

Indian Institute of Technology Roorkee
Department of Computer Science and Engineering
CSN-101: Introduction to Computer Science and Engineering

Homework Assignment 1 (HA1)

Date: Aug 11, 2019

Due Date: Aug 23, 2019 10:00 PM

Motivation:

Nowadays, we all are using a desktop computer or a laptop. Any such system has different main components like processor, memory and input/output (I/O) devices. The objective of this homework is to be familiar with the working principles of different input, output and storage devices attached in a computer / laptop (see figure for block diagram). As I discussed in the class about some working principles of some such devices, such devices follow some working principles which you already had studied in Physics in school and high-school. I hope this homework will be interesting for you, if you are very much curious and inquisitive to know more detail concepts of physics (electronics, mechanics, optics, acoustics, electricity, magnetism, etc.) which are involved in the working principles of these devices. Please do it for the sake of knowledge.

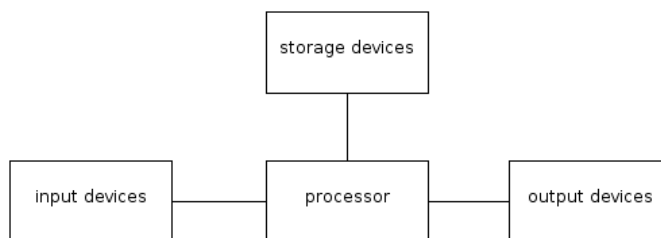


Figure: Block Diagram of Components of a Digital Computer.

List of components:

- | | | |
|-------------------------------|--------------------------------|------------------------|
| 1. SMPS or Power Supply | 8. Pen drive (USB Flash Drive) | 16. Dot-Matrix Printer |
| 2. RAM (Random Access Memory) | 9. SSD (Solid State Device) | 17. Inkjet Printer |
| 3. Magnetic Tape | 10. Mechanical Mouse | 18. LaserJet Printer |
| 4. Hard Disk Drive | 11. Optical Mouse | 19. Scanner |
| 5. CD R/W Drive | 12. Touchpad | 20. Speaker/Headphone |
| 6. DVD R/W Drive | 13. CRT Monitor | 21. Microphone |
| 7. Blu-Ray Disk | 14. LCD Monitor | 22. Joystick |
| | 15. LED Monitor | 23. Touch Screen |
| | | 24. Web camera |
| | | 25. Cooling fan |

Instructions:

1. This is a homework to be done by individual student.
2. Prepare a report DOC file (using Microsoft Word) containing the details of **all the 25 components**. For each component, keep the following:
 - a. Only one / two diagram(s) or image(s) of the component (may be collected by Google search)
 - b. A description of the working principle (concepts of Physics applied) of the component after consulting books, Internet, or elsewhere. First try to understand yourselves and then write in your own language in such an easy way that anyone can understand.
3. The report file should be named as **191140XX.DOC**, if the enrollment number of the student is **191140XX**.
4. Submit the DOC file of your report through Moodle submission link only: <https://moodle.iitr.ac.in/mod/assign/view.php?id=405>. Any submission through email will not be considered and deleted.
5. **Submission Deadline in Moodle: August 23, 2019 10:00 PM.**

Guidelines for Preparing the Report

General:

- Margins: Top=Bottom=Left=Right=1”
- Line Space = 1.5
- Font type: Times New Roman
- Font size: Title = 24 (NO Bold), Author/affiliation= 18 (No Bold), Headings=16 (bold), Sub-headings=14 (Bold), Sub-Sub-headings=12 (Bold), further sub-headings=12 (bold+Italics), running text=12
- All figures must have a caption (for example Figure 3. Xxx) and should be placed at the bottom of the figure. All figures should be legible and text inside the figures must be readable.
- All tables must have a caption (for example Table 1. Xxx) and should be placed at the top of the table
- All equations must have numbering.
- References must be cited in IEEE (for example: [1]) or ACM (for example (**Patel et al., 2016**)) formats.
- Should include Table of Contents with corresponding page numbers.
- Sample title page is provided at the annexure below.

Technical:

- The technical details should cover at least the following sections:
 - a. Introduction
 - b. Motivation for the Assignment
 - c. Working Principles of Computer Hardware Components
 - i. SMPS or Power Supply
 - ii. RAM (Random Access Memory)
 - iii. Magnetic Tape
 - iv. ...
 - v. ...So on
 - d. Conclusions
 - e. References