LAPORAN KEGIATAN

SIT IN PROGRAM

LYCEUM OF THE PHILIPPINES UNIVERSITY (LPU)

MANILA CAMPUS

18 Maret – 13 April 2019

Penyusun :

Bunga Maharani   6317500040

Program Studi Teknik Industri

Fakultas Teknik

UPT KERJASAMA DAN HUBUNGAN INTERNASIONAL

UNIVERSITAS PANCASAKTI TEGAL

2019

HALAMAN PENGESAHAN

Laporan kegiatan *Sit In Program* Fakultas Teknik Universitas Pancasakti Tegal di *College of Technology* Lyceum of the Philippines University yang dilaksanakan pada tanggal 18 Maret – 13 April 2019 telah disetujui dan disahkan oleh :

Tegal, 15 April 2019

Kepala UPT Kerjasama Dalam
dan Luar Negeri UPS TEGAL

Penulis

Dr. Yoga Prihatin, M.Pd
NIDN. 0603067403

Bunga Maharani
NPM. 6317500040

Dekan Fakultas Teknik
UPS Tegal

Kaprogdi Teknik Industri

Dr. Agus Wibowo, ST., MT.
NIDN. 0618107201

Saufik Luthfianto, ST., MT.
NIPY. 18752331981

LETTER OF ASSIGNMENT

YAYASAN PENDIDIKAN PANCASAKTI TEGAL
UNIVERSITAS PANCASAKTI TEGAL
UPT. KERJASAMA DAN URUSAN INTERNASIONAL
Jl. Halmahera Km 1 – Tegal 52122 Sekretariatan: Telp./Fax (0283) 351882
REKTOR: Telp/Fax (0283) 351267 Email: ociamptegal@gmail.com Website: upstegal.ac.id

LETTER OF ASSIGNMENT
No: 05/LN/UPT-KUI/UPS/II/2019

Undersign, Head of Office of Cooperation and International Affairs (OCIA), Universitas Pancasakti Tegal, it is hereby assign to:

Name	: Bunga Maharani
NIM	: 6317500040
Passport No.	: C3203541
Study Program/Department	: Industrial Engineering

To join international sit in program at **Lyceum of the Phillipines University** for three weeks started on March 18, 2019 to April 13, 2019 in Manila, Phillipines. As soon as the program is over, the student which is mentioned above must make a report of the program.

Such a letter is given the task to be carried out with full responsibility.

Tegal, March 12, 2019
Head of OCIA

Dr. Yoga Prihatin, M.Pd.

Phillipines

Ma. Christina G. Aquino

LETTER OF INVITATION

INTERNATIONAL AFFAIRS OFFICE

Telephone number: (+632) 527-8251 local 144
Email address: internationalaffairs@lpu.edu.ph
businesslanguagepromoter@yahoo.com

March 6, 2019

TO WHOM IT MAY CONCERN

This letter serves as a letter of Invitation to:

Name	:	Bunga Maharani
Sex	:	Female
Nationality	:	Indonesian

Lyceum of the Philippines University certifies that Ms. **Bunga Maharani** has been accepted to join the Sit-in Program at the **College of Technology** from **March 18 until April 13, 2019**. We hope that she would make the most of this opportunity to enhance her academic endeavors.

For any additional inquiries, please contact:

Mr. Alfredo P. Diamante
Director, International Affairs Office

Telephone Number	:	(+632) 527-8251 local 144
Email Address	:	alfredo.diamante@lpu.edu.ph

Thank you for your kind attention and cooperation.

Sincerely,

DR. CONRADO E. INIGO, JR.
Vice President for Academic Affairs
Lyceum of the Philippines University
Manila

Intramuros, Manila **Tel.** +(632) 527-8251 to 56 **Fax** +(632) 527-1761
www.lpu.edu.ph

KATA PENGANTAR

Assalamu'alaikum Wr. Wb

  Puji syukur atas kehadirat Allah SWT karena atas karunia serta rahmat-Nya saya dapat menyelesaikan Laporan *Sit In Program* di Lyceum of the Philippines University dengan lancar. Laporan ini merupakan hasil observasi saya selama mengikuti kegiatan *Sit In Program* dari tanggal 18 Maret sampai 13 April 2019.

Atas selesainya laporan ini, kami mengucapkan terima kasih kepada :

- Prof. Dr. Burhan Eko Purwanto, M. Hum selaku Rektor Universitas Pancasakti Tegal.
- Dr. Yoga Prihatin, M.Pd selaku *Head Office of Cooperation International Affairs (OCIA)* Universitas Pancasakti Tegal.
- Anin Eka Sulistyawati, SS.,M.Hum selaku Kabag. Kerjasama Luar Negeri.
- Dr. Agus Wibowo, ST., MT selaku Dekan Fakultas Teknik.
- Saufik Luthfianto, ST., MT selaku Kepala Program Studi Teknik Industri.
- Dr. Conrado E.Inigo, JR. selaku *Vice President Academic Affairs of* Lyceum of the Philippines University.
- Dr. Christina Aquino selaku *Executive Director for Linkages and Standards of* Lyceum of the Philippines University.
- Mr Alfredo P. Diamante selaku *Director of International Affairs Office of* Lyceum of the Philippines University.
- Ms Jobelle Villanueva selaku *Secretary of International Affairs Office of* Lyceum of the Philippines University.
- Angel Allanigue selaku *President of LPU Young Educators' Guild*.
- Juss Moslares selaku *Main English Tutor* di Lyceum of the Philippines University.

- Debrunaire de Guzman selaku *Second English Tutor* di Lyceum of the Philippines University.
- Dosen-dosen dan teman kelas di Lyceum of the Philippines University.
- Teman-teman Mahasiswa *Sit In Program* Indonesia.
- Serta orang tua dan teman-teman saya yang sudah mendukung dan membantu dalam melaksanakan kegiatan *Sit In Program* ini.

Kesempurnaan hanyalah milik Allah SWT dan kesalahn adalah milik manusia sehingga laporan ini jauh dari kata sempurna dan tak luput dari kesalahan serta kekurangan karena kurangnya pengetahuan dan pengalam saya sebagai penulis. Kritik dan saran sangat diperlukan untuk mengintropeksi dan memotivasi saya untuk menjadi lebih baik.

Akhir kata, saya mengucapkan terima kasih. Semoga hasil laporan saya ini dapat bermanfaat.

Wassalamu'alaikum Wr. Wb.

Tegal, 15 April 2019

Penulis

DAFTAR ISI

BAB I
PENDAHULUAN

A. Latar Belakang

Kerjasama luar negeri menjadi bagian tidak terbantahkan dalam relasi kekinian di lingkup perguruan tinggi. Berdasarkan standar Badan Akreditasi Nasional untuk Perguruan Tinggi (BAN PT), salah satu kriteria penilaian terhadap suatu perguruan tinggi diantaranya terdapat kegiatan yang bertujuan untuk menambah wawasan mahasiswa dalam lingkup kemajuan pendidikan di negara lain.

Oleh karena itu sebagai bentuk kerjasama antara dua universitas, Univeritas Pancasakti Tegal dan Lyceum of the Philippines University, diadakannya kegiatan *Sit In Program*. Kegiatan tersebut memberikan kesempatan bagi mahasiswa Universitas Pancasakti Tegal untuk belajar di Lyceum of the Philippines University selama 27 hari dari Tanggal 18 Maret sampai dengan 13 April 2019.

Sit in Program merupakan salah satu kegiatan kunjungan belajar dengan tujuan untuk mempelajari aspek-aspek yang dianggap lebih baik dan lebih berhasil uang dilakukan oleh lembaga atau sekolah dalam mengelola kegiatan pembelajaran.

Dalam proses pengelolaan *Sit In Program*, kelompok kerja yang akan belajar kepada kelompok lain yang dianggap lebih berhasil terjadi proses identifikasi aspek yang dianggap perlu ditingkatkan, identifikasi kelompok-kelompok lain yang mempunyai kelebihan diaspek yang serupa dengan hasilnya dan lebih penting lagi bagaimana mereka melakukannya.

B. Tujuan

1. Memperoleh gambaran pelaksanan perkuliahan di Lyceum of the Philippines University.
2. Memperoleh informasi tentang faktor-faktor yang membuat Lyceum of the Philippines University berhasil melaksanakan model perkuliahan yang inovatif.
3. Memperoleh informasi fasilitas pekuliahan yang tersedia di Lyceum of the Philippines University.
4. Memperoleh gambaran pelakasanaan kegiatan unggulan di Lyceum of the Philippines University.

C. Manfaat

1. Mempererat hubungan kerjasama luar negeri antara Universitas Pancasakti Tegal dan Lyceum of the Philippies University.
2. Terciptanya komunikasi yang semakin baik antara Indonesia dan Filipina.
3. Media untuk menjembatani kultur dua negara mempunyai kekhasan budaya masing-masing.
4. Menambah wawasan mahasiswa terhadap aspek-aspek pendidikan di luar negeri.

BAB II

PELAKSANAAN

Jadwal pelaksanaan Sit In Program di *College of Technology*, Lyceum of the Philippines University 18 Maret sampai 13 April 2019.

	Tanggal	Waktu	Kegiatan	Tempat
Minggu I				
Senin	18 Maret	05.55 AM	Tiba di Ninoy Aquino International Airport	Ninoy Aquino International Airport
		09.30 AM	Opening Ceremony Mahasiswa Sit In Program Indonesia	Boardroom, LPU
		12.00 NN	Check In Dormitory	La Casarita
Selasa	19 Maret	10.00 AM – 12.00 NN	Campus Tour (Angel Allanigue)	LPU
		13.00 PM	Membeli sim card lokal dan kebutuhan dormitory (Angel Allanigue)	SM Manila
Rabu	20 Maret	13.00 PM – 16.00 PM	English Comunication and Cross Cultural Exposure (All English Tutors)	Lantai 2, Ruang 204

Kamis	21 Maret	11.30 AM – 1.00 PM	Technopreneurship (Prof. Arlene Caballero) *Tidak ada kelas	Lantai 3, Ruang 304
		1.00 PM – 2.30 PM	Operating System (Prof. Chirstopher Cunanan)	Lantai 3, Ruang 309
Jum'at	22 Maret	09.00 AM – 12.00 NN	English Communication and Cross Cultural Exposure (Juss Moslares, Main Tutor English)	Lantai 1, Ruang 111
		1.00 PM – 2.30 PM	Data Communication & Networking (Prof. Mark Melegrito)	Lantai 3, Ruang 309
		2.30 PM – 4.00 PM	Platform Technology (Prof. Orlando Lingo)	Lantai 4, Ruang 403
Sabtu	23 Maret	10.00 AM – 4.00 PM	Cross Cultural Activities, Tour : Intramuros Walled City Fort Santiago (Lyle Norick B. Carino)	Intramuros, Manila
Minggu	24 Maret	06.00 AM – 11.00 AM	Jogging dan Sarapan bersama Mr. Alfredo P. Diamante	Mall Of Asia (MOA)
Minggu II				
Senin	25 Maret	11.30 AM – 1.00 PM	Technopreneurship (Prof. Arlene Caballero) *Tidak ada kelas	Lantai 3, Ruang 304

		1.00 PM – 2.30 PM	Operating System (Prof. Chirstopher Cunanan)	Lantai 3, Ruang 309
Selasa	26 Maret	09.00 AM – 12.00 NN	English Communication and Cross Cultural Exposure (Juss Moslares, Main Tutor English)	Lantai 2, Ruang 204
		1.00 PM – 2.30 PM	Data Communication & Networking (Prof. Mark Melegrito)	Lantai 3, Ruang 309
		2.30 PM – 4.00 PM	Platform Technology (Prof. Orlando Lingo)	Lantai 4, Ruang 403
Rabu	27 Maret	13.00 PM – 16.00 PM	English Communication and Cross Cultural Exposure (Juss Moslares, Main Tutor English)	Lantai 2, Ruang 204
Kamis	28 Maret	11.30 AM – 1.00 PM	Technopreneurship (Prof. Arlene Caballero)	Lantai 3, Ruang 304
		1.00 PM – 2.30 PM	Operating System (Prof. Chirstopher Cunanan)	Lantai 3, Ruang 309
Jum'at	29 Maret	09.00 AM – 12.00 NN	English Communication and Cross Cultural Exposure (Juss Moslares, Main Tutor English)	Lantai 1, Ruang 111

		1.00 PM – 2.30 PM	Data Communication & Networking (Prof. Mark Melegrito) *Tidak ada kelas	Lantai 3, Ruang 309
		2.30 PM – 4.00 PM	Platform Technology (Prof. Orlando Lingo)	Lantai 4, Ruang 403
Sabtu	30 Maret	10.00 AM – 4.00 PM	Cross Cultural Activities, Tour : National Museum, National Museum of Natural History dan National Museum of Anthropology (Lyle Norick B. Carino, Rhaine Ong dan Debrunaire de Guzman)	Metro Manila
Minggu	31 Maret		Free	
Minggu III				
Senin	1 April	11.30 AM – 1.00 PM	Technopreneurship (Prof. Arlene Caballero)	Lantai 3, Ruang 304
		1.00 PM – 2.30 PM	Operating System (Prof. Chirstopher Cunanan)	Lantai 3, Ruang 309
Selasa	2 April	09.00 AM – 12.00 NN	English Communication and Cross Cultural Exposure (Juss Moslares, Main English Tutor)	Lantai 2, Ruang 204

		1.00 PM – 2.30 PM	Data Communication & Networking (Prof. Mark Melegrito) *Tidak ada kelas	Lantai 3, Ruang 309
		2.30 PM – 4.00 PM	Platform Technology (Prof. Orlando Lingo)	Lantai 4, Ruang 403
Rabu	3 April		Tidak ada kelas, Libur Isra Mi'raj	
Kamis	4 April	11.30 AM – 1.00 PM	Technopreneurship (Prof. Arlene Caballero) *Tidak Ada Kelas	Lantai 3, Ruang 304
		1.00 PM – 2.30 PM	Operating System (Prof. Chirstopher Cunanan) *Tidak ada kelas	Lantai 3, Ruang 309
Jumat	5 April	09.00 AM – 12.00 NN	English Communication and Cross Cultural Exposure (Debrunaire de Guzman, Second English Tutor)	Lantai 1, Ruang 111
		1.00 PM – 2.30 PM	Data Communication & Networking (Prof. Mark Melegrito)	Lantai 3, Ruang 309
		2.30 PM – 4.00 PM	Platform Technology (Prof. Orlando Lingo)	Lantai 4, Ruang 403
Sabtu	6 April	3.00 PM – 8.00 PM	Cross Cultural Activities, Tour : Bonafacio Global City	Metro Manila

			(BGC) (Lyle Norick B. Carino)	
Minggu	7 April		Free	
Minggu IV				
Senin	8 April	11.30 AM – 1.00 PM	Technopreneurship (Prof. Arlene Caballero)	Lantai 3, Ruang 304
		1.00 PM – 2.30 PM	Operating System (Prof. Chirstopher Cunanan) *Tidak Ada Kelas	Lantai 3, Ruang 309
Selasa	9 April		Tidak ada kelas, Hari Libur Nasional Filipina – Bataan Day	
Rabu	10 April	1.00 PM – 4.00 PM	Cooking Session and Food Festival (Filipino Cuisine and Indonesian Cuisien)	LPU kitchen Laboratory dan Boardroom
Kamis	11 April	1.00 PM – 4.00 PM	- Program Evaluation - Program Discussion - Tutors Evaluation - Speech Making	Lantai 2, Ruang 204
Jumat	12 April	1.00 PM – 3.00 PM	Closing Ceremony Sit In Program	Boardroom, LPU
Sabtu	13 April	4.00 PM	Check Out Dormitory	La Casarita
		9.45 PM	Take Off	Ninoy Aquino International Airport

BAB
HASIL PELAKSANAN

A. Keberangkatan

Hari Minggu , 17 Maret 2019 pukul 2.30 PM WIB saya bersama satu mahasiswa Universitas Pancasakti Tegal dan dosen UPS Tegal berangkat dari Tegal ke Jakarta menggunakan transportasi Kereta Api dan berhenti di Stasiun Gambir. Perjalanan dari Stasiun Gambir menuju bandara Internasional Soekarno-Hatta menggunkan Bus. Sesampainya di Bandara, kami bertemu dengan sepuluh teman *Sit In Program* dari sekolah berbeda di Semarang, Surakarta dan Yogyakarta. Pukul 00.45 AM wib rombongan mahasiswa Sit In Program meninggalkan Bandara Internasional Soekarno-Hatta dan tiba di Ninoy Aquino International Airport (NAIA) pada pukul 5.55 AM waktu Filipina. Kami tiba di Manila setelah menempuh sekitar 5 jam perjalanan udara. Sesampainya di bandara kami langsung disambut oleh Ms. Jobelle, Ms Erica dan Allyssa. Kami menuju Lyceum of the Philippines University untuk mengikuti *Opening Ceremony Indonesian Students' Sit In Program*.

B. Kedatangan di Lyceum of the Philippines University

Hari Senin, 18 Maret 2019 pukul 9.15 AM waktu Filipina, kami tiba di Lyceum of the Philippines University. Kedatangan kami disambut baik oleh Mr Alfredo P. Diamante, *Director of International Affairs Office of* LPU dan Mahasiswa-mahasiwa LPU yang tergabung dalam *LPU Young Educators' Guild*. Pukul 9.30 AM kami mengikuti acara Opening Ceremony di Boardroom Lyceum of the Philippines University. Satu persatu mahasiswa Sit In Program memperkenalkan diri dan diikuti oleh mahasiswa-mahasiswa LPU yang tergabung dalam *LPU Young Educators' Guild*.

Selesai acara Opening Ceremony pada pukul 11.30, kami diantara oleh Ms. Jobelle dan lima mahasiswa *LPU Young Educators' Guild* ke dormnitory La Casarita yang akan kami tinggali selama mengikuti *Sit In Program*. Jarak dormitory kami ke LPU sekitar 3,3 KM, kami dipersilahkan untuk istirahat dan masuk ke kamar masing-masing yang sudah ditentukan. Malam harinya kami diajak oleh Ms. Jobelle dan lima mahasiswa *LPU Young Educators' Guild* untuk dinner disalah satu tempat makan dekat dormitory.

Hari Selasa tanggal 19 April pukul 10.00 AM kami dijemput oleh dua mahasiswa LPU, Juss Moslares dan Debrunaire de Guzman. Mereka memberitahu kami cara pergi ke LPU dengan menggunakan transportasi umum Jeepney, berapa harga yang dibayar dan dimana kami harus turun. Kami harus turun di SM Manila dan melanjutkan perjalanan dengan berjalan kaki melewati pasar tradisional untuk bisa sampai ke LPU, perjalanan ini memakan wantu sekitar 20 menit menggunakan Jeepney dan berjalan kaki.

Sesampainya di LPU kami disambut oleh Angel Allanigue, kami diantar ke salah satu ruangan untuk membuat ID Card. ID Card ini harus kita pakai selama mengikuti kegiatan perkuliahan di LPU. Setelah itu, kami diajak oleh Angel Allanigue untuk *Campus Tour*, kami diperlihatkan fasilitas-fasilitas kampus dan ruang-ruang kelas yang nantinya akan kami tempati. Kami juga diajak mengujungi Hotel The Bayleaf, hotel milik LPU dan jaraknya cukup berdekatan dengan LPU. Setelah *Campus Tour*, Angel mengajak kami ke Mall terbesar di Manila yakni SM Manila untuk membeli sim card lokal dan membeli kebutuhan sehari-hari kami untuk di dormitory.

C. Kegiatan Akademik

Selama 27 hari kami berada di LPU, saya mengukuti 14 hari kegiatan perkuliahan secara penuh di *College of Technology* dan *English Tutorial*, selebihnya adalah kegiatan Non-Akademik.

a. Kegiatan Perkuliahan di English Tutorial

Mahasiswa *Sit In Program* Indonesia mengikuti *English Tutorial* ini tiga kali seminggu, namun memiliki jadwal hari yang berbeda-beda.

1) Pertemuan Pertama (Rabu, 20 Maret 2019 pukul 1.00 PM-2.00 PM)

Mahasiswa Sit In Program Indonesia diberikan kertas *English Test Placement*, *English Test* diuji oleh masing-masing tutor untuk mengetahui seberapa kemapuan berbahasa Inggris kami, tutor saya bernama Juss Moslares. Test ini terdiri dari *Understanding English, Speaking English, Reading English, Writing English* dan menjawab pertanyaan-pertanyaan pada soal pilihan ganda. Setelah *English Test*, Juss Moslares memaparkan presentasi mengenai keanekaragam yang ada di Filipina.

2) Pertemuan Kedua (Jumat, 22 Maret 2019 pukul 9.00 PM -12.00 PM)

Saya diajarkan *pronounce* dan *spelling* beberapa *vocabulary* kemudian tutor mendikte beberapa *vocabulary* lalu saya diminta menuliskannya di papan tulis. Saya juga diberi permainan yakni tebak objek dan permainan ini dalam betuk kartu, tutor membaca clue dan kami harus menebak *object* yang sesuai dengan clue tersebut.

Saya diminta menuliskan profil singkat kami dalam bentuk paragraf dan Bahasa Inggris oleh tutor untuk melihat kemampuan *writting* dan kemudian tutor mengkoreksi hasil *writting* dan memberitahu mana penggunaan grammar yang salah serta mengajarkan penggunaan grammar yang benar. Lalu tutor membacakan cerita tentang Pinocchio dan kami diminta menjawab pertanyaan yang sesuai dengan cerita tersebut.

3) Pertemuan Ketiga (Selasa, 26 Maret 2019 pukul 9.00 PM -12.00 PM)

Melanjutkan kembali pertemuan sebelumnya, tutor memaparkan *pronounce* dan *spelling* beberapa *vocabulary* baru lalu tutor mendikte beberapa *vocabulary* tersebut dan saya diminta menuliskannya di papan tulis. Tutor memberikan materi tentang *Part of Speech* dalam Bahasa Inggris dan memberikan soal terkait materi tersebut dan meminta saya untuk menjawab soal tersebut dan tutor melanjutkan kembali membacakan cerita tentang Pinocchio dan saya diminta menjawab pertanyaan yang sesuai dengan cerita tersebut.

4) Pertemuan Keempat (Rabu, 27 Maret 2019 pukul 1.00 PM - 4.00 PM)

Melanjutkan kembali pertemuan sebelumnya, tutor memaparkan *pronounce* dan *spelling* beberapa *vocabulary* baru kemudian tutor mendikte beberapa vocabulary tersebut lalu saya diminta menuliskannya di papan tulis. Tutor memberikan materi tentang *Parallelism in Grammar* dan memberikan soal terkait materi tersebut dan saya diminta untuk mengubah kalimat *Not Parallelism* menjadi *Parallelism*. Tutors meminta kami untuk membaca cerita tentang Pinocchio dan tutor mengkoreksi kemampuan speaking saya melalui cerita tersebut dan tutor kembali menguji kemampuan *writting* dengan menuliskan pengalaman saya selama berada di Manila.

5) Pertemuan Kelima (Jumat, 29 Maret 2019 pukul 9.00 PM -12.00 PM)

Melanjutkan kembali pertemuan sebelumnya, tutor memaparkan *pronounce* dan *spelling* beberapa *vocabulary* baru kemudian tutor mendikte beberapa *vocabulary* tersebut lalu saya diminta menuliskannya di papan tulis. Tutor memberikan contoh lain tentang *Parallelism in Grammar* dan memberikan soal terkait contoh tersebut dan saya diminta untuk mengubah kalimat bukan *Parallelism* menjadi *Parallelism*. Tutor memberikan materi baru mengenai *Figure of Speech* dan contohnya.

Tutor kembali memainkan permainan tebak objek dan meminta saya untuk menebak objek tersebut dengan ciri-ciri objek tersebut yang dibacakan olehnya

6) Pertemuan Keenam (Selasa, 2 April 2019 pukul 1.00 PM - 4.00 PM)

Melanjutkan kembali pertemuan sebelumnya, tutor memaparkan *pronounce* dan *spelling* beberapa *vocabulary* baru kemudian tutor menyakan makna dari *vocabulary* tersebut. Tutor memberikan soal mengenai materi *Figure of Speech* dan meminta saya untuk menetukan tipe kalimat *Figure of Speech*. Saya diminta menggambar arah mata angin dan menuliskan arah tersebut kedalam bahasa inggris, tutor mengajarkan *Clock Direction* dan meminta saya membuat contoh penggunaan *Clock Direction*. Kemudian, tutor kembali menguji kemampuan *writting* saya dengan memberikan lima pertanyaan mengenai diri saya.

7) Pertemuan Ketujuh (Jumat, 5 April 2019 pukul 9.00 PM -12.00 PM)

Pertemuan ini melanjutkan kembali pertemuan sebelumnya, tutor memaparkan *pronounce* dan *spelling* beberapa *vocabulary* baru kemudian tutor mendikte beberapa *vocabulary* tersebut lalu saya diminta menuliskannya di buku tulis dan papan tulis dan tutor memberikan beberapa *vocabulary* baru dan meminta saya menuliskan arti dan contoh kalimatnya. Saya diminta untuk membetulkan kalimat yang diacak untuk menjadi kata yang memiliki makna.

8) Pertemuan Kedelapan (Kamis, 11 April pukul 1.00 PM – 4.00 PM)

Pertemuan terakhir kami Mahasiswa *Sit In Program* Indonesia dan semua *English Tutors* berkumpul. Sesi pertama kami diberikan kertas lembaran dimana kertas itu untuk mengevaluasi tutor kami, kami juga diminta untuk memberi kritik dan saran untuk tutor kami.

Sesi kedua kami ditanyakan satu persatu oleh Ms Jobelle tentang pengalaman *Sit In Program* di LPU dan pengalaman tinggal di Manila. Sesi terakhir kami berfoto bersama dan bersenang-senang bersama tutor-tutor kami.

b. Kegiatan Perkuliahan di *College of Technology*

Kegiatan perkuliahan ini saya mengikuti empat mata kuliah dalam satu minggu dan dalam seminggu dilaksanakan dua kali pertemuan. Disetiap mata kuliah saya memiliki teman satu kelas yang bereda-beda dan hanya dua mata kuliah yang memiliki teman satu kelas yang sama. Masing-masing kelas diisi oleh 25 mahasiswa.

Media pembelajaran di *Collage of Technology* LPU memiliki kesamaan dengan model pembelajaran di Fakultas Teknik UPS tegal yakni ada dosen yang menggunakan media Proyektor, dosen menerangkan materi mahasiswa mendengarkan, dosen memberi soal mahasiswa mengerjakan dan ada juga yang menggunakan media buku, dosen menerangkan materi mahasiswa mendengarkan terkadang menulis sedikit materi di papan tulis dan mahasiswa mencatat. Namun mahasiswa di *Collage of Technology* LPU lebih tertib dan cepat menyelesaikan jika diberi tugas di kelas oleh dosen.

Fasilitas di ruang kelas *Collage of Technolgy* terdiri dari Meja dan Kursi Dosen, Meja gabungan kursi mahasiswa, papan tulis, layar LDC dan Proyektor, dua buah AC dan tempat sampah. Terdapat bel/alram yang berbeda nada sebagai penanda waktu mulai dan selesainya kelas dan selalu ada sesi doa bersama sebelum dan sesudah memulai pembelajaran. Mayoritas mahasiswa di Collage of Technology adalah laki-laki

1) Technopreneurship

Mata Kuliah oleh Prof. Arlene Caballero dimulai pukul 11.30 PM – 1.00 PM dilaksanakan setiap hari Senin dan Kamis diruang 304. Dari 14 hari Perkuliahan saya mengikuti tiga kali pertemuan mata kuliah ini.

a) Pertemuan Pertama (Kamis, 28 Maret 2019)

Pertemuan pertama, saya diminta oleh Prof. Arlene untuk memperkenalkan diri dan menjelaskan sedikit tentang Sit In Program yang saya ikuti didepan teman kelas. Teman-teman kelas dan Prof. Arlene menyambut saya dengan baik dan banyak teman kelas yang memperkenalkan diri kepada saya dan saling bertukar obrolan.

Proses pembelajaran pada pertemuan ini belum begitu kondusif kerena Prof membagikan hasil ujian mahasiswanya minggu lalu dan banyak mahasiswa yang masih mendiskusikan hasil jawaban ujiannya kepada Prof. Arlene. Kemudian saya diberikan print materi tentang *Intoduction to Technopreurship* dan *Value Chain* untuk dipelajari terlebih dahulu.

b) Pertemuan Kedua (Senin, 3 April 2019)

Pertemuan kedua membahas materi tentang Intoduction to Technopreurship yang terdiri dari *Who is Enterpreur and What is Enterpreurship, who is Technopreneur, Technological Enterpreneurship, Example of Technopreneurship* dan membahas materi tentang *Bussines Plan* yang terdiri dari *definition of Bussines Plan and Value Chain, Technopreneursip Component and example of a Bussines Plan*.

c) Pertemuan Ketiga (Senin, 8 April 2019)

Pertemuan ketiga membahas materi tentang *Development and Production* yang terdiri dari *Development Status, Product Development, Production/Manufacturing/ Factory Cost, Production Proces, Research & Development Cost and Cost of Goods.*

Pertemuan ketiga adalah pertemuan terakhir saya mengikut pembelajaran dan diakhir sesi pembelajaran saya beserta teman satu kelas dan Prof. Arlene berfoto bersama sebagai kenang-kenangan.

2) Operating System

Mata kuliah oleh Prof. Cristhoper Cunanan dimulai pukul 1.00 PM – 2.30 PM dilakasanakan setiap hari Senin dan Kamis di Ruang 309. Dari 14 hari perkuliahan saya mengikuti empat kali pertemuan mata kuliah ini.

a) Pertemuan Pertama (Kamis, 21 Maret 2019)

Pertemuan pertama saya disambuat baik oleh Prof. Cunanan dan teman satu kelas. Prof. Cunanan memperkenal kan saya kepada teman satu kelas, kami saling berjabatan untuk saling memperkenalkan diri dan kami juga saling bertukar obrolan.

Pertemuan ini Prof. Cunanan membagikan hasil ujian mahasiswanya pada minggu lalu dan membahas jawabanya di depan papan tulis.

b) Pertemuan Kedua (Senin, 25 Maret 2019)

Pertemuan kedua membahas materi tentang Introduction Operating System yang terdiri dari *Understanding Operating System, Definition of Operating System and Operating system Softwere.*

c) Pertemuan Ketiga (Kamis, 28 Maret 2019)

Pertemuan ketiga melanjutkan pembahasan materi sebelumnya tentang *Introduction Operating System* yang terdiri dari *Machine Hardware, Types of Operating Systems and Brief History of Operating Systems*

d) Pertemuan Keempat (Senin, 1 April 2019)

Pertemuan keempat melanjutkan pembahasan materi sebelumnya tentang *Understanding Operating System* yang terdiri dari *Current Operating System, System Archiecture, and Multiprocessing Cofiguration*.

3) Data Communication & Networking

Mata kuliah oleh Prof. Mark Melegrito dimulai pukul 1.00 PM – 2.30 PM dilakasanakan setiap hari Selasa dan Jumat di Ruang 309. Dari 14 hari perkuliahan saya mengikuti tiga kali pertemuan mata kuliah ini.

a) Pertemuan Pertama (Jumat, 22 Maret 2019)

Pertemuan pertama saya disambut baik oleh Prof Mark Mellegrito. Pada kelas ini saya memiliki kesamaan teman satu kelas dengan kelas Operating System. Pertemuan ini Prof. Cunanan membagikan hasil ujian mahasiswanya pada minggu lalu dan membahas jawabanya di depan papan tulis.

b) Pertemuan Kedua (Jumat, 26 Maret 2019)

Pertemuan kedua membahas materi tentang Linear Summer yang terdiri dari Phasordiagrm, Constellaion and Summary Table.

c) Pertemuan ketiga (Jumat, 5 April 2019)

Pertemuan ketiga membahas materi tentang Error Control yang terdiri dari Definition of Error Detection and Techniques of Error Control.

Pertemuan ketiga adalah pertemuan terakhir saya mengikuti mata kuliah Data Communication &Networking, saya berpamitan dan mengucapkan terima kasih kepada Prof. Mark.

4) Platform Technology

Mata kuliah oleh Prof. Orlando Lingo dimulai pukul 2.30 PM – 4.00 PM dilakasanakan setiap hari Selasa dan Jumat di Ruang 309. Dari 14 hari perkuliahan saya mengikuti lima kali pertemuan mata kuliah ini.

a) Pertemuan Pertama (Jumat, 22 Maret 2019)

Pertemuan Pertama saya disambut baik oleh Prof. Lingo dan teman satu kelas. Prof. Lingo memperkenal kan saya kepada teman satu kelas, mereka memberi salam dengan ramah dan ada banyak mahasiswa yang memperkenalkan dirinya kepada saya.

Pertemuan Pertama ini membahas materi tentang *Memory Management: Early System* yang terdiri dari *Type of Memory allocation Schemes, Single User Contuguos Scheme, Fixed and Dynamic Partitions and Best Fit Versus First Fit Allocation*.

b) Pertemuan Kedua (Selasa, 26 Maret 2019)

Pertemuan kedua membahas materi mengenai *Concurrent Processes* yang terdiri dari *Definitoin of Parallel Processing, Master/Slave Configuration, Process Synchronization Software, Semaphores, The Java Language Environment and The Java Platform*.

c) Pertemuan Ketiga (Jumat, 29 Maret 2019)

Pertemuan ketiga membahas materi tentang Processor Management yang terdiri dari Job and Process Status, Job Scheduling Versus Process Scheduling and Process Scheduling Policies .

d) Pertemuan Keempat (Selasa, 2 April 2019)

Pertemuan keempat membahas materi tentang *Memory Management: Virtual Memory* yang terdiri dari *Paged Memory Allocation, The Mechanics of Paging, Segmented Memory Allocation and Segmented/Demand Page Memory Allocation*.

e) Pertemuan kelima (Jumat, 5 April 2019)

Pertemuan kelima membahas materi tentang *Process Management* yang terdiri dari *Deadlock, Conditions for Deadlock, Deadlocks on File Requests and Deadlocks in Databases.*

Peremuan kelima adalah pertemuan terakhir saya mengikut pembelajaran dan diakhir sesi pembelajaran saya beserta teman satu kelas dan Prof. Lingo berfoto bersama sebagai kenang-kenangan.

D. Kegiatan Non-Akademik

Selain kegiatan akademik, kami mahasiswa Indonesia *Sit In Program* memiliki jadwal kegiatan non-akademik baik di lingkungan universitas maupun diluar universitas. Saya dan Mahasiswa Sit In Program Indonesia memiliki Tours yang dilaksanakan setiap hari sabtu dan mengujungi tempat-tempat berbeda di sekitar Manila.

1. Cross Cultural Activities Tour: Intramuros Walled City Fort Santiago

Kegiatan ini dilaksanakan pada hari Sabtu, 23 Maret 2019 pukul 10.00 AM. Kami ditemani oleh salah satu mahasiswa *LPU Young Educators' Guild,* Lyle Norick B. Carino sebagai tour guide kami selama pelaksanaan tour.

Pukul 10.00 kami sudah berkumpul di ruang IAO untuk bersiap melaksanakan tour. Tempat tour ini tidak jauh dari LPU, Intramuros merupakan salah satu distric di Manila. Disini lah LPU Manila berada. Intramuros memiliki banyak bangunan besar yang bersejarah dan unik serta sentuhan desain bangunannya yang bergaya Spanyol.

Kami mengunjungi gereja Katholik terbesar di Manila yakni Caterdal Manila, saat kami mnegunjungi gereja ini sedang berlangsung upacara pernikahan, lalu kami diajak ke ruang bawah tanah gereja Caterdal Manila dimana tempat ini makam dari para Pastur gereja ini yang telah meninggal dan kami juga belajar sedikit tentang penganut Katholik di Manila.

Denistinasi selanjutnya adalah Museum of Jose Rizal Fort Santiago, Dr Jose Rizal adalah salah satu pahlawan kebangsaan Filipina, di Museum ini menampilkan profil, kisah hidup dan perjuangan Dr Jose Rizal dalam menyuarakan kemerdekaan Filipina diluar negeri (Spanyol). Museum ini juga menampilkan kehidupan saat-saat terakhir Dr. Jose Rizal, mulai dari kepergianyya dari Dapitan hingga eksekusi di Bagumbayan. Pada masanya, Dr. Jose Rizal dinyatakan bersalah atas pemberontakan, hasutan dan konspirasi, beliau dijatuhkan hukuman mati pada tanggal 29 Desember 1896 dan eksekusinya dijadwalkan pada hari berikutnya dan Museum ini menampilkan koleksi permanen Museum of Jose Rizal,

yang meliputi :

- Koleksi pribadi dan pakaian yang digunakan oleh Dr. Jose Rizal.
- Koleksi patung yang dibuat oleh Dr. Jose Rizal.
- Vertebra dari sisa-sisa Dr. Jose Rizal
- Dan Koleksi lukisan yang berkaitab dengan kehidupan dan kematian Dr. Jose Rizal.

Selesai mengunjungi Museum of Jose Rizal pukul 3.00 PM, kami diajak oleh Lyle untuk makan siang disalah satu tempat makan di daerah Intramuros, tempat makan ini tersedia untlimited rice dimana kami bisa menambah nasi sebanyak tiga kali dan porsi lauknya yang besar dengan harga yang cukup terjangkau. Selesai makan siang kami berpisah dengan Lyle dan kami kembali ke dormitory untuk beristirahat.

2. Jogging dan Sarapan bersama Mr. Alfredo P. Diamante

Kegiatan ini dilaksankan pada tanggal 24 April 2019, kami berangkat dari dormitory pukul 06.00 AM, kami jalan kaki menuju Central Station, stasiun LRT. Disana kami bertemu dengan Ms Jobelle dan Mr Tejay, kami pergi ke MOA menggunakan transportasi LRT. Sesampainya di MOA pukul 7.30 AM, kami bertemu dengan Mr Alfredo dan kedua anaknya.

Kami mahasiswa *Sit In Program* Indonesia diajak oleh Mr Alfredo untuk mengunjungi Mall of Asia (MOA) dimana MOA adalah Mall terbesar di Asia yang berlokasi di Makati dan dibelakang Mall ini terdapat taman dan laut yang sangat cantik, jika dipagi hari sebelum jam buka Mall tempat ini dipadati oleh warga untuk jogging ataupun senam dan sore harinya warga mengujungi tempat ini untuk melihat Sunset. Ms Jobelle bilang jika sunset ditempai ini bagus dan banyak pasangan muda-mudi yang duduk berjejeran menikmati keindahan laut dan sunset.

Pada pukul 9.00 AM kami diajak Mr Alfredo untuk sarapan bersama disalah satu tempat makan disekitaran MOA. Selasai sarapan, kami berfoto bersama untuk kenang-kenangan dan kami masuk ke dalam MOA untuk mampir ke tempat oleh-oleh Filipina, sebagian dari kami ada yang membeli oleh-oleh dan ada yang tidak dan sekitar pukul 10.30 AM kami pulang ke dormitory.

3. Cross Cultural Activities Tour: National Museum of Philippines, National Museum of Natural History and National Museum of Anthropology.

Kegiatan ini dilaksakan pada tangga 30 Maret 2019, pukul 10.00 kami sudah berkumpul di ruang IAO dan bersiap untuk tour. Tour kali ini tidak hanya dengan Lyle namun juga bersam Rhaine dan Deb yang menemani kami.

Lokasi destinasi ini tidak jauh dari LPU, berjarak sekitar 1,5 KM dengan berjalan kaki. Destinasi yang pertama kami kunjungi adalah National Museum of Philippines. Museum ini buka pada hari Selasa sampai Minggu pukul 10.00 AM – 5.00 AM dan tutup pada hari Senin

Harga tiket masuk museum ini termasuk terjangkau yakni 150PHP untuk dewasasa, Senior Citizen 120PHP dan untuk pelajar hanya 50PHP, terkadang untuk masuk ke museum ini tidak dikenakan biaya masuk alias Free. Beruntungnya saat kami mengunjungi museum ini tidak dikenai biaya masuk. Museum ini memiliki beberapa aturan yang harus kita patuhi yakni kami harus menitipkan tas dan barang bawaan kami dan hanya diperbolehkan membawa masuk dompet dan handphone/kamera. Kami juga dilarang untuk merecord/memfoto menggunkan cahaya flash jadi hanya diperbolehkan untuk foto biasa.

Saat pertama kali masuk ke museum ini kami langsung disuguhkan dengan lukisan sangat besar, dimana lukisan ini adalah lukisan terbesar di Filipina. Lukisan ini dibuat oleh Juan Luna di Roma pada tahun 1884. Kemudian kami masuk ke ruangan yang menampilkan dua patung Pastur yang cukup besar dan juga menampilkan patung-patung dalam agama Katholik dengan ukuran sedang, berpindah ke ruangan lain yag menampilkan lukisan-lukisan yang bercerita tentang kekejaman Perang Dunia II yang terjadi di Filipina dan juga terdapat lukisan-lukisan proses Penyaliban Yesus Kritus, diruangan lain juga menampilkan lukisan Dr. Jose Rizal serta barang-barang peninggalannya.

Naik ke lantai 2, ada salah satu koleksi sangat terkenal yaitu harta karun San Diego. Kapal layar Spanyol ini kandas dipesisir Teluk Manila pada tahun 1600, pada kapal ini terdapat artefak utuh, koin, emas, perhiasan, keramik dan rasior dari mani-manik gading. Kemudian kami masuk ke ruangan lain yang memamerkan beberapa meriam kapal dan benda-benda keseharian pada abad 17 seperti cangkir, botol dan guci besar yang digunakan untuk menyimpan persediaan makanan.

Destinasi yang kedua adalah National Museum of Natural History. Museum ini buka pada hari Selasa sampai Minggu pukul 10.00 AM – 5.00 AM dan tutup pada hari Senin. Museum ini tidak dikenakan biaya masuk dan memiliki peraturan yang sama seperti museum sebelumnya.

Saat pertama kali masuk National Museum of Natural History kami langsung disuguhkan patung fosil salah satu jenis Dinosaurus yang ditempatkan menggantung diatas. Museum ini memiliki enam lantai dengan "Tree of Life" sebagai pusat atrium. Berikut adalah bagian per lantai :

- Lantai Pertama : Tree of Life Foyer, dilantai ini biasanya digunakan pengunjung untuk beristirahat sejenak setelah mengelilingi museum ini dan lantai ini

- Lantai Kedua : Pada lantai ini memamerkan Warisan Alam Filipina seperti miniatur negara Filipina dan Pulau-pulau yang ada di Filipina.

- Lantai ketiga : Pada lantai ini menampilkan Hutan Bakau yang ada di Filipina, Pantai-pantai yang dimiiki Filipina, Zona Interdal dan Keanekaragaman Alam Laut Filipina.

- Lantai Keempat : Pada lantai ini menampilkan Hutan-hutan yang dimiliki Filipina seperti Hutan Lumut, Hutan Motan dan Hutan Pinus, Hutan Hujan Rumput Hijau Dataran Rendah, Hutan Ultramafik dan Batu Kapur serta menampilkan Lahan Air Tawar.

- Lantai Kelima : Pada lantai ini memamerkan Keanekaragaman Hayati Filipina, Geologi Filipina dan Sumber Daya yang dimiliki Filipina dan Keanekaragaman Hewani Filipina (terdapat patung Buaya dan Ikan Paus yang sengat besar serta patung ukuran sedang untuk hewan-hewan lain)

- Lantai Keenam : Pada lantai ini terdapat Taman Atap, Ruang Serbaguna dan Pusat Konfersi Nasional.

Setelah puas mengelilingi semua lantai di National Museum of Natural History kami berpindah ke museum selanjutnya

Destinasi terakhir adalah National Museum of Anthropology, museum ini buka pada hari Selasa sampai Minggu pukul 10.00 AM – 5.00 PM dan tidak dikenakan biaya masuk. Letaknya sangat dekat dengan Museum National of Natural History dan berhadapan dengan National Museum. Museum ini juga memiliki peraturan yang sama seperti dua museum sebelumnya.

National Museum of Athropology berisi benda-benda dan artefak yang berkaitan dengan arkeologi, masyarakat prasejarah, bahasa, adat istiadat, tradisi dan budaya Filipina. Kami diarahkan menuju lantai 2, dimana pada lantai ini terdapat dua galeri yaitu San Diego: 500 Years Of Maritime Trade, galeri ini menampilkan kegiatan perdagangan dan benda-benda perdagangan maritim Filipina di tempo dulu. Galeri Garing: The Philippines at the Crossroads of Ivory Trade, galeri ini menampilkan berbagai macam gigi hewan terutama Gajah dan gading-gading dari hewan seperti Gajah, Kuda Nil, Paus Sperma, Walrus dan Narwhal.

Menuju lantai 3, terdapat berbagai ruangan antara lain:

- Of War and Peace, dimana ruangan ini memamerkan Lantaka yang merupakan senjata saat perang Filipina tempo dulu.
- Manlilikha Ng Bayan, dimana ruangan ini menampilkan kehidupan 13 Manlilikha Ng Bayan (National Living Treasure).
- Lumud: Mindano, dimana ruangan ini memamerkan berbagai macam pakaian adat Mindano, aksesoris-aksesoris yang orang Mindano kenakan, alat-alat keseharian dan kesenian yang dimiliki oleh orang Mindano.
- Kaban ng Lahi, dimana ruangan ini berbeda dengan ruangan lain karena ruangan ini dominan petang dan lampu hanya dipasang pada benda-benda pameran saja, di ruangan ini memamerkan harta zaman purbakala berbagai koleksi guci-guci yang terkubur di dalam Gua. Disini juga terdapat

miniatur Gua yang penuh dengan guci yang sedang diteliti oleh ilmuan serta terdapat cahaya kecil matahari yang masuk dilubang gua.

- Rice, Biodiversity and Climate Change, dimana diruangan ini menampilkan varietas butiran padi dan ruangan ini menampilkan praktik pertanian padi, tanaman dan serangga di pertanian dan kehidupan pertanian.

- Hiba Ng Lahing Filipino, dimana ruangan ini koleksi tekstil dari pribadi Senator Loren Legarda, disini juga terdapat alat tenun yang digunakan oleh nenek moyang bangsa Filipina dalam memproduksi pakaian tekstil dari serat tunggal.

- Babayin, dimana menampilkan naskah kuno Filipina pada arkeologi artefak dengan aksara Babayin. Beberapa alat-alat musik, ornamen dan pot dengan aksara Babayin Prasasti dari adat suku Mindoro dan Palawa.

- Entwined Spheres, dimana pada ruangan ini terdapat berbagai macam kerajinan tikar dan keranjang sebagai wadah, konveyor dan wadah yang digunakan oleh nenek moyang bangsa Filipina.

Setelah puas keliling-keliling museum dan jam sudah menujukkan pukul 3.15 PM kami diajak oleh Rhaine untuk makan disalah satu tempat makan di SM Manila dan pukul 4.00 kami menyelesaikan makan dan kembali ke dormitory.

4. Cross Cultural Activities Tour : Bonafacio Global City (BGC)

Kegiatan ini dilaksanakan pada tanggal 6 April 2019 pukul 3.00 PM, tour kali ini Ms Jobelle dan Angel ikut begabung dengan Lyle dan kami. Perjalanan kami ke BGC menggunakan dua mobil dan memakan waktu sekitar satu jam perjalanan.

BGC berlokasi di Taguig, orang-orang menjulukinya kualitas dan kehidupan istimewa. BGC seperti kota dalam kota dimana banyak Mall, Apartement dan kanto-kantor dengan bangunan yang menjulang tinggi, mewah dan modern. Kami diajak oleh Lyle untuk masuk kedalam salah satu Mall dan didalam Mall ini terdapat spot terbuka dimana kami bisa melihat separuh kota BGC ini. Kami berfoto-foto disini dengan latar belakang bangunan yang menjulang tinggi.

Saat kami mengunjungi BGC, tempat ini sangat ramai dengan pengujung dan ternyata sedang berlangsung Festival Hewan Peliharaan, dimana para pengujung mayoritas membawa Anjing peliharaan mereka. Banyak sekali jenis-jenis Anjing di festival ini, dari yang berukuran kecil sampai yang berukuran besar.

Pukul 6.00 PM kami berpindah tempat destinasi menggunakan Jeepney karena jaraknya yang cukup jauh namun masih berada disekitaran BGC. Venice Grand Canai, Mckinley Hills dimana tempat ini memiliki bangunan bergaya Italia dan dijuluki sebagai Little Venice di Filipina. Tempat ini sangat indah di malam hari dengan gemerlapnya cahaya lampu yang memanjakan mata kami, disini juga terdapat sungai yang memutari tempat ini beserta perahu Gondola khas Kota Venice.

Pukul 7.30 kami diajak Ms Jobelle dan Lyle untuk makan disalah satu tempat makan di Venice Grand Canai. Karena ini adalah tour terakhir kami, kami membuat kenangan dengan berfoto bersama dengan latar belakang kota Venice. Pukul 9.00 kami kembali ke dormitory dengan menggunkan dua mobil.

5. Cooking Session (Philippines Cuisine and Indonesia Cuisine)

Kegiatan ini dilakasanakan pada tanggal 10 April 2019 pukul 1.00 PM, kami mahasiswa Sit In Program Indonesia memasakan makanan Indonesia yaitu Ayam Geprek dan Gado-gado. Pada acara ini ada tujuh mahasiswa LPU jurusan Cullinary Arts yang akan memasak makanan Filipina yaitu Chicken Adobo. Sebelum memasak. Kami membagi tugas antara memontong bahan masak, mencuci bahan masak dan memasak bahan masak.

Saya mendapat bagian memotong bahan masak dan saya diajarkan oleh salah satu mahasiswa *Cullinary Arts* cara memotong yang benar. Saya juga dipelihatkan pembuatan kue oleh mahasiswa *Cullinary Arts*, saya ikut mencoba mengaduk bahan-bahan pembuatan kue dan mahasiswa *Cullinary Arts* menawarkan saya untuk mencoba krim kue yang mereka buat, krim kue ini sangat enak dan lembut di mulut sangat berbeda dengan krim kue yang selama ini pernah saya makan. Karena ada salah satu tutor kami, Malou yang sedang berulang tahun jadi kami membuat kue sendiri dan kejutan untuknya.

Selesai Cooking Session, semua English Tutors, Mahasiswa *Sit In Program* Indonesia, Mr Alfredo dan Ms Jobelle makan bersama masakan yang kami buat, akhirnya kami Mahasiswa *Sit In Program* Indonesia bisa makan makanan Indonesia. Suasana makan bersama ini hangat dan menyenangkan karena sebentar lagi kami akan berpisah dan acara ini selesai pada pukul 5.00 PM.

6. Closing Ceremony Mahasiswa Sit In Program Indonesia.

Kegiatan ini adalah kegiatan akhir kami di LPU dan dilaksakan pada tanggal 12 April 2019 pukul 1.00 PM. Acara ini dihadiri semua *English Tutors* kami, Mr Alfredo, Ms Jobelle dan Mrs Christina.

Banyak dari Mahasiswa Sit In Program Indonesia yang menampilkan bakat mereka seperti menyanyi, menari tari tradisional, Pencak Silat, Pidato Perpisahan dan kami manari bersama dengan lagu Maumere dan mengajar tutor-tutor kami untuk bergabung menari bersama kami.

Dari tutor-tutor kami, mereka menyayikan lagu Filipina besama-sama, kemudian ada sesi pemberian Sertifikat untuk Mahasiswa *Sit In Program* Indonesia dan Tutor-tutor kami dan juga sesi pemerian kenang-kenangan dari Mahasiswa Sit In Program Indonesia untuk LPU.

Diakhir acara kami berfoto bersama-sama membuat kenang-kenangan dan mengucapkan salam perpisahan. Suasana acara ini hangat dan cukup haru dimana kami akan pulang ke Indonesia esok harinya dan akan berpisah dengan tutor-tutor kami, Ms Jobelle dan Mr Alfredo yang selama ini sudah membantu kami dalam mengikuti Sit In Program, kami juga membuat surat ucapan terima kasih dan perpisahan untuk mereka. Acara ini selesai pada pukul 3.30 PM.

E. Kepulangan

Pukul 4.00 kami sudah check out dormitory dan kami berangkat ke bandara menggunkan Bus milik LPU, didampingi oleh Ms Jobelle, Ja ja dan Bryan. Saat dalam perjalanan Ja ja membacakan surat yang ia buat untuk kami, surat itu berisi salam perpisahan dan terima kasih untuk kami. Diakhir kata ia juga menuliskan salam kerinduan dalam bahasa Indonesia.

Pukul 5.00 kami sampai di bandara NAIA, suasana ini sangat haru dimana sebagian dari kami ada yang sedih dan menangis karena kami benar-benar berpisah dengan mereka dan kami masuk ke bandara bersiap untuk terbang ke Indonesia.

BAB IV
PENUTUP

A. Kesimpulan

Sit In Program Fakultas Teknik Universitas Pancasakti Tegal dan *College of Technology* Lyceum of the Philippines University ini merupakan pertama kali dilaksankan. Banyak manfaat yang didapatkan dari kedua fakultas dan juga mahasiswa, khususnya yang telah mengikuti *Sit In Program* ini. Tidak hanya mengerti budaya negara lain namun juga menghargai budaya negara lain. Mengambil apa-apa yang baik dan meninggalkan apa-apa yang tidak baik.

Dari kedua fakultas masing-masing ada yang baik, dari segi pembelajaran yang berbeda, sosial budaya yang berbeda, budaya belajar mengajar dikampus maupun diluar kampus yang berbeda. Dari program ini kami bisa saling bertukar pikiran dan tukar pendapat. Sehingga pada *ending*-nya menjadikan kedua fakultas menjadi lebih baik lagi.

B. Saran

Setelah terlaksananya *Sit In Program* yang diselenggarakan oleh Universitas Pancasakti Tegal dan Lyceum of the Philippines, saya memberi saran agar *Sit In Program* kedepan mejadi lebih baik, yaitu :

1. Perlu adanya persiapan lebih matang dalam kegiatan *Sit In Program* ini mengingat beberapa informasi diberitahukan mendadak agar dalam pelaksanaanya dapat maksimal.
2. Untuk pelaksanaan program selanjutnya, universitas dan fakultas diharapkan dapat menyongkong seluruh dana yang dibutuhkan mahasiswa yang melaksanakan *Sit In Program.*

3. Pembekalan keberangkatan dirasa kurang karena persiapan yang kurang matang. Sebaiknya pembekalan keberangkatan dan teknis *Sit In Program* dipersiapkan jauh-jauh hari.

LAMPIRAN-LAMPIRAN

LYECEUM OF THE PHILIPPINES UNIVERSITY

INTRAMUROS, MANILA

Introduction

Lyceum of the Philippines University prides itself with its long and rich tradition of Academic excellence through the legacy of its founder, Dr. Jose P. Laurel. The only Philippine President to have served in all three branches of the Government, Dr. Laurel was a successful lawyer, legislator, constitutionalist, jurist, writer, scholar, statesman, philosopher, and above all things, an educator.

Dr. Laurel's concern for education was his most abiding passion. A graduate of top educational institutions such as University of the Philippines College of Law, Escuela de Derecho, University of Santo Tomas and Yale University, his credentials as an educator were unassailable. He wrote extensively on education and managed to teach in several educational institutions in Manila, despite his numerous commitments.

During the Second World War, as the leader of the nation during its darkest period in its history, he introduced educational policies that emphasized and upheld national morale and character.

The inspiration to establish a school came to him in the early 1920's while a student at Yale. Three decades later, along with some of his close friends, he turned this dream into a reality. With the aim of becoming a center of academic excellence in the Philippines and the Far East, Lyceum of the Philippines University (as it is now known) formally opened its doors to the public on July 7, 1952.

With his admiration for knowledge and his appreciation of classical thought, Dr. Laurel named the school Lyceum of the Philippines after Lykeios, the site in ancient Athens where the great Philosopher Aristotle nurtured the minds of his protegees. The school's

motto, "Veritas et Fortitudo", "Pro Deo et Patria", reflects Dr. Laurel's belief in the value of learning and character formation for God and country.

Unfortunately, Dr. Laurel unexpectedly died in 1959.

On his third son Sotero, who was then in the practice of law, fell the mantle of responsibility of running the school. He was the natural choice as, in years earlier, it was Senator Sotero who helped his father organize LPU and acted as the first executive secretary to his father.

For the next forty-three years, it was this chosen son, Sotero, who nurtured the school and made it grow beyond Manila into the provinces.

In 1966, he founded the Lyceum of the Philippines University-Batangas followed by Lyceum of the Philippines-Laguna in 2000. Both campuses are now headed by Senator Laurel's fourth son Dr. Peter P. Laurel.

In 2008, another campus in Cavite was established to bring the total number of LPU campuses to five with a grand total enrollment of approximately 37,000 students, about 15,000 of whom are enrolled in various hospitality courses. Senator Laurel's eldest son, Atty. Roberto P. Laurel, heads the Manila, Makati and Cavite campuses.

LPU Vision

An internationally accredited university dedicated to innovation and excellence in the service of God and country.

LPU Mission

Lyceum of the Philippines University, espousing the ideals of Jose P. Laurel is committed to the following mission:

1. Advance and preserve knowledge by undertaking research and disseminating and utilizing the results. - **RESEARCH**
2. Provide necessary knowledge and skills to meet entrepreneurial development and the managerial requirements of the industry. - **INSTRUCTION**
3. Provide equitable access to learning through relevant, innovative, industry-based and environment-conscious programs and services in the context of nationalism and internationalism**. - INSTRUCTION**
4. Establish local and international linkages that will be the source of learning and growth of the members of the academic community. - **INSTRUCTION and INSTITUTIONAL DEVELOPMENT**
5. Support a sustainable community extension program and be a catalyst for social transformation and custodian of Filipino culture and heritage. - **COMMUNITY EXTENSION**

6. Build a community of God-centered, nationalistic, environment-conscious and globally-competitive professionals with wholesome values and attitudes. - **PROFESSIONALISM and VALUES**

Academics :

College of Arts and Sciences

- AB Broadcasting
- AB Communication
- AB Journalism
- AB Legal Management
- AB Multimedia Arts
- BS Psychology

College of Bussines Administratiom

- BS Accountancy
- BS Bussines Administration
- BS Customs Administration
- BS Management Accounting

College of International Relations

- AB Forgein Service

College of International Tourism and Hospitality Management

- BS International Hospitality Management
- BS Interational Travel and Tourism Management

College of Techonogy

- BS Computer Science
- BS Information Technology

College of Law

- Bachelor of Laws

COLLEGE OF TECHNOLOGY

Vision

The LPU Manila - College of Technology envision itself to be the one of the leading HEIs offering technology education, producing successful graduates, to be recognized for its outstanding contribution, in Research, Innovation and Community Extension in the service of God and Country.

Mission

Guided by LPU Vision, the College of Technology is committed to:

1.Research,

2.Instructions, Quality Service and institutional Development,

3.Community Extension, and

4.Professionalism and Values

BS Computer Science

The BSCS program includes the study of computing concepts and theories, algorithmic foundations, and new developments in computing. The program prepares students to design and create algorithmically complex software and develop new and effective algorithms for solving computing problems. The program also includes the study of the standards and practices in Software Engineering. It prepares students to acquire skills and disciplines required for designing, writing, and modifying software components, modules, and applications that comprise software solutions.

BS Information Technology

The BS IT program includes the study of the utilization of both hardware and software technologies involving planning, installing, customizing, operating, managing, and administering and maintaining information technology infrastructure that provides computing solutions to address the needs of an organization. The program prepares graduates to address various user needs involving the selection, development, application, integration, and management of computing technologies within an organization.

DOKUMENTASI KEGIATAN

Mahasiswa Sit In Program Indonesia

Opening Ceremony

Mahasiswa Sit In Program

Kegiatan English Tutorial

Sarapan bersama Mr Alfredo di MOA

Kegiatan Tour ke Intramuros

Kegiatan Tour ke Fort Santiago

Kegiatan Tour ke National Museum of Anthropology

Kegiatan Tour ke National Museum of Philippines

Kegiatan Tour ke National Museum of Natural History

Kegiatan Tour ke Bonifacio Global City (BGC)

Kegiatan Cooking Session (Philippines dan Indonesian Cuisine)

Kegiatan English Tutorial

Kegiatan English Evaluation

Mr Lingo dan teman satu kelas
Platform Technology

Mrs Arlene dan teman satu kelas
Technopreneurship

KegiatanPerkuliahan

Closing Ceremony Mahasiswa Sit In Program Indonesia

Pemberian Sertifikat Sit In Program

Peyerahan kenang-kenangan dari UPS Tegal untuk LPU

CERTIFICATE

LYCEUM OF THE PHILIPPINES UNIVERSITY
INTERNATIONAL AFFAIRS OFFICE

STARS

Awards this

CERTIFICATE OF RECOGNITION

to

MS. BUNGA MAHARANI

for having successfully completed
the "2019 Students' Mobility Program"
held from March 18 to April 12, 2019.

Given on the 12th day of April 2019 at LPU- Boardroom
Lyceum of the Philippines University,
Intramuros, City of Manila, Philippines.

Ma. Christia G. Aquino
Executive Director
Department of Linkages and Standards

Alfredo P. Diamante
Director
International Affairs Office

LIST OF STUDENTS

SIT IN PROGRAM (FIRST BACTH) ORGANIZED BY ADRI CENTRAL JAVA INDONESIA (18 MARCH – 13 APRIL 2018)
TO LYCHEUM OF THE PHILIPPINES UNIVERSITY (LPU) MANILA

Date of Arrival: 18 March 2018 (**PHILIPPINES AIRLINES PR 536**, Jakarta-Manila 01.15 AM – 06.20 AM, NAIA Terminal 2)

18 March 2018 (**CEBU PACIFIC 5J 760**, Jakarta-Manila, 00.45 AM – 05.55 AM, NAIA Terminal 3)

Date of Departure: 13 April 2018 (**PHILIPPINES AIRLINES PR 535**, Manila-Jakarta 09.00 PM – 11.55 PM, NAIA Terminal 2)

13 April 2018 (**CEBU PACIFIC 5J 759**, Manila-Jakarta 08.10 PM – 11.50 PM, NAIA Terminal 3)

No	Name	Born	Sex	Affiliation	Home Department	Passport No	Host Department	Accom. (Room)
1	Wulanda Amelia	10-05-2000	Female	STIE AAS Surakarta	Tax Management	C3009855	Management	
2	Laly Amruatingsih	12-10-1999	Female	STIE AAS Surakarta	Accountancy	C3069116	Accountancy	1
3	Bunga Maharani	26-11-1999	Female	Universitas Pancasakti Tegal	Industrial Engineering	C3203341	Information Technology	
4	Fita Fabriana	22-02-2000	Female	Universitas Pancasakti Tegal	Communication Science	C3204319	Mass Communication	
5	Rinu Wahamusci	18-10-1999	Female	STIE Totalwin Semarang	Management	C2995034	Management	2
6	Saraswati Fajri	26-10-1998	Female	STIE Totalwin Semarang	Accountancy	C2995918	Accountancy	
7	Agustina Christanaeati	22-08-1999	Female	STIE ST PIGNATELLI SURAKARTA	Accountancy	B7704544	Accountancy	3
8	Seven Octavia Liba	07-10-1998	Female	STIE ST PIGNATELLI SURAKARTA	Accountancy	C3070652	Accountancy	
9	Debby Malya Oktafani	05-10-1998	Female	AMA YPK Yogyakarta	Management	B5210300	Management	4
10	Erika Maulismani Julitia	01-10-1998	Female	STIE YKP Yogyakarta	Accountancy	C3425903	Accountancy	
11	Abdel Hano Tanmisi	10-10-1999	Male	AMA Yogyakarta	Administration Management	B4903053	Management	5
12	M. Fajri Hakal	26-00-2001	Male	AMA Yogyakarta	Administration Management	C3002900	Management	

MEMORANDUM OF AGREEMENT
Lyceum of the Philippines University (LPU)
Philippines
and
Universitas Pancasakti Tegal
Indonesia

This Memorandum of Agreement (MoA) is intended to implement the programs as stated in the the Memorandum of Understanding between **Lyceum of the Philippines University (LPU) Philippines** and Universitas Pancasakti Tegal (UPS) Indonesia. In particular, its purpose is to provide mutual opinion and agreement on **"students' mobility (sit in program)."** LPU acts as a host university and UPS Tegal acts as home university.

Both LPU and UPS have come to an agreement to organize the following programs:

a. The home university will send students to host university with the duration of 29 days at maximum.
b. The host university will provide the followings for the program:
   1) Certificate
   2) Cultural Study/Tour
   3) Field study related to the disciplines (if necessaray).
   4) Letters of Acceptance (L.O.A) / Letter of Invitation
   5) Pick up service for the students to the airport.

   and *excluding*:
   1) Meals
   2) Other personal expenses

c. The minimum number of students is 2
d. The courses selection to attend in the classroom for the students will be determined by both parties
e. The host university will be in charge of all activities of the students from home university during conducting the program.

This memorandum of agreement (MoA) is signed in Manila, 18 March 2019.

On behalf of UPS – Tegal

Dr. Yoga Prihatin, M.Pd
Head of International Affairs Office

On behalf of LPU

Dr. Christina Aquino,
Executive Director for Linkages and Standards of Lyceum of the Philippines University.
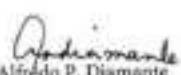
LPU

LYCEUM OF THE PHILIPPINES UNIVERSITY
MANILA · MAKATI · BATANGAS · LAGUNA · CAVITE

INVOICE

INVOICE NO.	1
DATE	March 18, 2019

TO

Ms. Bunga Maharani
Student
Universitas Pancasakti Tegal

JOB	PAYMENT TERMS
Accommodation (inclusive of Water and Electricity) for each student from March 18– April 13, 2019 at La Casarita – Condormitel 333 San Rafael St, San Miguel, Manila, Metro Manila.	PHP. 8, 500.00

	TOTAL DUE	PHP. 8, 500.00

RECEIVED BY: Alfredo P. Diamante
International Affairs Office
Lyceum of the Philippines University

Introducing Operating Systems

Objectives

You will be able to describe:
- The basic role of an operating system
- The major operating system software subsystem managers and their functions
- The types of machine hardware on which operating systems run, and give at least one example of an operating system for each of the following: PDAs, microcomputers, minicomputers, mainframes, workstations, and supercomputers

---

Objectives (continued)

Describe:
- The differences between the following types of operating systems: batch, interactive, real-time, hybrid, and embedded
- Multiprocessing and its impact on the evolution of operating system software
- System architecture trends in current operating systems

Understanding Operating Systems
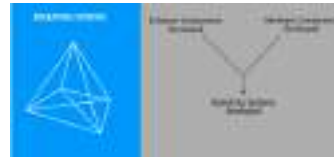
"I think there is a world market for maybe five computers."—Thomas J. Watson (1874–1956; chairman of IBM 1949–1956)

What is an Operating System?

- **Operating System:**
  - Part of the computing system that manages all of the hardware and software
  - Controls every file, every device, every section of main memory, and every nanosecond of processing time
  - Controls who can use the system and how
- **Computer system** consists of:
  - Software (programs)
  - Hardware (the physical machine and its electronic components)

Operating System Software

- **Essential managers** of an operating system:
  - Memory Manager
  - Processor Manager
  - Device Manager
  - File Manager
- Each manager both works closely with the other managers and performs its unique role
- User Command Interface is unique to each operating system

Operating System Software (continued)
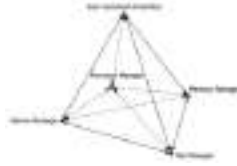
Figure 1.1: Model of a non-networked operating system

Operating System Software (continued)

- Each **subsystem manager must perform** the following tasks:
  - Monitor its resources continuously
  - Enforce the policies that determine who gets what, when, and how much
  - Allocate the resource when it's appropriate
  - Deallocate the resource when appropriate

Operating System Software (continued)
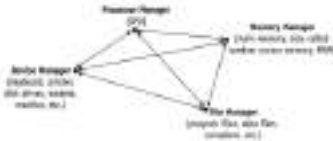
Figure 1.2: Subsystems managers at the base of a pyramid

Operating System Software (continued)

- **Memory Manager:** In charge of main memory (RAM)
- **Responsibilities include:**
  - Preserves the space in main memory occupied by the operating system
  - Checks the validity of each request for memory space
  - Sets up a table to keep track of who is using which section of memory in a multiuser environment
  - Deallocates memory when the time comes to reclaim the memory

---

Operating System Software (continued)

- **Processor Manager** decides how to allocate the central processing unit (CPU)
- Processor Manager has **two levels of responsibility:**
  - To handle jobs as they enter the system
    - Handled by Job Scheduler
  - To manage each process within those jobs
    - Handled by Process Scheduler

Operating System Software (continued)

- **Device Manager** monitors every device, channel, and control unit
- **Responsibilities include:**
  - Chooses the most efficient way to allocate all of the system's devices, printers, terminals, disk drives, based on a scheduling policy
  - Makes the allocation, starts its operation
  - Deallocates the device

Operating System Software
(continued)

- **File Manager** keeps track of every file in the system including data files, assemblers, compilers, and application programs
- **Responsibilities include:**
  - Enforces restrictions on who has access to which files by using predetermined access
  - Controls what users are allowed to do with files once they access them
  - Allocates the resource by opening the file and deallocates it by closing the file

Operating System Software
(continued)

- Operating systems with networking capability have a fifth essential manager called the **Network Manager**
- Network Manager provides a convenient way for users to share resources while controlling users' access to them. The resources include:
  - Hardware (such as CPUs, memory areas, printers, tape drives, modems, and disk drives)
  - Software (such as compilers, application programs, and data files)

Operating System Software
(continued)
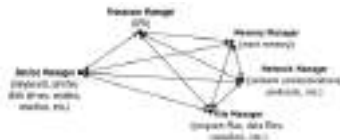
Figure 1.3: Model of a networked operating system

Machine Hardware

- Essential hardware components include:
  - Memory chips
  - Input/output devices
  - Storage devices
  - Central processing unit (CPU)

To appreciate the role of the OS (which is software), we need to discuss the essential aspects of the computer systems' hardware-the physical machine and electronic components.
-Main Memory-where the data and instructions must reside to be processed.

Machine Hardware (continued)
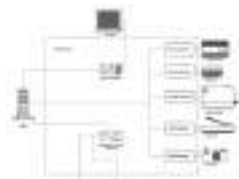
Figure 1.4: Computer system hardware configuration

The logical view of computer system hardware configuration. The tower holds the CPU, ALU, register cache, and main memory as well as controllers and interfaces shown in the dotted lines

Machine Hardware (continued)

- Until mid-1970s, computers were classified by capacity and price
- A **mainframe** was a large machine—in size and in internal memory capacity
  - In 1964, IBM 360 model 30 required an air-conditioned room (18 feet square) to house the CPU
  - The CPU was five feet high and six feet wide, had an internal memory of 64K
  - A price tag of $200,000 in 1964 dollars.
  - Applications limited to large computer centers

Machine Hardware (continued)

- **Minicomputer** was developed to meet the needs of smaller institutions
- Digital Equipment Corporation marketed one of the early minicomputers
- Price was less than $18,000
- Minicomputers are smaller in size and memory capacity, and cheaper than mainframes.
- Today, computers that fall between microcomputers and mainframes in capacity are often called midrange computers

Machine Hardware (continued)

- **Supercomputer** was introduced for military operations and weather forecasting
  - Example: A Cray supercomputer with six to thousands of processors performing up to 2.4 trillion floating point operations per second (teraflops)
- Supercomputer's uses include wide range of tasks from scientific research to customer support and product development

Machine Hardware (continued)

- **Microcomputer** was developed for single users in the late 1970s
- Tandy Corporation and Apple Computer, Inc. were the first to offer microcomputers
- These early models had very little memory by today's standards—64K maximum capacity
- The distinguishing characteristic of a microcomputer is its single-user status

Machine Hardware (continued)

- **Workstations:** Most powerful microcomputers used by commercial, educational, and government enterprises
- Workstations are networked together and used to support engineering and technical users who perform:
  - Massive mathematical computations
  - Computer-aided design (CAD)
  - Applications requiring powerful CPUs, large main memory, and extremely high-resolution graphic displays

Machine Hardware (continued)

- **Advances in computer technology**
  - Dramatic changes in physical size, cost, and memory capacity
  - Networking is an integral part of modern computer systems
  - Delivering information to a mobile society, creating a strong market for handheld devices
  - Classified by processor capacity instead of memory capacity
  - Computing power rises exponentially

Machine Hardware (continued)

Table 1.1: Different platforms and operating systems

These are several popular operating systems and the platforms they can manage

Types of Operating Systems (continued)

- Operating systems for computers fall into following five **categories**:
  - Batch
  - Interactive
  - Real-time
  - Hybrid
  - Embedded
- Distinguished by response time and how data is entered into the system

Types of Operating Systems (continued)

- **Batch Systems:**
  - Relied on punched cards or tape for input in past
  - Efficiency of the system was measured in the output
- **Interactive Systems:**
  - Gives a faster turnaround than batch systems but are slower than the real-time systems
  - Introduced for users who needed fast turnaround when debugging their programs
  - Operating system required the development of time sharing software

Batch systems in the past relied on punched cards or tape for input, and the efficiency was measured in throughput (the number of jobs completed in a given amount of time, example 550 jobs per hour)

Interactive systems –time sharing which allows users to interact directly with computer system via commands entered from a typewriter like terminals.

Types of Operating Systems (continued)

- **Real-time systems:**
  - Fastest and used in time-critical environments
  - Real-time systems are used for:
    - Space flights, airport traffic control, high-speed aircraft
    - Industrial processes
    - Sophisticated medical equipment
    - Distribution of electricity
    - Telephone switching
  - A real-time system must be 100 percent responsive, 100 percent of the time

Types of Operating Systems (continued)

Figure 1.5: Computer interface box for the Apollo spacecraft (1968)

Types of Operating Systems (continued)

- **Hybrid Systems:**
  - Combination of batch and interactive
  - Accepts and runs batch programs in the background when the interactive load is light
- **Embedded Systems:**
  - Computers placed inside other products to add features and capabilities
  - Operating systems with small kernel and flexible functions capabilities will have potential for embedded system

Example of Embedded systems are applicance, automobiles, digital music players, elevators, and pacemakers.

Brief History of Operating Systems Development

- **1940s:**
  - Computers based on vacuum tube technology
  - No standard operating system software
  - Typical program included every instruction needed by the computer to perform the tasks requested
  - Machines were poorly utilized
    - CPU processed data and made calculations for only a fraction of the available time
  - Early programs were designed to use the resources conservatively at the expense of understandability

computers were size of a class rooms
-**because** each computers were restricted to a few professionals working on military, scientific and mathematical whom were familiar with hardwares
-**you should program** and give directions to card reader (when to begin, how to interpret the data on the card, when to end) for CPU (how wnd where to store instructions, what to calculate, where to find data, where to send)

Brief History of Operating Systems Development (continued)

Figure 1.6: Remains of the first computer "bug," a moth

Brief History of Operating Systems Development (continued)

- **1950s:**
  - Placed importance on cost effectiveness
  - Computers were still very expensive
    - IBM 7094 was priced at $200,000
  - Two improvements were widely adopted
    - Computer operators were hired to facilitate each machine's operation
    - Concept of job scheduling—groups together programs with similar requirements
  - Expensive time lags between CPU and I/O devices

Brief History of Operating Systems Development (continued)

Figure 1.7: The IBM 650 Magnetic Drum Data Processing System Machine

Brief History of Operating Systems Development (continued)

- Factors that improved the performance of CPU:
  - Speed of I/O devices like tape drives, disks, and drums gradually became faster
  - Records were blocked before they were retrieved or stored
  - Access methods were developed and added to object code by the linkage editor
  - Buffer was introduced between I/O and the CPU to reduce the discrepancy in speed
  - Timer interrupts were developed to allow job-sharing

Brief History of Operating Systems Development (continued)

- **1960s:**
  - Faster CPUs, but their speed caused problems
  - Multiprogramming was introduced, which allowed loading many programs at one time
  - Program scheduling, which was begun with second-generation systems, continued at this time
  - Few advances were made in data management
  - Total operating system was customized to suit user's needs

Some hardwares that run in slower speed got problems..incompatibility

Brief History of Operating Systems Development (continued)

- **1970s:**
  - Faster CPUs, but their speed caused problems
  - Multiprogramming schemes to increase CPU use were limited by physical capacity of main memory
    - Development of virtual memory to solve physical limitation issue
  - Database management software became a popular tool
  - A number of query systems were introduced
  - Programs started using English-like words, modular structures, and standard operations

Brief History of Operating Systems Development (continued)

Figure 1.8: Cray I supercomputer, introduced in 1976

Brief History of Operating Systems Development (continued)

- **1980s:**
  - Improvement in the **cost/performance ratio** of computer components
  - Hardware became more flexible
  - Introduction of **multiprocessing**, which allowed executing programs in parallel
  - Evolution of personal computers and high-speed communications
  - Introduction of **distributed processing** and **networked systems**

Brief History of Operating Systems Development (continued)

- **1990s:**
  - Demand for Internet capability sparked the proliferation of networking capability
  - Increased networking also created increased demand for tighter security to protect hardware and software
  - Multimedia applications, demanding additional power, flexibility, and device compatibility for most operating systems

Brief History of Operating Systems Development (continued)

Figure 1.9: Linked information system by Tim Berners-Lee

Current Operating Systems

- Primary design features of current operating systems are based on providing support for
  - Multimedia applications
  - Internet and Web access
  - Client/server computing
- Computer systems are required to have
  - Increased CPU speed
  - High-speed network attachments
  - Increased number and variety of storage devices

System Architecture

- Improvements in system architecture
  - Use of object-oriented design
    - Possible to modify and customize pieces of an operating system without disrupting the integrity of the remainder of the system
    - Makes software development groups more productive
  - Reorganization of the operating system's kernel
    - Limited to a few essential functions

System Architecture (continued)
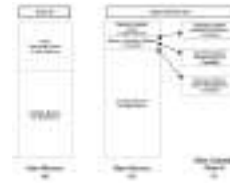
Figure 1.10: (a) Early operating systems; (b) & (c) Modern object-oriented systems

Threads

- **Thread:** A portion of a program that can run independently of other portions
  - The heavyweight process which owns the resources becomes a more passive element
  - Thread becomes the element that uses the CPU and is scheduled for execution
  - Swapping threads is less time consuming than swapping processes
- Multithreaded applications programs can have several threads running at one time with the same or different priorities

Multiprocessing Configurations

- **Symmetric multiprocessing:**
  - Allows for several CPUs to process multiple jobs at the same time
  - CPUs are independent of one another, but each has access to the operating system
- **Asymmetric multiprocessing:**
  - Some operating systems functions are assigned to subordinate processors, which take their instructions from the main CPU

Multiprocessing Configurations (continued)
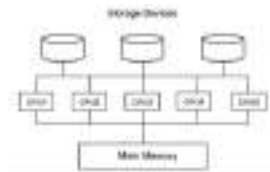
Figure 1.11: Symmetric multiprocessing system with five processors

Multiprocessing Configurations (continued)

- Network PCs gave impacts to the concept of **distributed processing**
  - Processors are placed at remote locations and are connected to each other via telecom devices
  - Different from symmetric multiprocessing systems as they do not share memory
  - Computations can be dispersed among several processors
  - Overall capability of the computer system is maximized

Summary

- Operating System manages all of the hardware and software of a computer system
- Each manager of an OS both works closely with the other managers and performs its unique role
- Operating systems with networking capability have Network Manager
- Essential hardware components include memory chips, I/O, storage devices and CPU
- Until mid-1970s, computers were classified by capacity and price

Summary (continued)

- Computing power has been rising exponentially—Moore's Law
- Dramatic changes in physical size, cost, and memory capacity with time
- Networking has become an integral part of modern computer systems
- Delivering information to a mobile society, creating a strong market for handheld devices
- Operating systems fall into following five categories: batch, interactive, real-time, hybrid and embedded

Summary (continued)

- Use of object-oriented design improved the system architecture
- Symmetric multiprocessing allows for several CPUs to process multiple jobs at the same time
- Network PCs gave impetus to the concept of distributed processing

Platform Technology
Memory Management:
Early Systems

Objectives

You will be able to describe:
- The basic functionality of the three memory allocation schemes presented in this chapter: fixed partitions, dynamic partitions, relocatable dynamic partitions
- Best-fit memory allocation as well as first-fit memory allocation schemes
- How a memory list keeps track of available memory
- The importance of deallocation of memory in a dynamic partition system

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Objectives (continued)

Students should be able to describe:
- The importance of the bounds register in memory allocation schemes
- The role of compaction and how it improves memory allocation efficiency

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Memory Management: Early Systems

"Memory is the primary and fundamental power, without which there could be no other intellectual operation." —Samuel Johnson (1709–1784)

Memory Management: Early Systems

- **Types of memory allocation schemes:**
  - Single-user systems
  - Fixed partitions
  - Dynamic partitions
  - Relocatable dynamic partitions

Single-User Contiguous Scheme

- **Single-User Contiguous Scheme:** Program is loaded in its entirety into memory and allocated as much contiguous space in memory as it needs
  - Jobs processed sequentially in single-user systems
  - Requires minimal work by the Memory Manager
    - Register to store the base address
    - Accumulator to keep track of the program size

Single-User Contiguous Scheme (continued)

- **Disadvantages of Single-User Contiguous Scheme:**
  - Doesn't support multiprogramming
  - Not cost effective

Fixed Partitions

- **Fixed Partitions:** Main memory is partitioned; one partition/job
  - Allows multiprogramming
  - Partition sizes remain static unless and until computer system id shut down, reconfigured, and restarted
  - Requires protection of the job's memory space
  - Requires matching job size with partition size

Fixed Partitions (continued)

To allocate memory spaces to jobs, the operating system's Memory Manager must keep a table as shown below:

Partition Size	Memory Address	Access	Partition Status

Table 2.1: A simplified fixed partition memory table with the free partition shaded

Fixed Partitions (continued)
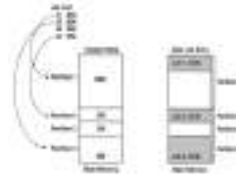
NOTE: Job 3 must wait even though 70K of free space is available in Partition 1 where Job 1 occupies only 30K of the 100K available

Figure 2.1: Main memory use during fixed partition allocation of Table 2.1

Fixed Partitions (continued)

- **Disadvantages:**
  - Requires entire program to be stored contiguously
  - Jobs are allocated space on the basis of first available partition of required size
  - Works well only if all of the jobs are of the same size or if the sizes are known ahead of time
  - Arbitrary partition sizes lead to undesired results
    - Too small a partition size results in large jobs having longer turnaround time
    - Too large a partition size results in memory waste or internal fragmentation

Dynamic Partitions

- **Dynamic Partitions:** Jobs are given only as much memory as they request when they are loaded
  - Available memory is kept in contiguous blocks
  - Memory waste is comparatively small
- **Disadvantages:**
  - Fully utilizes memory only when the first jobs are loaded
  - Subsequent allocation leads to memory waste or external fragmentation

Dynamic Partitions (continued)
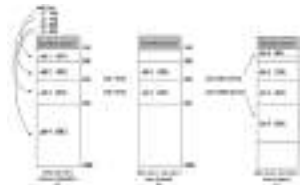
Figure 2.2: Main memory use during dynamic partition allocation

Dynamic Partitions (continued)
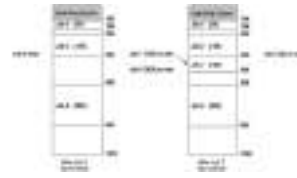
Figure 2.2 (continued): Main memory use during dynamic partition allocation

Best-Fit Versus First-Fit Allocation

- Free partitions are allocated on the following basis:
  - **First-fit memory allocation:** First partition fitting the requirements
    - Leads to fast allocation of memory space

  - **Best-fit memory allocation:** Smallest partition fitting the requirements
    - Results in least wasted space
    - Internal fragmentation reduced but not eliminated

Best-Fit Versus First-Fit Allocation (continued)

- **First-fit memory allocation:**
  - **Advantage:** Faster in making allocation
  - **Disadvantage:** Leads to memory waste

- **Best-fit memory allocation**
  - **Advantage:** Makes the best use of memory space
  - **Disadvantage:** Slower in making allocation

Best-Fit Versus First-Fit Allocation (continued)

Figure 2.3: An example of a first-fit free scheme

Best-Fit Versus First-Fit Allocation (continued)

Figure 2.4: An example of a best-fit free scheme

Best-Fit Versus First-Fit Allocation (continued)

- **Algorithm for First-Fit:**
  - Assumes Memory Manager keeps two lists, one for free memory and one for busy memory blocks
  - Loop compares the size of each job to the size of each memory block until a block is found that's large enough to fit the job
  - Job is stored into that block of memory
  - Memory Manager moves out of the loop to fetch the next job from the entry queue

Best-Fit Versus First-Fit Allocation (continued)

- **Algorithm for First-Fit (continued):**
  - If the entire list is searched in vain, then the job is placed into a waiting queue
  - The Memory Manager then fetches the next job and repeats the process

Best-Fit Versus First-Fit Allocation (continued)

Table 2.2: Status of each memory block before and after a request is made for a block of 200 spaces using the first-fit algorithm

Best-Fit Versus First-Fit Allocation (continued)

- **Algorithm for Best-Fit:**
  - Goal: find the smallest memory block into which the job will fit
  - Entire table must be searched before allocation

Best-Fit Versus First-Fit Allocation (continued)

Table 2.3: Status of each memory block before and after a request is made for a memory block of 200 spaces using the best-fit algorithm

Best-Fit Versus First-Fit Allocation (continued)

- **Hypothetical allocation schemes:**
  - **Next-fit:** Starts searching from last allocated block, for the next available block when a new job arrives
  - **Worst-fit:** Allocates the largest free available block to the new job
    - Opposite of best-fit
    - Good way to explore the theory of memory allocation; might not be the best choice for an actual system

Deallocation

- **Deallocation:** Freeing an allocated memory space
  - **For fixed-partition system**:
    - Straightforward process
    - When job completes, Memory Manager resets the status of the job's memory block to "free"
    - Any code—for example, binary values with 0 indicating free and 1 indicating busy—may be used

Deallocation (continued)

- **For dynamic-partition system**:
  - Algorithm tries to combine free areas of memory whenever possible
  - Three cases:
    - **Case 1:** When the block to be deallocated is adjacent to another free block
    - **Case 2:** When the block to be deallocated is between two free blocks
    - **Case 3:** When the block to be deallocated is isolated from other free blocks

Deallocation: Dynamic Partition System

- **Case 1: Joining Two Free Blocks**
  - Change list must reflect starting address of the new free block
    - In the example, 7600—which was the address of the first instruction of the job that just released this block
  - Memory block size for the new free space must be changed to show its new size—that is, the combined total of the two free partitions
    - In the example, (200 + 5)

Case 1: Joining Two Free Blocks

Table 2.4: Original free list before deallocation for Case 1

Case 1: Joining Two Free Blocks (continued)

Table 2.5: Free list after deallocation for Case 1

Deallocation: Dynamic Partition System (continued)

- **Case 2: Joining Three Free Blocks.** Deallocated memory space is between two free memory blocks
  - Change list to reflect the starting address of the new free block
    - In the example, 7560— which was the smallest beginning address
  - Sizes of the three free partitions must be combined
    - In the example, (20 + 20 + 205)
  - Combined entry is given the status of null entry
    - In the example, 7600

Case 2: Joining Three Free Blocks

Beginning Address	Memory Block Size	Status
		Free

Table 2.6: Original free list before deallocation for Case 2

Case 2: Joining Three Free Blocks (continued)

Beginning Address	Memory Block Size	Status
		Free
		Free
		Free
		Free
		(null entry)
		Free
		Free
		Free

Table 2.7: Free list after job has released memory

Deallocation:
Dynamic Partition System (continued)

- **Case 3: Deallocating an Isolated Block.** Space to be deallocated is isolated from other free areas
  - System learns that the memory block to be released is not adjacent to any free blocks of memory, it is between two other busy areas
  - Must search the table for a null entry
  - Null entry in the busy list occurs when a memory block between two other busy memory blocks is returned to the free list

---

Case 3: Deallocating an Isolated Block

Beginning Address	Memory Block Size	Status
		Free
		Free
		Free
		Free
		(null entry)
		Free
		Busy
		Free

Table 2.8: Original free list before deallocation for Case 3

Case 3: Deallocating an Isolated Block (continued)

The job to be deallocated is of size 445 and begins at location 8805. The asterisk indicates the soon-to-be-free memory block.

Beginning Address	Memory Block Size	Status
		Busy
	445	Busy
		Busy

Table 2.9: Memory list before deallocation

Case 3: Deallocating an Isolated Block (continued)

Beginning Address	Memory Block Size	Status
		Busy
		(null entry)
		Busy

Table 2.10: Busy list after the job has released its memory. The asterisk indicates the new null entry in the busy list.

Case 3: Deallocating an Isolated Block (continued)

Table 2.11: Free list after the job has released its memory. The asterisk indicates the new free block entry replacing the null entry

Relocatable Dynamic Partitions

- **Relocatable Dynamic Partitions:**
  - Memory Manager relocates programs to gather together all of the empty blocks
  - Compact the empty blocks to make one block of memory large enough to accommodate some or all of the jobs waiting to get in

Relocatable Dynamic Partitions (continued)

- **Compaction:** Reclaiming fragmented sections of the memory space
  - Every program in memory must be relocated so they are contiguous
  - Operating system must distinguish between addresses and data values
    - Every address must be adjusted to account for the program's new location in memory
    - Data values must be left alone

Relocatable Dynamic Partitions (continued)

Figure 2.5: An assembly language program that performs a simple incremental operation

Relocatable Dynamic Partitions (continued)

Figure 2.6: The original assembly language program after it has been processed by the assembler

Relocatable Dynamic Partitions (continued)

- Compaction issues:
  - What goes on behind the scenes when relocation and compaction take place?
  - What keeps track of how far each job has moved from its original storage area?
  - What lists have to be updated?

Relocatable Dynamic Partitions (continued)

- **What lists have to be updated?**
  - Free list must show the partition for the new block of free memory
  - Busy list must show the new locations for all of the jobs already in process that were relocated
  - Each job will have a new address except for those that were already at the lowest memory locations

Relocatable Dynamic Partitions (continued)

- Special-purpose registers are used for relocation:
  - **Bounds register**
    - Stores highest location accessible by each program
  - **Relocation register**
    - Contains the value that must be added to each address referenced in the program so it will be able to access the correct memory addresses after relocation
    - If the program isn't relocated, the value stored in the program's relocation register is zero

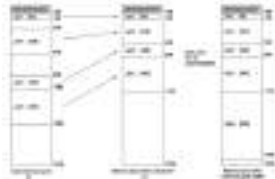## Relocatable Dynamic Partitions (continued)

Figure 2.7: Three snapshots of memory before and after compaction

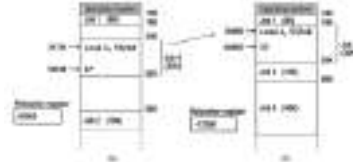## Relocatable Dynamic Partitions (continued)

Figure 2.8: Contents of relocation register and close-up of Job 4 memory area (a) before relocation and (b) after relocation and compaction

Relocatable Dynamic Partitions (continued)

- Compacting and relocating optimizes the use of memory and thus improves throughput
- Options for when and how often it should be done:
  - When a certain percentage of memory is busy
  - When there are jobs waiting to get in
  - After a prescribed amount of time has elapsed
  - **Goal:** Optimize processing time and memory use while keeping overhead as low as possible

Summary

- Four memory management techniques were used in early systems: single-user systems, fixed partitions, dynamic partitions, and relocatable dynamic partitions
- Memory waste in dynamic partitions is comparatively small as compared to fixed partitions
- First-fit is faster in making allocation but leads to memory waste
- Best-fit makes the best use of memory space but slower in making allocation

Summary (continued)

- Compacting and relocating optimizes the use of memory and thus improves throughput
- All techniques require that the entire program must:
  - Be loaded into memory
  - Be stored contiguously
  - Remain in memory until the job is completed
- Each technique puts severe restrictions on the size of the jobs: can only be as large as the largest partitions in memory

CHAPTER 1

INTRODUCTION TO TECHNOPRENEURSHIP

LEARNING OBJECTIVES

At the end of the chapter, students should be able to:

✓ Explain the definitions of entrepreneurship, intrapreneurship and technopreneurship.

✓ Describe the similarities and differences between entrepreneurship and technopreneurship.

Entrepreneur Are Made and Not Born

"The entrepreneurial mystique? It's not magic, it's not mysterious and it has nothing to do with the genes. It is a discipline. And like any discipline, it can be learned."

...Peter Drucker

ENTREPRENEUR

Who is Entrepreneur ?

DEFINING

An innovator or developer who recognizes and seizes opportunities; converts these opportunities into workable/marketable ideas; adds value through time, effort, money or skills; assumes the risks of the competitive marketplace to implement these ideas; realizes the rewards from these efforts. (Kuratko & Hodgetts,2007)

ENTREPRENEURSHIP

What is Entrepreneurship ?

DEFINING

▪ Entrepreneurship is the practice of embarking on a new business or reviving an existing business by pooling together a bunch of resources in order to exploit new found opportunities

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TECHNOPRENEUR

Who is Technopreneur?

DEFINING

▪ An entrepreneur who uses cutting-edge technology to develop new business. (Daniel Mankani, 2003)

▪ Is an entrepreneur who involves himself in technological changes in producing goods and services for his organization. (Sarimah Hanim & Abd. Rashid,2008)

▪ They are entrepreneurs who used **"technology"** as their driven factor in **transforming resources into goods and services**, creating an environment conducive to industrial growth"...

TYPES OF TECHNOLOGY ENTREPRENEURSHIP

2 types of technology entrepreneurship

1) **Technology developers**
   - those who develop a unique technology capable of driving a new business (inventors)
2) **Technology users**
   - those who see a new technology development and understand how it can be applied to meet a market need (innovators)

TECHNOPRENEURS

Technopreneurs......

TECHNOPRENEURSHIP

Technological Entrepreneurship

- It is simply entrepreneurship in a technology-intensive context
- It is a process of merging technology prowess and entrepreneurial talent and skills

Technology + **Entrepreneurship** = **Technopreneurship**

TECHNOPRENEURSHIP

Examples of Technopreneurship

A technology-based enterprise is one that derives a competitive advantage from direct or indirect use of technology

Example 1: Apple iPod
- it has a number of innovations
- the most significant of which is 160Gb 1.8 inch hard disk drive (smaller than average harddisk 3.5 inch a 40Gb capacity)
- Many people, even techies was fascinate by this and wonder how Apple able to do that

TECHNOPRENEURSHIP

Examples of Technopreneurship?

Example 2: UPS (United Parcel Services)
- able to offer one day delivery anywhere in the world
- They have their sorting and delivery facility that could process up to 1,000,000,000 parcels a year

TECHNOPRENEURSHIP

- It doesn't limit technopreneurship to really high-tech stuff or to business we normally relate to as 'technology-based'.
- For example, an internet café is not considered a technology-based enterprise even if it uses computers in its business operation.
- However, it could be considered a technology-based enterprise if the computers and or the computer network is configured much differently than ordinary internet café businesses

INTRAPRENEUR

Who is Intrapreneur?

DEFINING

- Are individuals in organizations with high entrepreneurial characteristics. (Pinchot 1985)
- Is an entrepreneur within a large organization with high entrepreneurial characteristics who strongly believes in his talent and ability and has a strong desire to create something using his own initiative and creativity. (Sarimah Hanim & Abd. Rashid,2008)

INTRAPRENEUR (Cont..)

Who is Intrapreneur?

DEFINING

- In the world corporate business, intrapreneurs emerge as that breed who is a cross between managers and entrepreneurs

- They work for the corporation but are given the task of starting new ventures

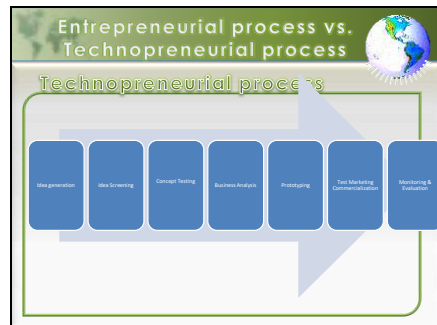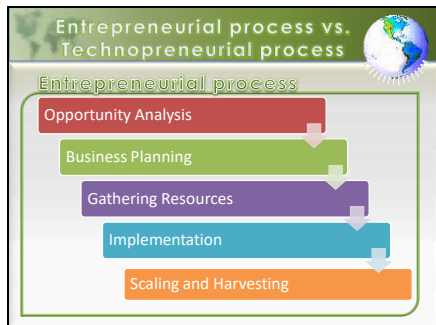## INTRAPRENEUR (Cont..)

Sony PlayStation
Intrapreneur:
Ken Kutaragi Company:
Sony Computer Entertainment Inc.
Year Launched: 1994

- Ken Kutaragi was working in Sony's sound labs when he bought his daughter a Nintendo game console
- Watching her play, he was dismayed by the system's primitive sound effects.
- He realized that a digital chip dedicated solely to sound would improve the quality of the games-and the product itself

INTRAPRENEUR (Cont..)

- Keeping his job at Sony, Kutaragi developed the SPC7000 for the next generation of Nintendo machines.
- Sony execs nearly fired him after discovering his sideline project, but then-CEO Norio Ohga realized the value of his innovation and encouraged Kutaragi's efforts
- With Sony's blessing, Kutaragi worked with Nintendo to develop a CD-ROM-based Nintendo
- Kutaragi helped Sony develop its own gaming system, which became the PlayStation.
- He first PlayStation made Sony a major player in the games market, but the PlayStation 2 did even better, becoming the best-selling game console of all time.

Entrepreneurial process vs. Technopreneurial process

Entrepreneurial process

- Opportunity Analysis
- Business Planning
- Gathering Resources
- Implementation
- Scaling and Harvesting

Entrepreneurial process vs. Technopreneurial process

Technopreneurial process

Idea generation | Idea Screening | Concept Testing | Business Analysis | Prototyping | Test Marketing Commercialization | Monitoring & Evaluation

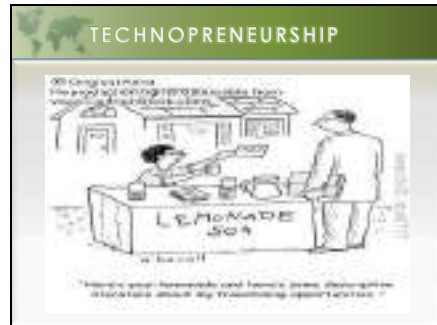## Entrepreneurship vs. Technopreneurship

Similarities . . .

- Able to determine risk and has the courage to take risks
- Independent and self-confident, yet knows where to get help
- Likes a challenge
- Hardworking and willing to stick with a project
- Not easily discouraged
- Robust, very energetic and can handle stress
- Has a strong sense of self-worth
- A positive thinker who does dwell on setbacks
- Often has a close friend or relative who owns a business

Entrepreneurship vs. Technopreneurship

Differences . . .

An Entrepreneur	A Technopreneur
• Likes to compete	• Likes to innovate
• Is a self-starter/pioneer	• Is part of a team
• Is able to do many things at once	• Is able to do many things at once, but chooses to delegate
• Is creative, and has dreams and goals	• Is innovative and has a greater vision
• Likes to work for him or herself and be in control	• Likes to be the one to control innovation and be part of an evolution
• Is motivated by a strong desire to achieve and attain financial success	• Is motivated by a strong vision and the passion to innovate
• Focuses his/her attention on the chances of success rather than the possibility of failure	• Takes failure in stride and knows it will lead to success if correction can be made

TECHNOPRENEURSHIP

TECHNOPRENEURSHIP

TECHNOPRENEURSHIP

TECHNOPRENEURSHIP