FACULTY OF COMPUTER SCIENCE & MULTIMEDIA

Program	**: Bachelor of Information Technology (Hons.)**
Course	**: Basic Computer Architecture**
Course Code	**: BIT 112**
Year/ Semester	**: I Year /I Semester**
Assessment	**: Assignment**
Weightage	**: 20 Marks**
Date	**: 11th May2020–Monday**

Instruction to candidates

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Study and answer the questions asked at the end.

The concept of stored program computers appeared in 1945 when John von Neumann drafted the first version of EDVAC (Electronic Discrete Variable Computer). Those ideas have since been the milestones of computers:

• an input device through which data and instructions can be entered

• storage in which data can be read/written; instructions are like data; they reside in the same memory • an arithmetic unit to process data

• a control unit which fetches instructions, decode and execute them

• output devices for the user to access the results.

The improvements in computer technology have been tremendous since the first machines appeared. A personal computer that can be bought today with a few thousand dollars, has more performance (in terms of, say, floating point multiplications per second), more main memory and more disk capacity than a machine that cost millions in the 50s-60s

Four lines of evolution have emerged from the first computers (definitions are very loose and in many case the borders between different classes are blurring):

1. Mainframes: large computers that can support very many users while delivering great computing power. It is mainly in mainframes where most of the innovations (both in architecture and in organization) have been made.

2. Minicomputers: have adopted many of the mainframe techniques, yet being designed to sell for less, satisfying the computing needs for smaller groups of users. It is the minicomputer group that improved at the fastest pace (since 1965 when DEC introduced the first minicomputer, PDP-8), mainly due to the evolution of integrated circuits technology (the first IC appeared in 1958).

3. Supercomputers: designed for scientific applications, they are the most expensive computers (over one million dollars), processing is usually done in batch mode, for reasons of performance.

4. Microcomputers: have appeared in the microprocessor era (the first microprocessor, Intel 4004, was introduced in 1971). The term micro refers only to physical dimensions, not to computing performance. A typical microcomputer (either a PC or a workstation) nicely fits on a desk. Microcomputers are a direct product of technological advances: faster CPUs, semiconductor memories, etc. Over the time many of the concepts previously used in mainframes and minicomputers have become common place in microcomputers.

For many years the evolution of computers was concerned with the problem of object code compatibility. A new architecture had to be, at least partly, compatible with older ones. Older programs (“the dusty deck”) had to run without changes on the new machines. A dramatic example is the IBM-PC architecture, launched in 1981, it proved so successful that further developments had to conform with the first release, despite the flaws which became apparent in a couple of years thereafter.

1.2 Performance Definition

What is the meaning of saying that a computer is faster than another one? It depends upon the position you have: if you are a simple user (end user) then you say a computer is faster when it runs your program in less time, and you think at the time it takes from the moment you launch your program until you get the results, this the so called wall-clock time. On the other hand, if you are system's manager, then you say a computer is faster when it completes more jobs per time unit.

As a user you are interested in reducing the response time (also called the execution time or latency). The computer manager is more interested in increasing the throughput (also called bandwidth), the number of jobs done in a certain amount of time.

Response time, execution time and throughput are usually connected to tasks and whole computational events. Latency and bandwidth are mostly used when discussing about memory performance.

Questions

1. What is K-map? Why it is used? Explain k-map with example
2. What is an expansion slot? Explain its types?
3. What is chipset? Explain the Northbridge and Southbridge
4. What is BIOS? Explain its functions
5. Explain the different types of logic gates with its logic diagram and truth table

******BEST OF LUCK******