Atria Institute of Technology

Anandnagar, Bengaluru – 560024

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

LABORATORY DETAILS

PURPOSE

Engineering education is incomplete without laboratory practice. The overall goal of engineering education is to prepare students to practice engineering and in particular to deal with the nature of problems faced by society. The laboratory practice has been an important part of professional and engineering undergraduate education; a laboratory is an ideal place for active learning. Students learn in a real-world environment, function as team members, discuss the planning of experiments, and share ideas about the analysis and interpretation of data. Most engineering instruction took place in the laboratory and it demands the active use of knowledge and skill.

SCOPE

For the student the objective of engineering laboratory is to **"practice by doing"** and the laboratory courses help them to gain insight and understanding of the real world which they learn in their theory courses and the ideas for innovations. Now there is shift from the text book learning to the learning by observation and doing. Students have to design, analyse, and build their own creation. The emphasis on laboratories has increased many folds over the years. Now attention has been paid to laboratory courses in the curriculum and teaching methods.

There are so many factors that can be learned during the laboratory work like--

Designing: they can Design, build, or assemble a part, product, or system using specific methodologies, equipment and materials.

Creativity: students are able to demonstrate appropriate levels of independent thought, creativity, and capability in real-world problem solving.

Team work: they work effectively in teams, including structure individual and joint accountability, assign roles, responsibilities and tasks.

Effective communication: Communicate effectively about laboratory work both orally and in writing.

Ethics: Behave with highest ethical standards, including reporting information objectively and interacting with integrity in the laboratory.

Data analysis: students are able to Demonstrate the ability to collect, analyze, and interpret data.

Software Engineering Lab

- The Software Engineering lab helps to understand theories, methods and technologies applied for professional software development.

- Moreover, the students understand the process to be followed in the software development life cycle.

- Another important objective of the lab is to impart knowledge on graphic applications and also to work with Numerical Analysis. This lab also helps to understand the various steps in designing a creative and dynamic website.

- The nature of programming language is emphasized in the wide variety of examples and applications.

- This lab enables the students to learn and acquire art of computer programming and to know about some popular programming languages and how to choose programming languages for solving problems.

Capabilities of the Lab

- The Software Engineering Lab is used to work with following applications:

- Graphical Applications.

- Web Designing Applications.

- Developing applications in C/C++.

- Data Structures handled in C/C++.

- Computer Oriented Numerical Analysis.

- Simulating and Modeling of a system.

- Solving various AI problems using C/C++

List of Software

- Oracle
- MS Office
- Ubuntu
- C/ C++
- Open License Software like Xampp, Java, PHP/Mysql etc.
- OpenGL

List of Hardware

- Lenovo Computer System – 20 pc
- Dell OptiPlex- 37
- Dell vostro- 10
- Zenith Systems - 36
- HP Workstation Z 420 – 01
- HP LaserJet Printer – 01
- HP Scanner – 01
- Multimedia Projector – 03
- Network Switch – 01
- UPS

Hardware Lab

- Hardware lab is a major part of Computer Engineering Degree program. Herein Hardware lab of computer engineering degree course, The main objective of the lab is to provide the students the knowledge of computer hardware, the processors, memories, motherboards, different add-on cards, and other peripherals like printers, plotters and the scanners.

- The students are trained for the assembly and disassembly of PCs. Another important objective is to impart knowledge about the troubleshooting and fault finding the computers and the peripherals.

Capabilities of the Lab

The Hardware Lab is used by the students to give the training/knowledge regarding the:

- Different hardware components of a computer and their troubleshooting.
- Different peripherals, their performance and cost characteristics.
- Installation of various operating systems, their capabilities.
- Installation of commonly used software.
- Networking, network topologies and installation of LANs.

List of Hardware

- Computer System   20
- Workstation   01
- Hardware Trainer Kits   05
- Laser jet Printer   01
- Scanner   01
- Line Printer   01
- Network Switch   01
- Multimedia Projector   02

LABS LIST---

1. DATA STRUCTURES LAB
   SUB CODE -18CSL38
   SEM -III

- Data Structures laboratory is spatial and which includes about 30 systems with well equipped latest DELL OPTLEX systems. It provides a wide approach in C programming and enables to apply knowledge in Artificial Intelligence.
- Guidance's are provided to the students by a team of faculty experts and lab programmer. The labs are kept open after the college hours to enable the students to engage themselves in getting practiced with Laboratory experiments in their leisure hours.
- The lab is used to train the students to improve their programming knowledge and make experiments to get familiar with the Core Courses.
- The importance of this lab is to Understanding the relationship between data representation and data manipulation.

2. ANALOG & DIGITAL ELECTRONICS LAB
   SUB CODE - 18CSL37
   SEM – III

- The objective of this laboratory is to link the theoretical concepts of different analog and digital electronics circuits with practical feasibility by giving to the students a scope to learn analog circuits and digital circuits in a better way.
- This laboratory is useful for beginners to understand the basic fundamentals of analog and digital circuits.
- The lab is well equipped with analog and digital electronic components, so students can fabricate their own circuit. The lab also comprises of Analog and digital trainer kits so as to facilitate verification of the results obtained through the fabricated circuits.

3. DBMS LAB
   SUB CODE -18CSL58
   SEM- V

- A database management system (DBMS) is computer application software that provides a way to manage data.

- The requirement of modern days is to have an automated system that manages, modifies and updates data accurately. This is achieved by a DBMS in robust, correct and non-redundant way.
- DBMS lab aims at practicing and achieving this aim by using various software's such as SQL, ORACLE, and MS – Access etc. All these require a thorough practice of various DDl, DCL and DML queries.

4. COMUTER NETWORK LAB
   SUB CODE - 18CSL57
   SEM - V

- This lab helps to explain the importance of data communications and the Internet in supporting business communications and daily activities.
- Also explains how communication works in data networks and Internet. This lab helps to recognize the different internetworking devices and their functions and also explain the role of protocols in networking.
- Main objective of this lab is to implement different topologies like bus, ring, star, mesh.

5. ML LAB
   SUB CODE - 17CSL76
   SEM – VII

- Machine learning, now-a-days, is so pervasive that we use several applications of it every day without even realizing it. In the past, Machine learning provided us with a bounty of algorithms to analyze data.
- But, as data generation has now become inexpensive, machine learning researchers are now being challenged by the sheer scale and complexity of the data.
- In this era of Big Data, we need efficient algorithms to tackle the data analysis irrespective of the data size and complexity.
- Understand the implementation procedures for the machine learning algorithms.
- Design Java/Python programs for various Learning algorithms.
- Apply appropriate data sets to the Machine Learning algorithms.
- Identify and apply Machine Learning algorithms to solve real world problems.

6. WEB LAB
   SUB CODE -17CSL77
   SEM – VII

- Understand the importance of the web as a medium of communication.
- Understand the principles of creating an effective web page, including an in-depth consideration of information architecture.
- Develop skills in analyzing the usability of a web site.
- Learn the language of the web: HTML and CSS.

- Be able to embed social media content into web pages.
- Implement and understand how to interpret basic web analytics.

- Use JavaScript to access and use web services for dynamic content

EVEN SEMESTER

7. **DAA LAB**
   SUB CODE -18CSL47
   SEM- IV

- To learn the importance of designing an algorithm in an effective way by considering space and time complexity.
- To learn graph search algorithms.
- To study network flow and linear programming problems.
- To learn the dynamic programming design techniques.
- To develop recursive backtracking algorithms.

8. **MES LAB**
   SUB CODE -18CSL48
   SEM - IV

- To provide practical exposure to the students on microprocessors, design and coding knowledge on 80x86 family/ARM. To give the knowledge and practical exposure on connectivity and execute of interfacing devices with 8086/ARM kit like LED displays, Keyboards, DAC/ADC, and various other devices.
- Learn 80x86 instruction sets and gins the knowledge of how assembly language works.
- Design and implement programs written in 80x86 assembly language.
- Know functioning of hardware devices and interfacing them to x86 family.
- Choose processors for various kinds of applications.

9. **SS & OS LAB**
   SUB CODE -18CSL66
   SEM-VI

- The goal of this course is to implementation knowledge of System Software concepts and FAFL grammar concepts through UNIX supported tools Lex and Yacc.
- To acquire the knowledge of retrieval of the information in the static files and manipulate the contents of files using Unix utilities in scripting languages
- To have students understand and appreciate the principles in the design and implementation of operating systems software.
- Introduction to operating systems concepts, process management, memory management, file systems, virtualization, and distributed operating systems. The laboratory exercises will include familiarization with UNIX system calls for process

management and inter-process communication; Experiments on process scheduling and other operating system tasks through simulation/implementation.

10. CG LAB
SUB CODE -18CSL67
SEM -VI

- This lab is meant for the basic implementation knowledge of Graphics Algorithm and provide student with thorough knowledge of Geometric transformations.
- Programs for effective learning of Standardised Line and Circle drawing Algorithms.
- Recreates classroom learning experience with hands-on practical on Geometric transformations.

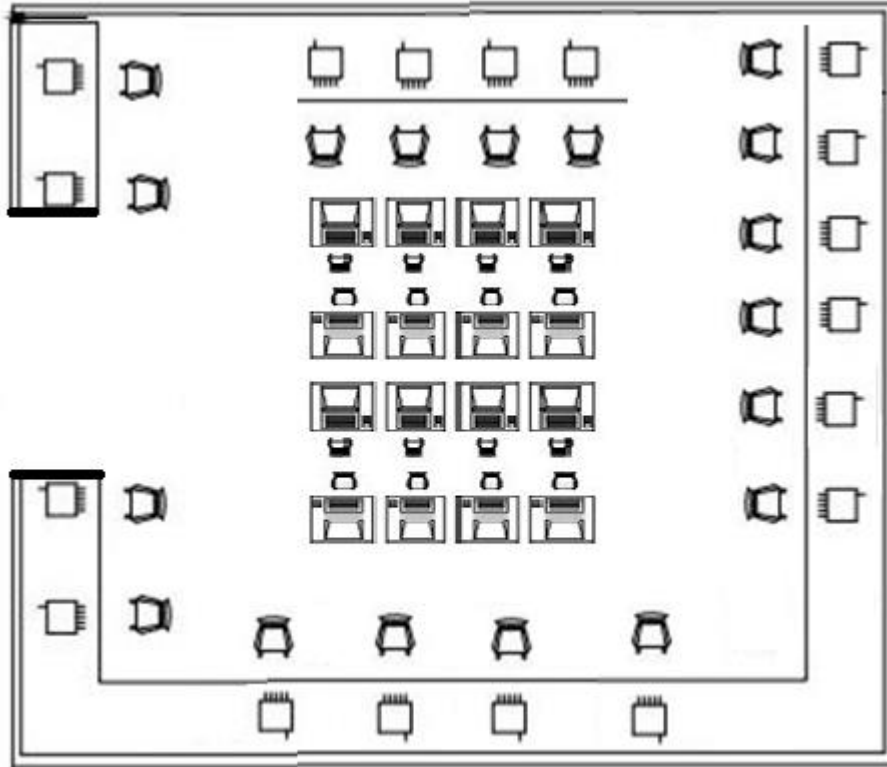# LAB FACILITIES –
ADE,MICRO PROCESSOR LABS

DS, CG, DBMS LABS

LABS LAYOUT

ADE AND MP LABORATORY
AL-308
Area of Laboratory: 25'X35'6"

Sl.No	No of Equipment	Quantity
1	**Analog IC Trainer Kits**	08
2	**Digital IC Trainer Kits (big)**	05
3	**Digital IC Trainer Kits (small)**	06
4	**CRO (old)**	3
5	**CRO (new)**	4
6	**Function generator**	6
7	**DC Regulated Power Supply**	5
8	**Electric Probes (double)**	10
9	**Electric Probes (single)**	3
10	**Patch Chords**	150
11	**Circuit Boards**	6

NS2/SS & OS/ML
PG (MTECH) OS/ADBMS
AL-306
Area of Laboratory: 25'X35'6"
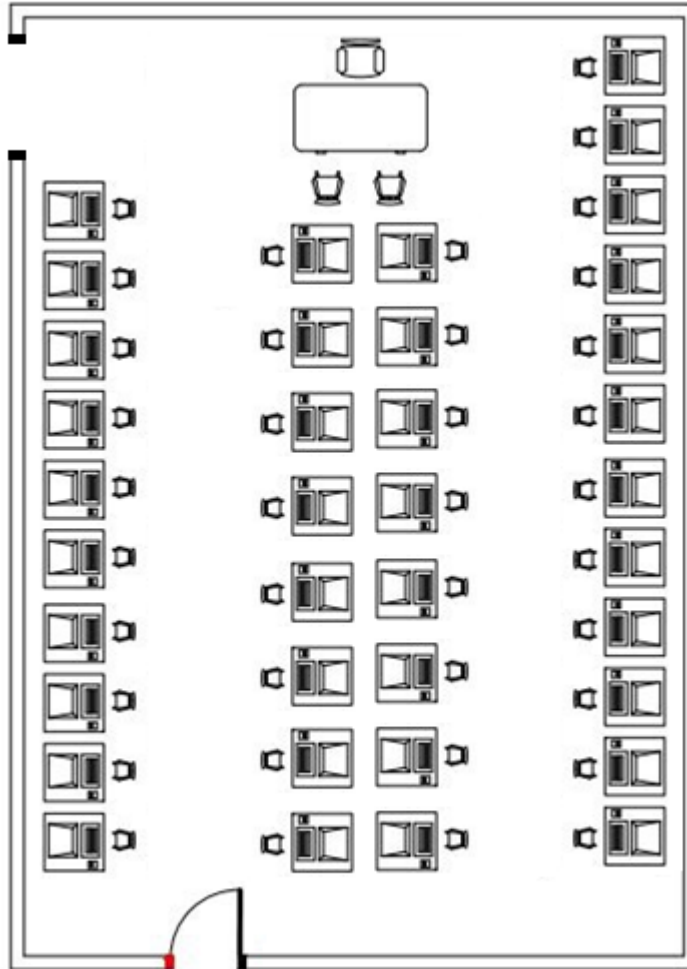
Sl. No	Make	Specifications	MAC Address
1			90:B1:1C:A1:DD:6C
2			90:D1:1C:9B:27:56
3			B8:CA:3A:A1:84:E3
4			90:B1:1C:A1:D5:88
5			34:17:EB:BF:E4:92
6			B8:CA:3A:83:BB:AE
7			B8:CA:3A:83:8C:AC
8			90:B1:1C:9B:59:C5
9			90:B1:1C:A1:D2:66
10			34:17:EB:AD:16:5E
11			90:B1:1C:A6:C9:B5
12		**PROCESSOR:** Intel Core i5 550 CPU @ 3.20 GHZ **RAM:** 4 GB **HDD:** 500GB	90:B1:1C:9B:5F:12
13			34:17:EB:9E:C7:51
14			F4:8E:38:AA:99:18
15	**DELL**		18:03:73:38:5A:A3

16		**MONITOR:** 18.5"	B8:CA:3A:A1:7C:FF
17		**OS:** Ubuntu 16.04	B8:CA:3A:83:86:55
18		**SOFTWARE:** NS2,Lex,Yacc,ML	34:17:EB:AD:B8:48
19			F4:8E:38:AA:96:32
20			F4:8E:38:AA:97:82
21			F4:8E:38:AA:97:8C
22			F4:8E:38:AA:4B:E3
23			F4:8E:38:AA:99:47
24			F4:8E:38:AA:98:04
25			F4:8E:38:AA:4E:81
26			F4:8E:38:AA:97:EC
27			
28			F4:8E:38:AA:99:18
29			F4:8E:38:AA:97:E8

COMPUTER PROGRAMMING LABORATORY
AL-211
Area of Laboratory: 25'X35'6
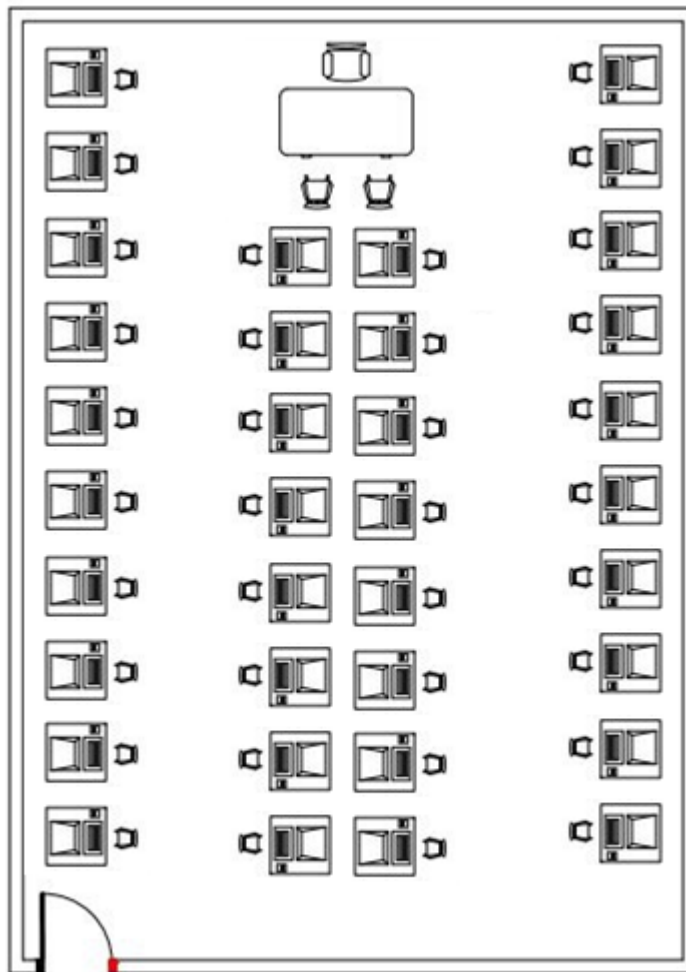
Sl. No	Make	Specifications	MAC Address
1			10:78:D2:DA:D1:E5
2			10:78:D2:DA:D1:35

3			10:78:D2:DA:D3:A0
4			10:78:D2:DA:D0:5A
5			10:78:D2:DA:D2:78
6			10:78:D2:DA:D2:A5
7			10:78:D2:DA:D1:6C
8			10:78:D2:DA:D2:72
9			10:78:D2:DA:D1:96
10			10:78:D2:DA:D0:E9
11			10:78:D2:DA:D2:87
12		**PROCESSOR:** Intel Core i3 550	10:78:D2:DA:D2:6F
13		CPU @ 3.20 GHZ	10:78:D2:DA:D2:63
14		**RAM: 2 GB**	10:78:D2:DA:D3:8A
15	**ZENITH**	**HDD:300 GB**	10:78:D2:DA:D1:21
16		**MONITOR:18.5'**	10:78:D2:DA:D2:53
17		**OS: Ubuntu 14.04**	10:78:D2:DA:D0:B1
18		**SOFTWARE:Open GL**	10:78:D2:DA:D1:6F
19			10:78:D2:DA:DO:E3
20			10:78:D2:DA:D4:46
21			10:78:D2:DA:D0:B4
22			10:78:D2:DA:D1:F6
23			10:78:D2:DA:D0:57
24			10:78:D2:DA:D2:47
25			10:78:D2:DA:D0:CD
26			10:78:D2:DA:D2:4A
27			10:78:D2:DA:D2:4C
28			10:78:D2:DA:D3:83
29			10:78:D2:DA:D1:16
30			10:78:D2:DA:D2:45
31			10:78:D2:DA:D2:4E
32			10:78:D2:DA:DO:55
33			10:78:D2:DA:D1:5C
34			10:78:D2:DA:D1:ED
35			10:78:D2:DA:D1:24
36			

MP/ADE
AL-308
Area of Laboratory: 27'X20'
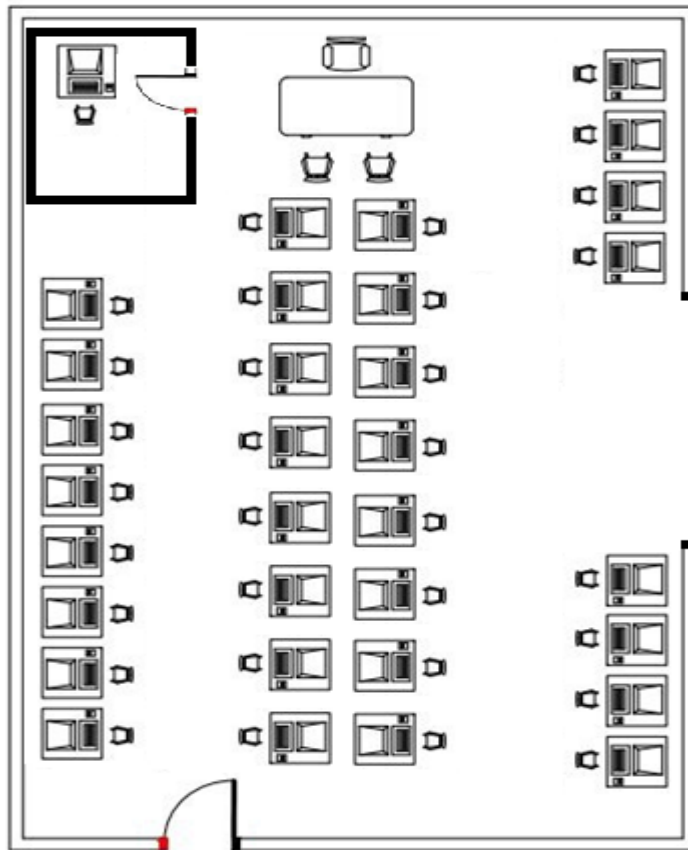
Sl.No	Make	Specifications
1-8	ACER	**PROCESSOR:** Intel Pentium **RAM:**1 GB **HDD:**150 GB **MONITOR:** 15.6/18.04 **OS:** WINDOWS XP **SOFTWARE:** MODELSLIM,Xlinix,MASM
9-32	ZENITH	**PROCESSSOR:** Intel CORE i3 **RAM:** 1 GB **HDD:** 150 GB **MONITOR:** 15.6/18.04 **OS:** Windows XP **SOFTWARE:** MODELSLIM,Xlinix,MASM
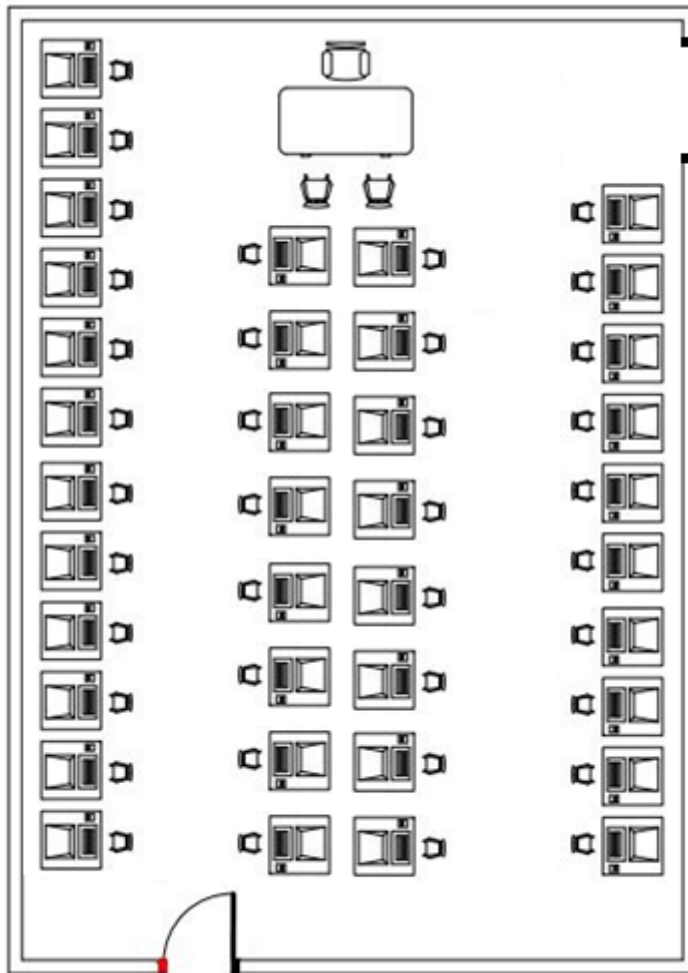
SL.N0	Make	Specifications	MAC Address
01		**PROCESSOR:** Intel Core i3 4150 CPU @ 3.50 GHZ	50:AF:73:6E:3C:62
02		**RAM:** 4 GB **HDD:** 300 GB	50:AF:73:64:15:0B
03		**MONITOR:** 18.5" **OS:** Ubuntu 16.04 LTS	B8:AE:ED:26:F0:83
04	LENOVO	**SOFTWARE:** WEB,DBMS, Open Gl,LAMP Server	50:AF:73:6C:97:31
05			50:AF:73:6E:43:30
06			50:AF:73:6C:5E:F6
07			1C:83:41:00:54:B1
08			1C:83:41:00:24:AB

09			50:AF:73:6E:3B:D0
10			B8:AE:ED:26:F0:FB
11			1C:83:41:00:2D:F1
12			1C:83:41:00:55:BA
13			B8:AE:ED:25:24:0C
14			CO:3F:D5:97:7F:8C
15			90:B1:1C:9B:47:64
16			90:B1:IC:A1:DA:2A
17		**PROCESSOR:** Intel Core i5 3470 CPU @ 3.20 GHZ	34:17:EB:9F:47:61
18	**DELL**	**RAM:** 4 GB **HDD:** 500 GB	90:B1:1C:9B:19:7C
19		**MONITOR:** 18.5" **OS:** Ubuntu 16.04 LTS	34:17:EB:9F:45:3F
20		**SOFTWARE:** WEB,DBMS, Open GL ,LAMP Server	90:B1:1C:9B:4A:B2
21			90:B1:1C:9B:56:71
22			90:B1:1C:A1:D9:E2
23			34:17:EB:9B:DD:5C
24			90:B1:1C:9B:47:86
25			90:B1:1C:9B:47:87
26			34:17:EB:97:C0:26
27			34:17:EB:97:C3:7D
28			90:B1:1C:9B:58:
29			B8:CA:3A:A1:86:52
30			34:17:EB:9E:A4:0B
31			90:B1:1C:9B:54:B2
32			18:03:73:3D:3E:63
33			34:17:EB:9E:F6:2B
34			90:B1:1C:9B:55:9B
35			90:B1:1C:9B:5D:O4

36	90:B1:1C:9B:5E:A5
37	90:B1:1C:9B:44:B6
38	90:B1:1C:9B:46:25
39	90:B1:1C:9B:56:5B
40	B8:CA:3A:A1:84:E3