A LAB REPORT

ON

COURSE CODE :

COURSE TITLE :

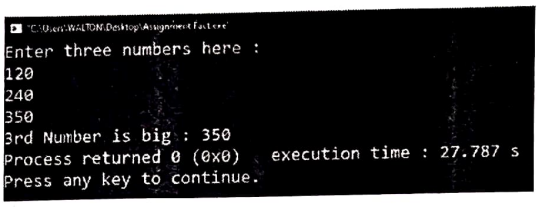
SUBMITTED BY:

SUBMITTED TO:

Date:

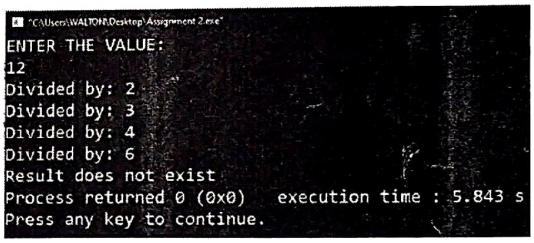
Assignment 01: Find the big numbers among three numbers.

```
#include<stdio.h>
int main(){
 int a,b,c;
 printf("Enter three numbers here : \n");
 scanf("%d %d %d",&a,&b,&c);
if(a>b && a>c){
 printf("1st Number is big : %d",a);
}
else if(b>a && b>c){
 printf("2nd Number is big : %d",b);
}
else{
 printf("3rd Number is big : %d",c);
}
}
```



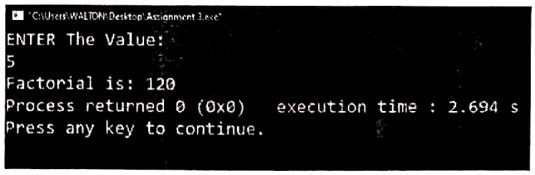
Assignment 02: Divider Rules.

```
#include<stdio.h>
int main(){
 int a,i;
 printf("ENTER THE VALUE:\n");
 scanf("%d",&a);
for(i=2;i<=9;i++){
 if(a%i==0){
 printf("Divided by: %d\n",i);
    }
 }
if(a%i!=0){
 printf("Result does not exist");
    }
 }
```



Assignment 03: Find the factorial of any number.

```
#include<stdio.h>
int main(){
 int a, f=1;
 printf("ENTER The Value: \n");
 scanf("%d",&a);
for(int i=1;i<=a;i++){
 f=f*i;
}
 printf("Factorial is: %d",f);
}
```



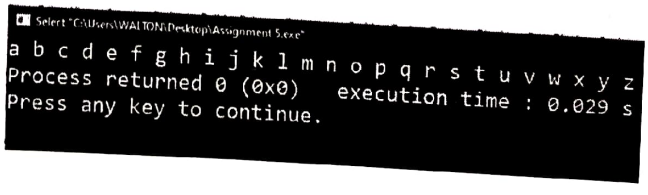
Assignment 04: ASCII Code

ASCII is the acronym for the American Standard Code for Information Interchange. It is a code for representing 128 English characters as numbers, with each letter assigned a number from 0 to 127. For example, the ASCII code for uppercase M is 77. Most computers use ASCII codes to represent text, which makes it possible to transfer data from one computer to another.

Capital Alphabet	ASCII Code	Small Alphabet	ASCII Code	Number	ASCII Code
A	65	a	97	0	48
B	66	b	98	1	49
C	67	c	99	2	50
D	68	d	100	3	51
E	69	e	101	4	52
F	70	f	102	5	53
G	71	g	103	6	54
H	72	h	104	7	55
I	73	i	105	8	56
J	74	j	106	9	57
K	75	k	107		
L	76	l	108		
M	77	m	109		
N	78	n	110		
O	79	o	111		
P	80	p	112		
Q	81	q	113		
R	82	r	114		
S	83	s	115		
T	84	t	116		
U	85	u	117		
V	86	v	118		
W	87	w	119		
X	88	x	120		
Y	89	y	121		
Z	90	z	122		

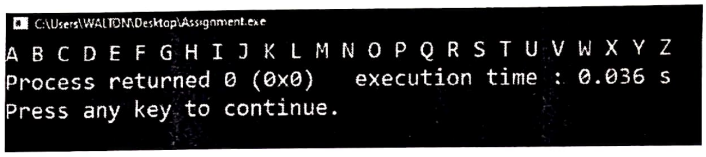
Assignment 05: (I) Print a to z using ASCII value.

```
#include<stdio.h>
int main(){
int i;
for (i=97; i<=122; i++){
 printf("%c ",i);
}
}
```



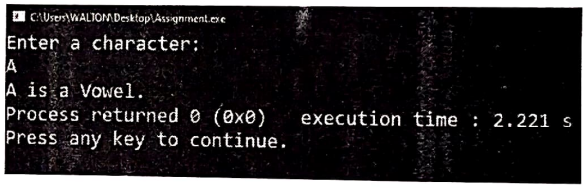
(II) Print A to Z using ASCII value.

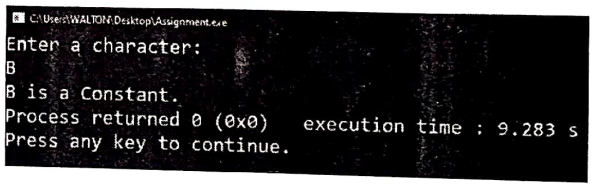
```
#include<stdio.h>
int main(){
int i;
for (i=65; i<=90; i++){
 printf("%c ",i);
}
}
```



Assignment 06: Check an alphabet vowel or consonant using switch case.

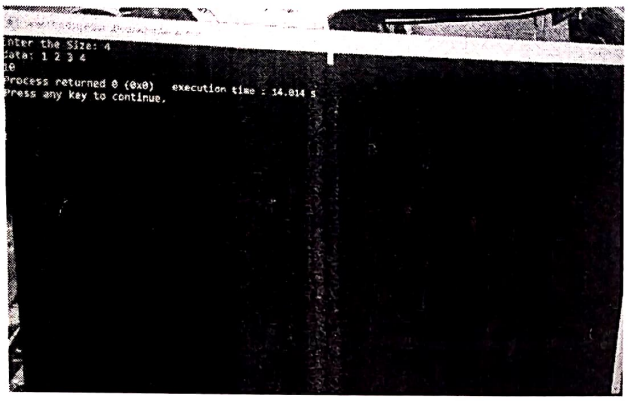
```
#include <stdio.h>
int main(){
char ch;
printf("Enter a character:\n");
 scanf("%c",&ch);
 if((ch>='A' && ch<='Z') || (ch>='a' && ch<='z')) {
 switch(ch) {
 case 'A':
 case 'E':
 case 'I':
 case 'O':
 case 'U':
 case 'a':
 case 'e':
 case 'i':
 case 'o':
 case 'u':
 printf("%c is a Vowel.\n",ch);
 break;
 default:
printf("%c is a Constant.\n",ch);
 }
}
 else {
 printf("%c is not an Alphabet.\n",ch);
}
}
```





Assignment 07: Write a C program to find the Sum of N numbers using array

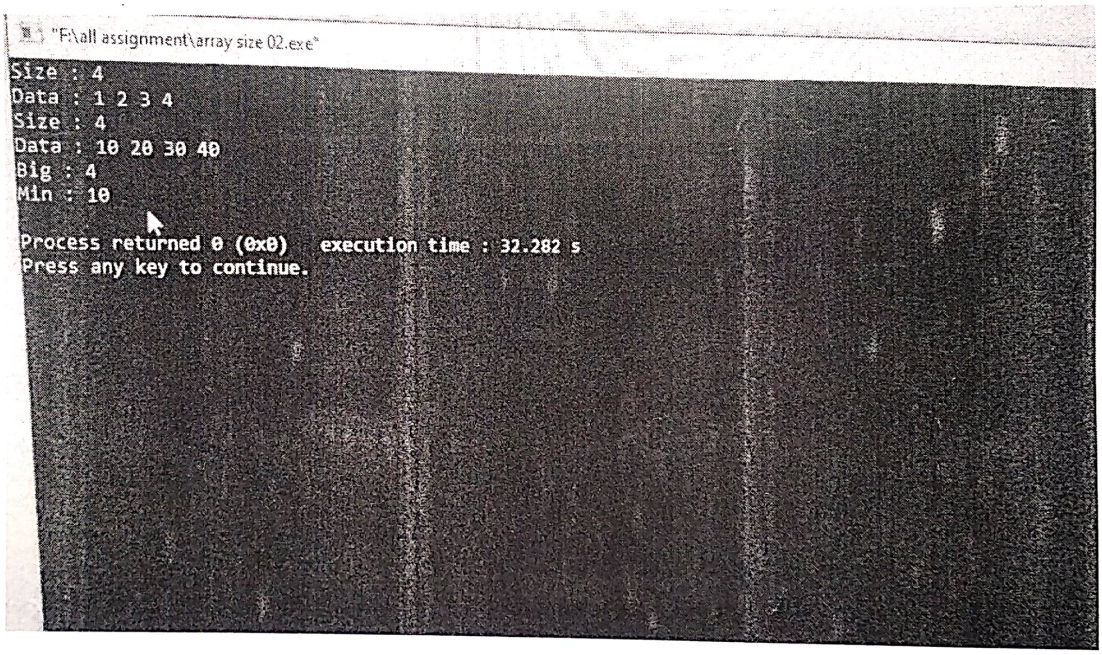
#include<stdio.h>




```
int main(){
int size,sum=0;
printf("Enter the Size: ");
scanf("%d",&size);

 int ar[size];
 printf("data: ");
 for(int i=0;i<size;i++){
 scanf("%d",&ar[i];
 sum = sum+ar[i];
}
printf("%d",sum);
}
```

Assignment 08: Write a C program to find out the largest number of array 1 and the smallest number of array 2 by taking 2 arrays from the user.

```
include<stdio.h>
int main(){
   int s;
```

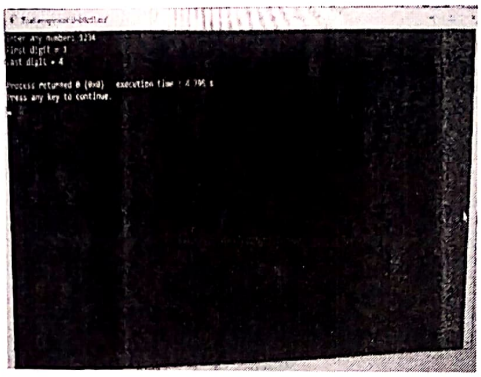



```
   printf("Size : ");
   scanf("%d",&s);
   int ar[s];
   printf("Data : ");
   for(int i=0;i<s;i++){
      scanf("%d",&ar[i]);
   }
   int s2;
   printf("Size : ");
   scanf("%d",&s2);
   int ar2[s2];
   printf("Data : ");
```

```
for(int i=0;i<s2;i++){
   scanf("%d",&ar2[i]);
}

int big=ar[0];
for(int i=1;i<s;i++){
   if(big < ar[i]){
      big=ar[i];
   }
}
printf("Big : %d\n",big);
int min=ar2[0];
for(int i=1;i<s;i++){
   if(min > ar2[i]){
      min=ar2[i];
   }
}
printf("Min : %d\n",min);



}
```

Assignment 09:Write a C program to find first and last digit of a number using loop

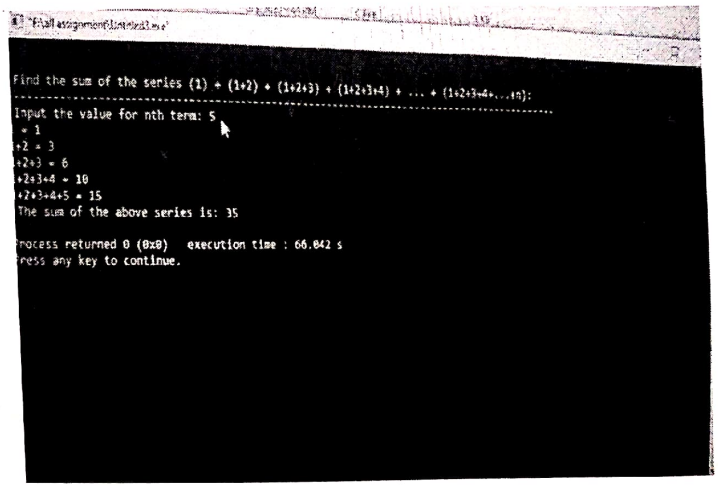
```
#include <stdio.h>
#include <math.h>
```




```
int main()
{
    int n, firstDigit, lastDigit, digits;
    /* Input a number from user */
    printf("Enter any number: ");
    scanf("%d", &n);
    /* Find last digit */
    lastDigit = n % 10;

    /* Total number of digits - 1 */
    digits = (int)log10(n);
    /* Find first digit */
    firstDigit = (int)(n / pow(10, digits));
    printf("First digit = %d\n", firstDigit);
    printf("Last digit = %d\n", lastDigit);

    return 0;
}
```

Assignment 10: calculate the series 1+(1+2)+(1+2+3)+.....+n using c

```
#include <iostream>
using namespace std;

int main()
{
    int i, j, n, sum = 0, tsum;
    cout << "\n\n Find the sum of the series (1) + (1+2) + (1+2+3) +
(1+2+3+4) + ... + (1+2+3+4+...+n):\n";
    cout << "-----------------------------------------------------------
---------------------------------\n";
    cout << " Input the value for nth term: ";
    cin >> n;
    for (i = 1; i <= n; i++)
     {
        tsum = 0;
        for (j = 1; j <= i; j++)
           {
            sum += j;
            tsum += j;
            cout << j;
            if (j < i)
                {
                cout << "+";
            }
         }
         cout << " = " << tsum << endl;
     }
     cout << " The sum of the above series is: " << sum << endl;
}
```



Assignment 11 : c program to find prime number

```
#include<stdio.h>
int main (){
   int a,i ,count =0;
   printf("Enter any number:   ");
   scanf("%d",&a);
   for(i=2;i<a;i++);{

   if (a%i==0){



      count++;
      break;

   }


   }
 if (count==0)
   printf("prime\n");
 else
   printf("not prime\n");
```

A Lab Report

on

Introduction to Digital Electronics Lab

Course Code : CSE 1212

Course Title : Introduction to Digital Electronics Lab

Submitted by:

Name : Nafiun Sakin
ID : 2038520108
Department : CSE
Session : 2019-2020

Submitted to:

Mounita Ghosh
Lecturer
Department of EEE
Imperial College of Engineering.

Date of Submission: 28 | 03 | 22

29.03.22

A LAB REPORT

ON

COMPUTER MAINTENANCE

COURSE CODE : CSE - 1112

COURSE TITLE : COMPUTER MAINTENANCE & ENGINEERING

SUBMITTED BY:

SHARIF MD. NAFIUN SAKIN

STUDENT ID: 203852018

ODD SEMESTER, PART- 1

DEPT. OF CSE

IMPERIAL COLLEGE OF ENGINEERING.

SUBMITTED TO:

HAFIZUR RAHMAN SHAKIL

ASSISTANT PROFESSOR

DEPT. OF CSE

IMPERIAL COLLEGE OF ENGINEERING

Date: 15. 02. 2020

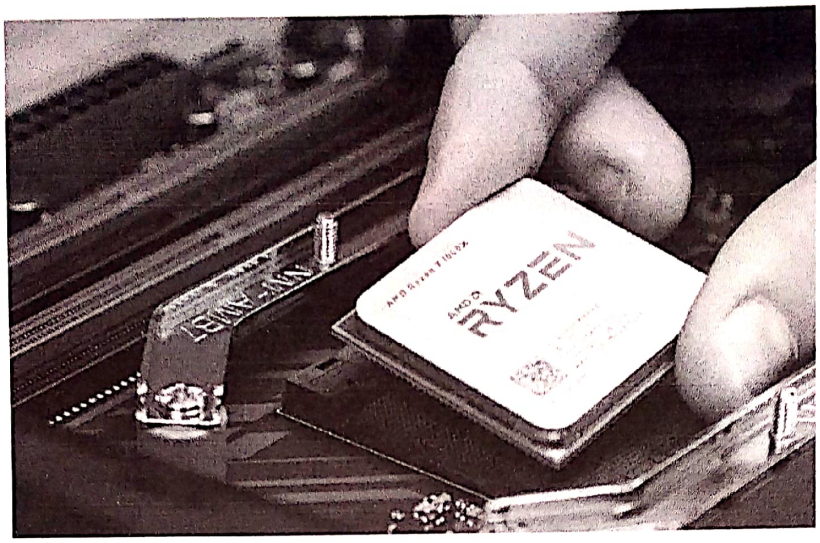
16/04/2020

INDEX

S.L	Date	Name Of Experiment	Page No	Remark
1.	15.02.2020	Identify and Recognize the different elements of computer		A+
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

01.CPU:

The central processing unit (CPU) is the unit which performs most of the processing inside a computer. To control instructions and data flow to and from other parts of the computer, the CPU relies heavily on a chipset, which is a group of microchips located on the motherboard.



The CPU has two components:

Control Unit: Extracts instructions from memory and decodes and executes them.

Arithmetic Logic Unit (ALU): Handles arithmetic and logical operations.

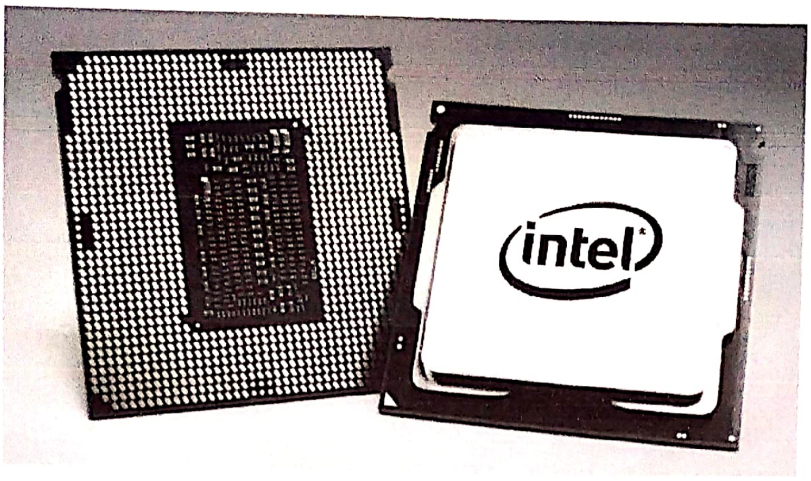
To function properly, the CPU relies on the system clock, memory, secondary storage, and data and address buses.This term is also known as a central processor, microprocessor or chip.

The CPU is the heart and brain of a computer. It receives data input, executes instructions, and processes information. It communicates with input/output (I/O) devices, which send and receive data to and from the CPU. Additionally, the CPU has an internal bus for communication with the internal cache memory, called the backside bus. The main bus for data transfer to and from the CPU, memory, chipset, and AGP socket is called the front-side bus.

The CPU contains internal memory units, which are called registers. These registers contain data, instructions, counters and addresses used in the ALU's information processing.Some computers utilize two or more processors. These consist of separate physical CPUs located side by side on the same board or on separate boards. Each CPU has an independent interface, separate cache, and individual paths to the system front-side bus. Multiple processors are ideal for intensive parallel tasks requiring multitasking. Multicore CPUs are also common, in which a single chip contains multiple CPUs.

02.Processor:

A processor, or "microprocessor," is a small chip that resides in computers and other electronic devices. Its basic job is to receive input and provide the appropriate output. While this may seem like a simple task, modern processors can handle trillions of calculations per second.



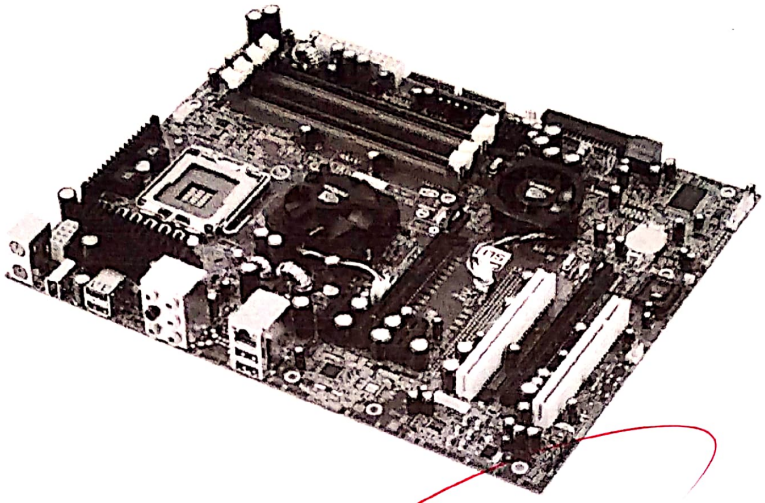
The central processor of a computer is also known as the CPU, or "central processing unit." This processor handles all the basic system instructions, such as processing mouse and keyboard input and running applications. Most desktop computers contain a CPU developed by either Intel or AMD, both of which use the x86 processor architecture. Mobile devices, such as laptops and tablets may use Intel and AMD CPUs, but can also use specific mobile processors developed by companies like ARM or Apple.

Modern CPUs often include multiple processing cores, which work together to process instructions. While these "cores" are contained in one physical unit, they are actually individual processors. In fact, if you view your computer's performance with a system monitoring utility like Windows Task Manager (Windows) or Activity Monitor (Mac OS X), you will see separate graphs for each processor. Processors that include two cores are called dual-core processors, while those with four cores are called quad-core processors. Some high-end workstations contain multiple CPUs with multiple cores, allowing a single machine to have eight, twelve, or even more processing cores.

Besides the central processing unit, most desktop and laptop computers also include a GPU. This processor is specifically designed for rendering graphics that are output on a monitor. Desktop computers often have a video card that contains the GPU, while mobile devices usually contain a graphics chip that is integrated into the motherboard. By using separate processors for system and graphics processing, computers are able to handle graphic-intensive applications more efficiently.

03.Motherboard:

Amotherboard is the main printed circuit board (PCB) in a computer. The motherboard is a computer's central communications backbone connectivity point, through which all components and external peripherals connect.



The large PCB of a motherboard may include 6-14 layers of fiberglass, copper connecting traces and copper planes for power and signal isolation. Additional components can be added to a motherboard through its expansion slots. These may include processor sockets, DIMM, HTX, PCI, PCIe and M.2 slots as well as power supply connections. Typically motherboards offer additional connectivity through a Southbridge chip such as PCI, SATA, Thunderbolt, USB and more. CPU to RAM and PCIe are generally connected through point-to-point interconnects such as hypertransport (HT), quick path interconnect (QPI) or Ultrapath interconnect (UPI). Often, choosing a motherboard determines many of the features a desktop will have.

The most common motherboard design in desktop computers today is ATX, an Intel improvement on the AT design by IBM. Other form factors include extended ATX mini-ATX, microATX, BTX, microBTX mini ITX, micro ITX and nano ITX.

The integration of components has eliminated the Northbridge chips that managed memory from motherboards. With the advent of memory controllers built into CPU, integrated video too has moved from motherboard to CPU. On AMD's new Ryzen, even the Southbridge is optional due to the SOC (system on a chip) nature of the CPU. This integration into the CPU reduces the cost for motherboard manufacturers who wish to offer base systems for workstations and entry level computers while also enabling highly customized implementations that support a range of processors to allow for platform upgradabillity.

04.Monitor:

A monitor is an electronic visual computer display that includes a screen, circuitry and the case in which that circuitry is enclosed. Older computer monitors made use of cathode ray tubes (CRT), which made them large, heavy and inefficient. Nowadays, flat-screen LCD monitors are used in devices like laptops, PDAs and desktop computers because they are lighter and more energy efficient

A monitor is also known as a screen or a visual display unit (VDU).

The advent of display technology has paved the way for the continuous evolution of the monitor, whether it's for computers, television, mobile devices or any device that has a display. The current contenders for top-tier technology being used for display devices includes Super LCD 3 (SLCD3) and Super AMOLED. It should be noted that LED displays are actually just a kind of LCD display that use LED lights as backlight illumination.

The quality of a monitor's performance is assessed using a few key factors:

Aspect Ratio: This is the relation of the vertical length to the horizontal length of the monitor (e.g. 16:9 or 4:5).

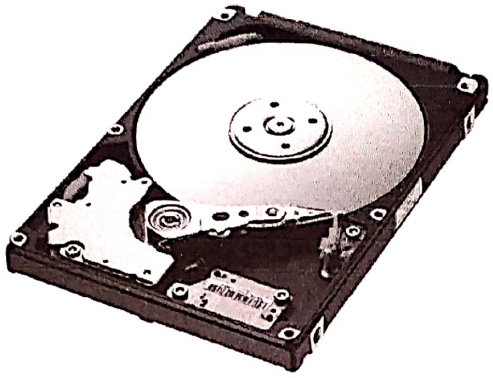
Dot Pitch: This is the distance between each pixel in every square inch that's displayed. The shorter the distance, the sharper and clearer the images are.

Display Resolution: Also known as dots per inch (DPI), this determines the number of pixels per linear inch. The maximum number of pixels is determined by the dot pitch. This determines the number of pixels the display screen can accommodate.

Size: This aspect is determined by the display screen's diagonal measurement.

05.HDD:

A hard disk drive (HDD) is a non-volatile computer storage device containing magnetic disks or platters rotating at high speeds. It is a secondary storage device used to store data permanently, random access memory (RAM) being the primary memory device. Non-volatile means data is retained when the computer is turned off.



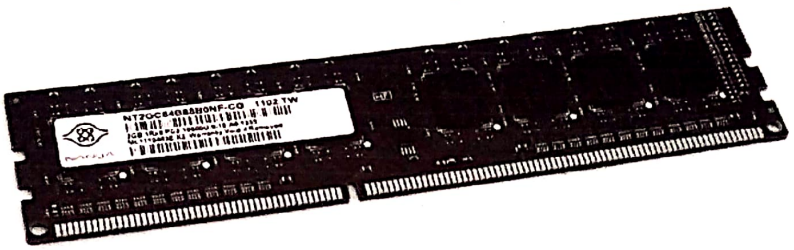
A hard disk drive is also known as a hard drive.A hard drive fits inside a computer case and is firmly attached with the use of braces and screws to prevent it from being jarred as it spins. Typically it spins at 5,400 to 15,000 RPM. The disk moves at an accelerated rate, allowing data to be accessed immediately. Most hard drives operate on high speed interfaces using serial ATA (SATA) or serial attached technology. When the platters rotate, an arm with a read/write head extends across the platters. The arm writes new data to the platters and reads new data from them. Most hard drives use enhanced integrated drive electronics (EIDE) including cables and connectors to the motherboard. All data is stored magnetically, allowing information to be saved when power is shut off.

Hard drives need a read only memory (ROM) controller board to instruct the read/write heads how, when and where to move across the platters. Hard drives have disks stacked together and spin in unison. The read/write heads are controlled by an actuator, which magnetically reads from and writes to the platters. The read/write heads float on a film of air above the platters. Both sides of the platters are used to store data. Each side or surface of one disk is called a head, with each one divided into sectors and tracks. All tracks are the same distance from the center of the disk. Collectively they comprise one cylinder. Data is written to a disk starting at the furthest track. The read/write heads move inward to the next cylinder once the first cylinder is filled.

A hard drive is divided into one of more partitions, which can be further divided into logical drives or volumes. Usually a master boot record (MBR) is found at the beginning of the hard drive and contains a table of partition information. Each logical drive contains a boot record, a file allocation table (FAT) and a root directory for the FAT file system.

06.RAM:

Random access memory (RAM) is a type of data storage used in computers that is generally located on the motherboard. This type of memory is volatile and all information that was stored in RAM is lost when the computer is turned off. Volatile memory is temporary memory while ROM (read-only memory) is non-volatile and holds data permanently when the power is turned off.



The RAM chip may be individually mounted on the motherboard or in sets of several chips on a small board connected to the motherboard. Older memory types were in the form of chips called dual in-line package (DIP). Although DIP chips are still used today, the majority of memory is in the form of a module, a narrow printed circuit board attached to a connector on the motherboard. The three main memory circuit boards types containing chips are: RIMMs (Rambus in-line memory modules), DIMMs (dual in-line memory modules) and SIMMs (single in-line memory modules). Most motherboards today use DIMMs.

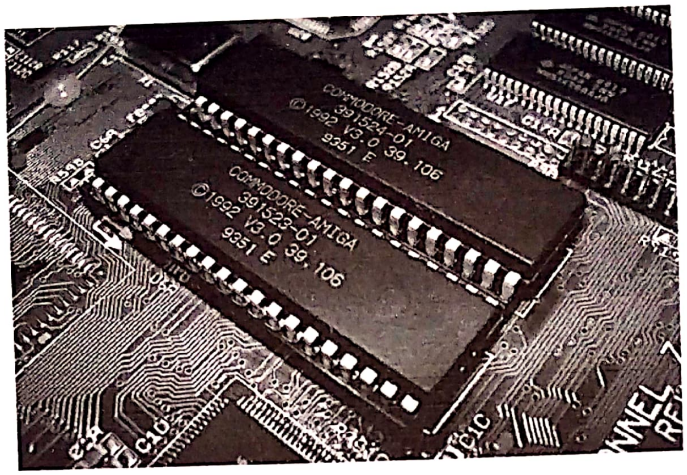
There are two main types of RAM: dynamic random access memory (DRAM), or Dynamic RAM, and static random access memory (SRAM). The RAM in most personal computers (PC's) is Dynamic RAM. All dynamic RAM chips on DIMMs, SIMMs or RIMMs have to refresh every few milliseconds by rewriting the data to the module.

Static RAM (SRAM) is volatile memory and is often used in cache memory and registers because it is a lot faster and does not require refreshing like Dynamic RAM. SRAM retains information and is able to operate at higher speeds than DRAM. Because DRAM is a lot cheaper than SRAM, it's common to see PC manufacturers use DRAM.

Dynamic RAM is memory that needs refreshing. The refreshing is done by the memory controller which is part of the chipset on the motherboard. Static RAM (SRAM) does not need refreshing and is used in memory cache on the central processing unit (CPU); it is called L1, L2 and L3 cache. Original SRAM was stored on the motherboard; later SRAM was inside of the CPU housing or stored on both the motherboard and inside of the CPU.

07.ROM:

Read-only memory (ROM) is a type of storage medium that permanently stores data on personal computers (PCs) and other electronic devices. It contains the programming needed to start a PC, which is essential for boot-up; it performs major input/output tasks and holds programs or software instructions.



Because ROM is read-only, it cannot be changed; it is permanent and non-volatile, meaning it also holds its memory even when power is removed. By contrast, random access memory (RAM) is volatile; it is lost when power is removed.There are numerous ROM chips located on the motherboard and a few on expansion boards. The chips are essential for the basic input/output system (BIOS), boot up, reading and writing to peripheral devices, basic data management and the software for basic processes for certain utilities.

Other types of non-volatile memory include:

Programmable Read-Only Memory (PROM)

Electrically Programmable Read-Only Memory (EPROM)

Electrically Erasable Programmable Read-Only Memory (EEPROM; also called Flash ROM)

Electrically Alterable Read-Only Memory (EAROM)

However, these types of non-volatile memory can be altered and are often referred to as programmable ROM. One of the original forms of non-volatile memory was mask-programmed ROM. It was designed for specific data such as bootstrap, which contains the startup code. Mask-programmed ROM can never be changed.

Because ROM cannot be changed and is read-only, it is mainly used for firmware. Firmware is software programs or sets of instructions that are embedded into a hardware device. It supplies the needed instructions on how a device communicates with various hardware components. Firmware is referred to as semi-permanent because it does not change unless it is updated. Firmware includes BIOS, erasable programmable ROM (EPROM) and the ROM configurations for software.

ROM may also be referred to as maskROM (MROM). MaskROM is a read-only memory that is static ROM and is programmed into an integrated circuit by the manufacturer. An example of MROM is the bootloader or solid-state ROM, the oldest type of ROM.

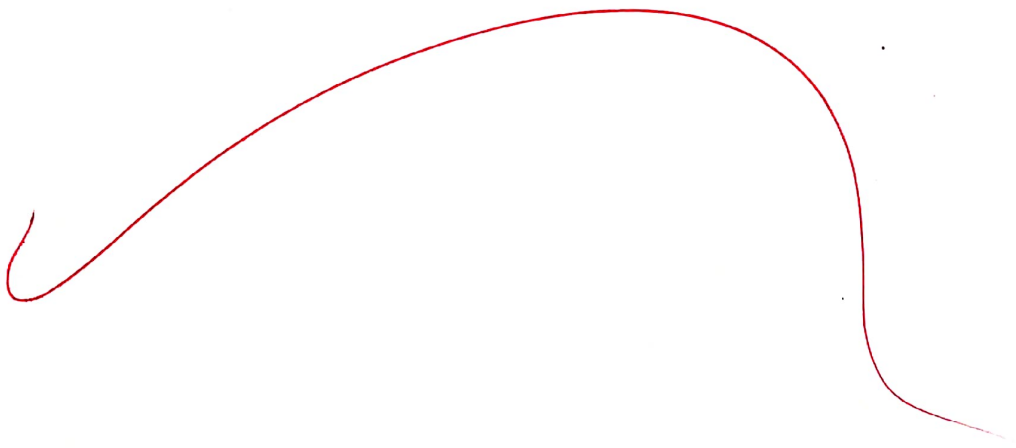
Some ROM is non-volatile but can be reprogrammed, this includes:

Erasable Programmable Read-Only Memory (EPROM): This is programmed with the use of very high voltages and exposure to approximately 20 minutes of intense ultraviolet (UV) light.

Electrically-Erasable Programmable Read-Only Memory (EEPROM): This is used in many older computer BIOS chips, is non-volatile storage that can be erased and programmed several times and allows only one location at a time to be written or erased. An updated version of EEPROM is flash memory; this allows numerous memory locations to be altered simultaneously.

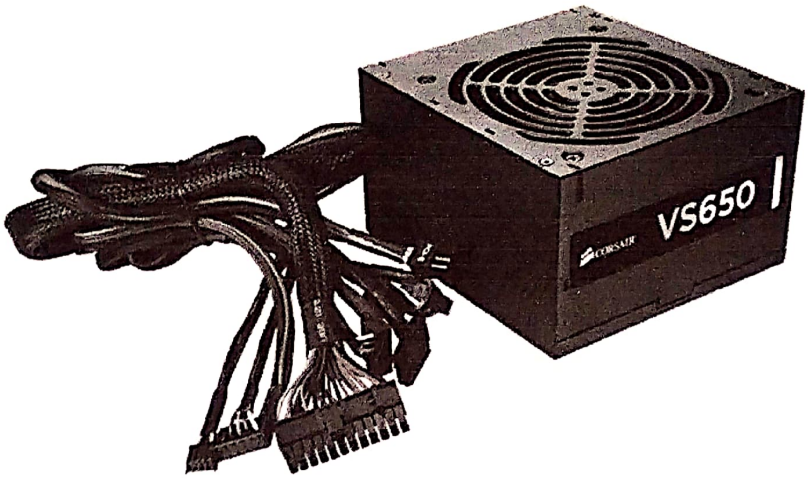
Ultraviolet-Erasable Programmable Read-Only Memory (UV-EPROM): This is read-only memory that can be erased by the use of ultraviolet light and then reprogrammed.

ROM is also often used in optical storage media such as various types of compact discs, including read-only memory (CD-ROM), compact disc recordable (CD-R) and compact disc rewritable (CD-RW).



08.PSU:

A power supply is a component that supplies power to at least one electric load. Typically, it converts one type of electrical power to another, but it may also convert a a different form of energy – such as solar, mechanical, or chemical - into electrical energy.



A power supply provides components with electric power. The term usually pertains to devices integrated within the component being powered. For example, computer power supplies convert AC current to DC current and are generally located at the rear of the computer case, along with at least one fan.A power supply is also known as a power supply unit, power brick or power adapter.

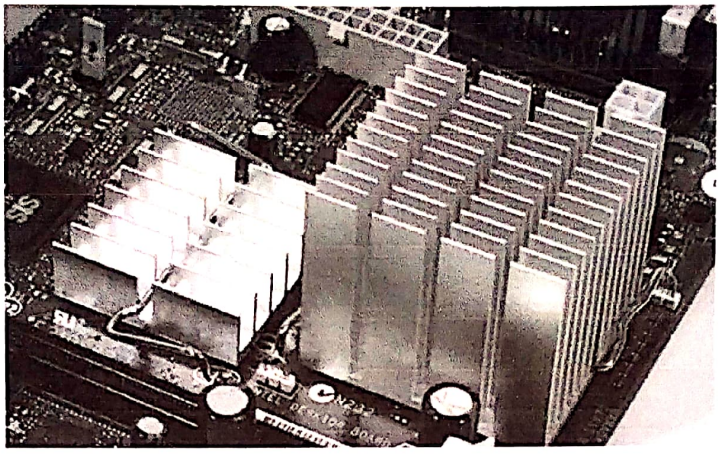
Most computer power supplies also have an input voltage switch, which can be set to 110v/115v or 220v/240v, depending on the geographic location. This switch position is crucial because of the different power voltages supplied by power outlets in different countries.

Most computers now use a switched-mode power supply, which changes AC current to DC voltage. This voltage can be switched on and off electronically. A switched- mode power supply can also shut itself down before damage is done when a short is detected.

Most computer power supplies include a number of switched-mode supplies, which operate independently by producing a single voltage. These are linked together, so that they shut down as a group in case of a computer fault.

09.Heat Sink:

A heat sink is a thermal conductive metal device designed to absorb and disperse heat away from a high temperature object such as a computer processor. Usually heat sinks are outfitted with built-in fans to help keep both the CPU and the heat sink at an appropriate temperature. Heat sinks are made out of metal, such as a copper or aluminum alloy, and are attached to the processor. Most heat sinks have fins, thin slices of metal connected to the base of the heat sink, which help spread heat over a large area.



The combination of a heat sink and fan (HSF) is referred to as an active heat sink, while a heat sink without a fan is a passive heat sink. In addition to the HSF, a heat sink compound is sometimes used. This is a coating between the device and the heat sink to improve thermal conduction. Heat sinks are commonly used in all CPUs and are also used in refrigeration and air conditioning systems, GPUs and video card processors.

A computer processor works at a very fast pace, generating a lot of heat. If a processor is overheated and does not have a heat sink, the CPU can be damaged. The computer may be dysfunctional and not able to complete a POST (power on self-test). If a POST fails, nothing will appear on the screen and the computer speakers may produce only a series of beeps.

To prevent overheating, the heat sink dissipates heat from the processor. To transfer heat from the processor to the heat sink, there must be an adequate amount of surface area between the two. This is done by the use of a heat sink compound (also called thermal paste), which is lightly spread over the surface. However, too much thermal paste will insulate the CPU instead of cooling it.

Fans are used to cool the air and push hot air away from the computer and move cool air across the heat sink. Fans near the CPU speed up as the temperature rises, helping cool the processor and heat sink. Maintaining a cool system is critical. Temperatures should be kept between 90 and 110 degrees Fahrenheit, or 32 and 43 degrees Celsius. Overheating internal components can cause data loss, shortened computer lifespan, system crashes, lock-ups, random reboots and permanent damage. For safety precautions, most motherboards are programmed to shut down if the CPU temperature reaches 85 to 90 degrees Celsius.

10.Cooling Fan:

Air cooling is a process of lowering air temperature by dissipating heat. It provides increased air flow and reduced temperatures with the use of cooling fins, fans or finned coils that move the heat out of a casing such as a computer case.

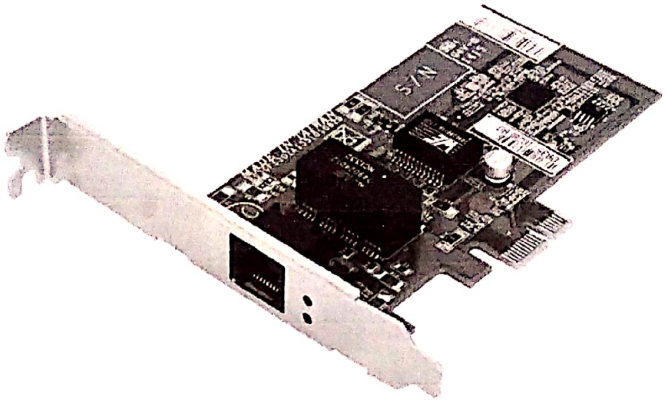
The technique involves increased airflow over the target that needs to cooled, or increasing the surface area of the object to help disburse heat. Sometimes both techniques are used.There are various techniques used that include cooling fins, fans or finned coils. Components in many electronics produce mass amounts of heat that can cause damage. A central processing unit (CPU) uses a cooling fan or heat sink to disperse heat that is clipped or mounted on top of the CPU. CPUs also add fins as part of their heat sink.

Air cooling is limited by heat density. It has low density and cannot sufficiently cool a small overheated component. Because air has limited mass, it can heat up in confined areas. Air cooling is ideal with components that have a larger mass and bigger surface area.

Heat density can be fatal for electrical components. In a PC, it can cause a shorter lifespan, data loss, system crashes and sometimes permanent damage.

11.LAN Card:

Local area network is a network type which links two computers in connection. To enable the connection between computer networks LAN card is required. LAN card is a piece of hardware which is connected inside the linking the computer network using the MAC address for network to work. ways by which create physical connection they are: OSI layer 1 i.e. physical layer and OSI layer 2 i.e. Data link layer.



By using special types of WLAN card it allows the computer to connect using cables and wirelessly. As in increasing technology wireless type is much preferable for that LAN card is required. Internal working of LAN card is like: A computer with the wireless LAN card transmit and receive data via radio waves using spread-spectrum technology. It is available is four basic types followed by a, b and g. Sort of LAN card used having some typical features of a network card which includes twisted pair. It is designed to used rate transfer to be ranging from 10 to 1000 megabits/sec.

Function of LAN cards:

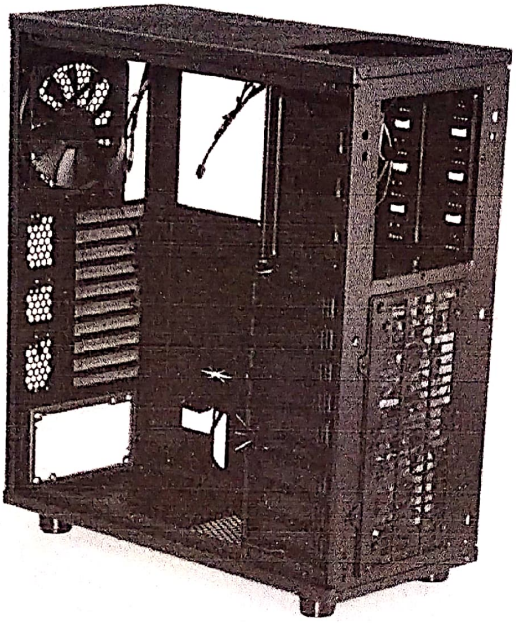
The purpose of LAN is to create physical connection which is open door. The first physical interface supported by LAN card through which cable plugs into the card. That interface is well defined in technical documentation which is best fit for network cables. The second function is to provide data link. Both of the function are the theoretical model in networking called Open system interconnection (OSI). The function of data link of a LAN card provides sending and receiving of network binary data and that data flow in zeros and ones form the network to the network card. Then card recognize the flow of data and check for errors. After that when you turn on computer with the LAN card it will show two lights green and orange, orange light will come on when data link layer is activated this means cable work and network connected and bits are flowing. Second green light shown network layer is activated now.

Types of LAN cards:

There are many different types of LANs, Ethernet is the most common for systems and Apple macintosh networks are based on Apple's AppleTalk network system. There are some of the things which differentiate one LAN from another they are: topology, Protocol and media.

12.Computer Case:

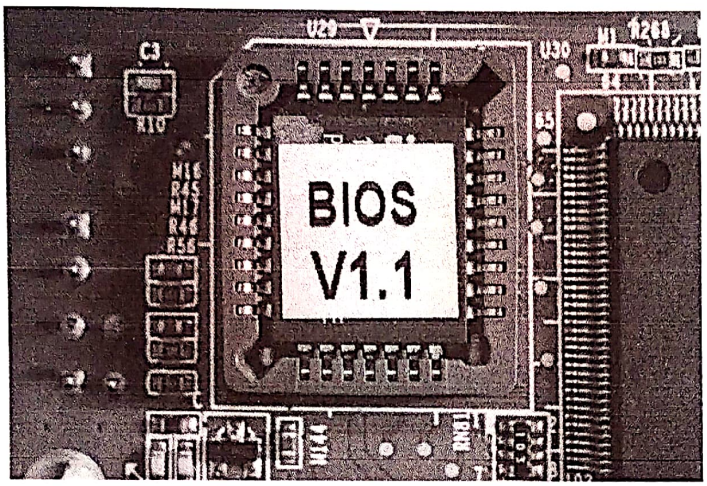
A computer case is also known as a "computer chassis", "tower", "system unit", "base unit" or simply "case". Also sometimes incorrectly referred to as the "CPU" or "hard drive", it is the enclosure that contains most of the components of a computer.



Form factors typically specify only the internal dimensions and layout of the case. For rack-mounted and blade servers form factors may include precise external dimensions as well, since these cases must themselves fit in specific enclosures. For example, a case designed for an ATX motherboard and power supply may take on several external forms, such as a vertical tower or a flat desktop or pizza box. Full-size tower cases are typically larger in volume than desktop cases, with more room for drive bays and expansion slots. Desktop cases—and mini-tower cases under about 46 cm high—are popular in business environments where space is at a premium. Currently, the most popular form factor for desktop computers is ATX, although microATX and small form factors have also become very popular for a variety of uses. In the high-end segment the unofficial and loosely defined XL-ATX spec appeared around 2009. XL-ATX extends the length of the Mainboard to accommodate 4 graphics cards with dual-slot coolers. Some XL-ATX mainboards increase the Mainboards width as well, to allow more space for the CPU and Memory PWM, and in some cases a second CPU socket. While the market share of these exotic high-end mainboards is very low, almost all high-end cases and many mainstream cases support XL-ATX. Companies like In Win Development, Shuttle Inc. and AOpen originally popularized small cases, for which FlexATX was the most common motherboard size. As of 2010 Mini ITX has widely replaced FlexATX as the most common small form factor Mainboard standard. The latest mini ITX mainboards from Asus, Gigabyte, Zotac and Foxconn offer the same feature set as Full size Mainboards. Highend mini ITX mainboards support standard desktop CPUs, use standard memory DIMM sockets and feature a full size pciE 16x slot with support for the fastest graphics cards. This allows customers to build a fully fledged high-end computer in a significantly smaller case. Apple Inc. has also produced the Mac Mini computer, which is similar in size to a standard CD-ROM drive.

13.BIOS:

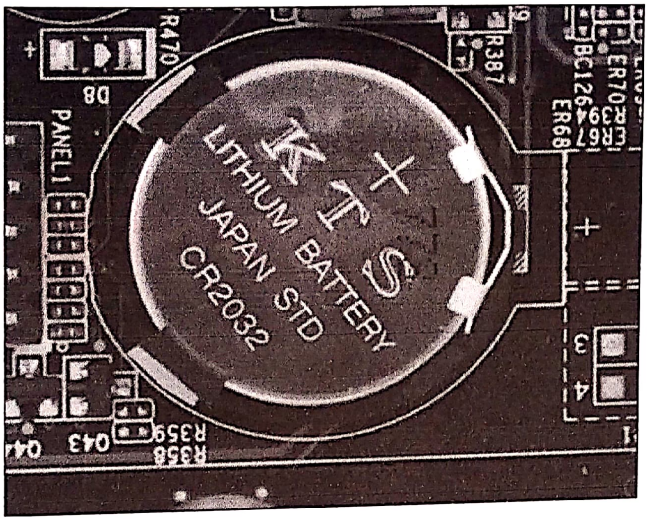
BIOS stands for Basic Input/Output System. BIOS is a "read-only" memory, which consists of low-level software that controls the system hardware and acts as an interface between the operating system and the hardware. Most people know the term BIOS by another name—device drivers, or just drivers. BIOS is essentially the link between the computer hardware and software in a system.



All motherboards include a small block of Read Only Memory (ROM) which is separate from the main system memory used for loading and running software. On PCs, the BIOS contains all the code required to control the keyboard, display screen, disk drives, serial communications, and a number of miscellaneous functions.The system BIOS is a ROM chip on the motherboard used during the startup routine (boot process) to check out the system and prepare to run the hardware. The BIOS is stored on a ROM chip because ROM retains information even when no power is being supplied to the computer.

14. CMOS Battery:

Motherboards also include a small separate block of memory made from CMOS RAM chips which are kept alive by a battery (known as a CMOS battery) even when the PC's power is off. This prevents reconfiguration when the PC is powered on.CMOS devices require very little power to operate.



The CMOS RAM is used to store basic Information about the PC's configuration for instance:-

Floppy disk and hard disk drive types

Information about CPU

RAM size

Date and time

Serial and parallel port information

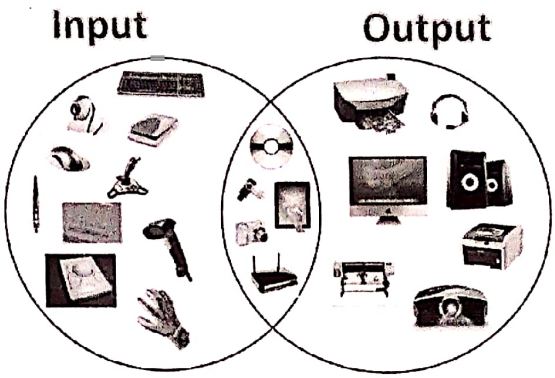
Plug and Play information

Power Saving settings

Other Important data kept in CMOS memory is the time and date, which is updated by a Real Time Clock (RTC).

15.I/O Device:

An input/output (I/O) device is a hardware device that has the ability to accept inputted, outputted or other processed data. It also can acquire respective media data as input sent to a computer or send computer data to storage media as storage output.

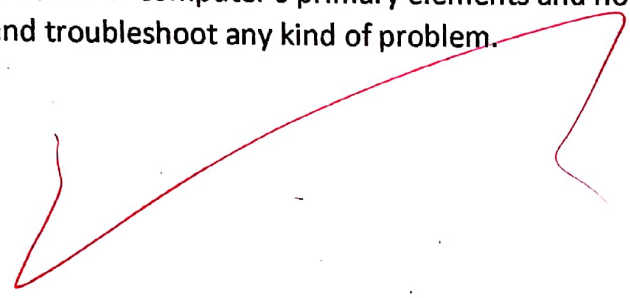


An I/O device is also known as an IO device. Input devices provide input to a computer, while output devices provide a way for a computer to output data for communication with users or other computers. An I/O device is a device with both functionalities.

Because I/O device data is bi-directional, such devices are usually categorized under storage or communications. Examples of I/O storage devices are CD/DVD-ROM drives, USB flash drives and hard disk drives. Examples of communication I/O devices are network adapters, Bluetooth adapters/dongles and modems.

Conclusion:

After the recognition of different elements of computer,I can able to operate the computer and also learned about the significance of computer's primary elements and how it works.It is very important to run a computer smoothly and troubleshoot any kind of problem.



A Lab Report

on

Basic Electronics

Course Code : **EEE1132**

Course Title : **Basic Electronics Lab**

Submitted by:

Name : **Nafiun Sakin**
ID : 2038520108
Department : CSE
Session : 2019-2020

Submitted to:

Mounita Ghosh
Lecturer,
Department of EEE.
Imperial College of Engineering.

Date of Submission:

27	11	2021

27.11.21

INDEX

S.L	Date of Performance	Date of Submission	Experiment name	Remark
01		2.	To observe the output wave from a ~~ripple factor have~~ half wave rectifier and ripple factor without filter	
02		1.	To study and verify the functionally of a p-n junction in forward bias.	
03		1.	To design and study the open loop gain from inverting amplifier circuit.	
04				
05				
06				
07				
08				
09				

Experiment No: 01

Name of the Experiment : To observe the output wave from a half wave rectifier and ripple without filter.

Theory : The half wave rectifier consist of one rectifire circuit with common load. These are connected in such way that conduction take place through one diode in alternate half cycle and through the load is sum of two currents. Thus the output voltage wave form contains half sinusoids in the two half cycle in the ac input signal.

Apparatus : (i) Diode
(ii) Rectifier
(iii) Resistance
(iv) Transformer
(v) Digital multimeter
(vi) Oscilloscope

Procedure :

(i) Connected the circuit as per the circuit diagram.

(ii) Connect CRO across the load.

(iii) Note down the peak value VH of the signal observed on the CRO.

(iv) Switch the CRO into DC mode and observe the wave form. Note down the DC shift.

(v) Calculate V_{rms} and V_{dc} values by using this formula.

(vi) Calculate the ripple factor by using the formula of ripple factor.

$$V_{ac}/V_{dc} = V_{rms}^2 - V_{dc}^2/V_{dc}$$

(vii) Remove the loads and measure the voltage across the circuit. Take down the value as VNI and calculate the percentage of voltage regulation using the formula.

$$\text{Regulation} = (VNI - FI)/VFI \times 100$$

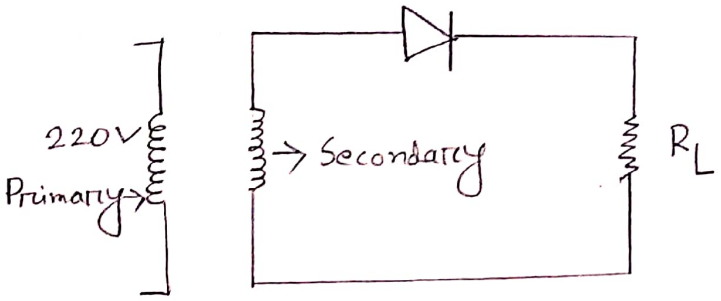


Figure : Half wave rectifier

$$V_0 = \left[V_1 \times \frac{R_2}{R_1} + V_2 \times \frac{R_1}{R_2}\right]$$

If $R_1 = R_2 = R_4 = R_0$ then $V_0 = (V_1 + V_2)$

little clearance

Table - 1 Half wave rectifier without filter:

SL No.	Load R(KΩ)	Input Current Iac (mA)	Output Voltage			Ripple factor	Efficiency $\frac{V^2_{dc}/R}{V_{ac} \times I_{ac}}$
			V_{ac}	V_{max}	$V_{dc} = \frac{V_{max}}{\pi}$		
1	10	1000	12	$\frac{190}{\pi}$	$\frac{190}{\pi}$	$\frac{12\pi}{190}$	0.304
2	10	1000	24	$\frac{369}{\pi}$	$\frac{369}{\pi}$	$\frac{24\pi}{369}$	1.865
3	10	1000	12	$\frac{184}{\pi}$	$\frac{184}{\pi}$	$\frac{12\pi}{184}$	0.898

Ans 27.11.21

Discussion: The reading of input and output are taken carefully.

Experiment No: 02

Name of Experiment: To study and verify the functionaly of PN junction in forward bias and reverse bias.

Apparatus: (i) Diode
(ii) Resistor
(iii) Connecting wire
(iv) DC power supply
(v) Bread board
(vi) Digital ameter and voltmeter

Biasing of PN junction diode:

Forward bias operation :- The junction support unidirectional current flow. If +ve terminal of the input supply is connected to p side. And -ve terminal is connected to n side. Then diode is said to be forward biased condition the height of the potential barriers at the junction is lowered by an amount of equal to given forward baising

Diode current equation :

$$I = I_0 \left(e^{V/\eta V_T} - 1 \right)$$

Where, I = Current flowing in the diode

I_0 = Reverse saturation current

V = Voltage applied to the diode

V_T = Volt equivalent of temperature

η = 1 for Ge and 2 for Si

Circuit diagram :-

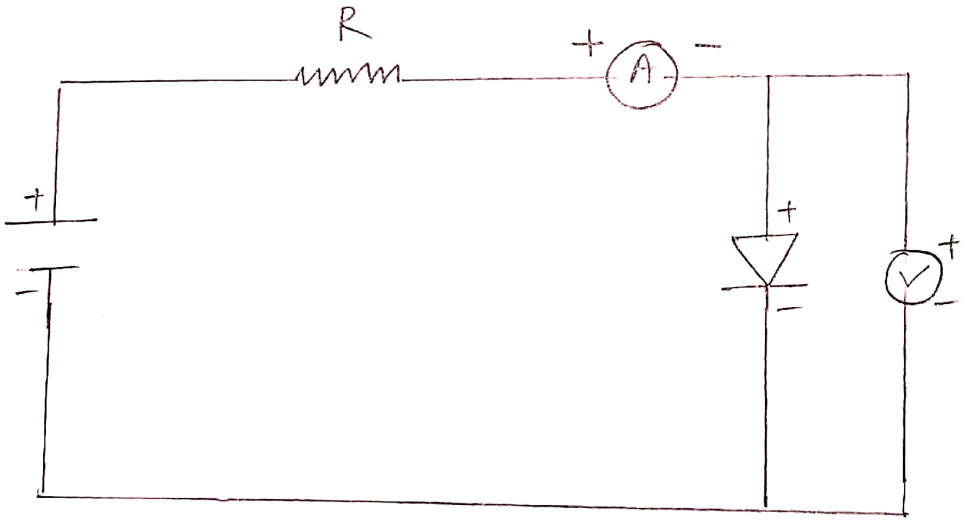


Figure: Forward bias

(vii) Function Genetrator

voltage both the holes P side and n side cross the junction simultaneously. Thereby decreasing the deplated region. The constitude a forward current diode offeres very small resistance is called forward resistance.

Procedure:-

Forward bias condition:-

(i) Connect the circuit as the shown on the figure.

(ii) Initially very regulated power supply voltage in step of 0·1 v once the current starts increasing very Vs in step of 0·02 v and note down the reading V_f and I_f.

(iii) Plot a graph between v and I. Compare the theoritical and practical value.

(iv) Make a table for different voltage and different current.

Table :-

Forward bias	
V_D (V_{OH})	I_D (mA)
0	0
0·2	0
0·3	0
0·6	4·9
0·7	30·5

27.11.21

Result :- VOH ampere characteristics of P-N diode are studied.

Experiment No : 03

Experiment Name : To study the characteristics of OP AMP in inverting and non-inverting mood and use it as an adder.

Theory :-

An operation amplifier (op amp) is highly customizable intigrated circuit element and it can perform various mathmatical opetations. Using the op amp we can build adder circuits and amplifier circuits which we are going to do this experiment.

Apparatus :-

(i) Operation amplifier MA 741
(ii) Digital Multimeter
(iii) DC power supply
(iv) Connecting wires
(v) Resistors 1KΩ (2no), 1 KΩ (2no), 1Ω
(vi) Bread board
(vii) Function Genetrator

Procedure :-

Inverting Amplifier :-

i) Circuit Assembly :-

(a) The op-amp is placed in the lower central portion of the breadboard. The notch is positioned, so that the pin 1 is at the top left.

(b) The circuit is constructed as shown the figure.

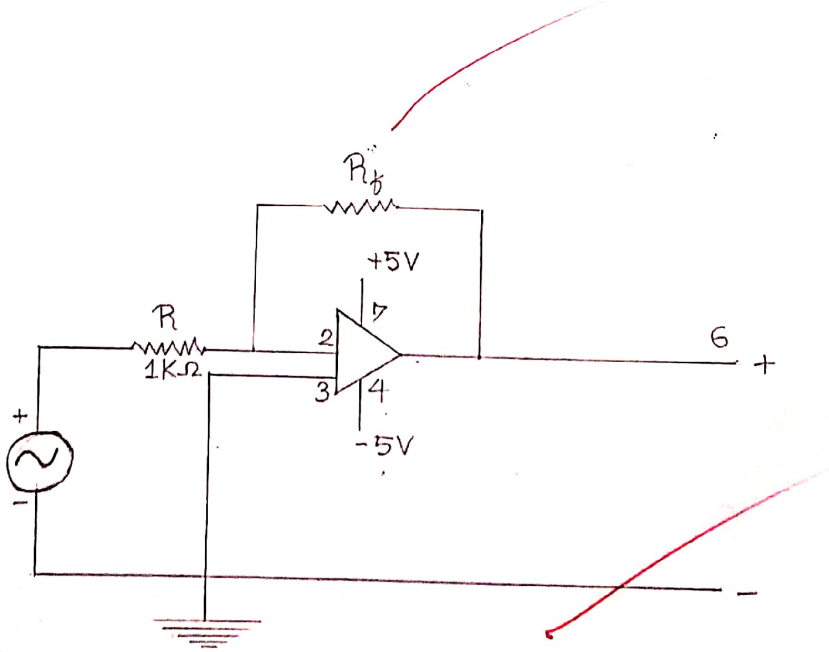


Figure: Inverting Amplifier Circuit

(ii) Variable feedback resistor, R_f :-

(a) The peak to peak amplitude of the output, V_o is measured and the gain, Av is calculated.

(b) The theoritical gain, A_R is compared to measured gain Av using the formula, $R_f/R_o = V_o/V_s$ and the reading are calculate.

(iii) Variable input voltage, V_s :-

(a) The value for peak to peak output voltage is measured for input voltage of 1V, 2V, 4V... peak to peak respectively.

(b) Variable bias voltage :-

(a) Using an input sine wave at the amplitude of the input V_s is slowly increased from zero volts to a value where the output

V_o becomes distorted on either the position or negative cycle.

(b) The bias voltage of pin 7 and pin 4 are reduced from +5v and -5v.

Non-inverting Amplifier :-

(i) The actual resistance of R and R_f of which has nominal values of 1KΩ are measured by using the table.

(ii) The bias voltage are set to +5v and -5v.

(iii) The nominal non-inverting amplifier is built $R = R_f = 1K\Omega$

(iv) The measured V_o is compared to the theoritical values, which are calculated by using measured the resistors and measured V_s.

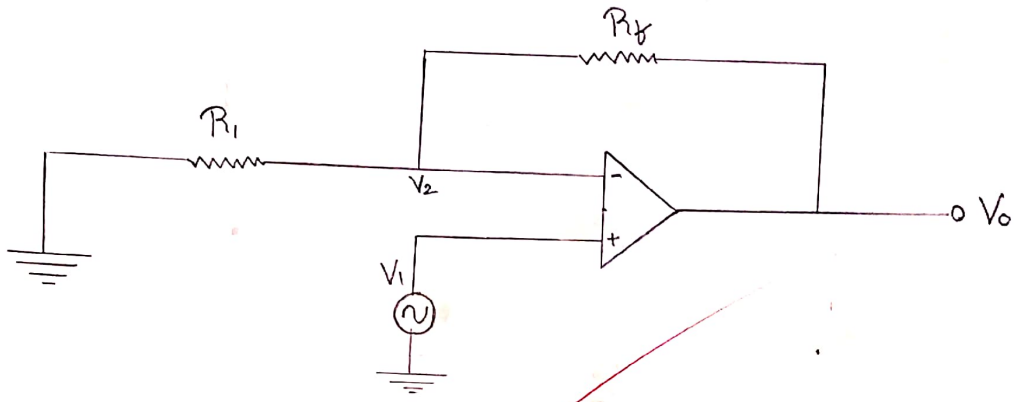


Figure: Non-inverting Amplifier

Summing Amplifier :-

The summing amplifier is very flexible circuit indeed. If the input R_1, R_2 are equal then the procedured which will output sum.

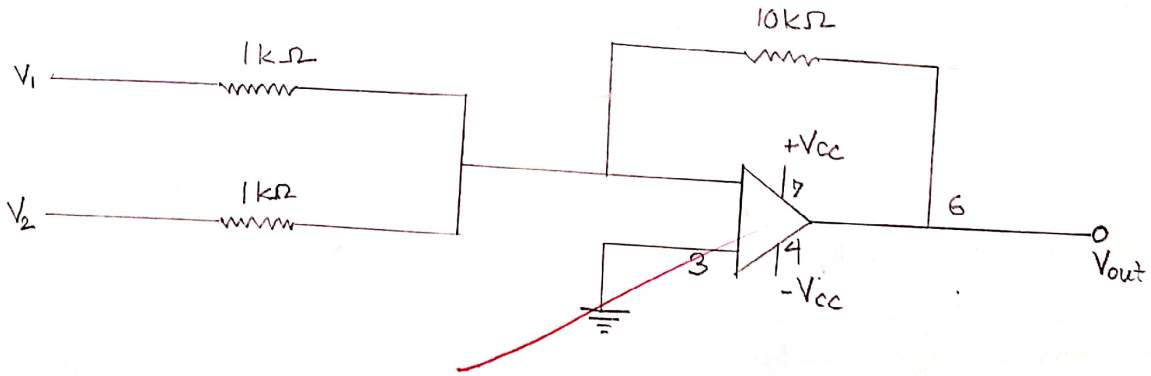


Figure: Summing Amplifier

Gain circuit,

$$\text{Gain } (A_V) = \frac{V_{out}}{V_{in}} = -\frac{R_f}{R_{in}}$$

$$V_{out} = (A_1 \times V_1) + (A_2 \times V_2).$$

Calculation:

1. Inverting Amplifier:-

V_S (V)		V_O	$A_V = \frac{V_O}{V_S}$
Nominal	Measured		
1	1.02	4.61	4.50
2	2.06	9.87	4.19
3	3.91	19.01	4.89

27.11.21

Observation:

i) Observe the output wave from CRO. An inverted and amplified wave from will be observed.

ii) Measure the output voltage from the input and output wave from in the CRO.