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SUBJECT :- INTRODUCTION TO COMPUTING

Q1) Explain and differentiate between analog, digital hybrid and super computers

Answer

Basic for comparison

Analog Computers

Digital Computer

Basic

Computations are carried out employing continuous variation of physical properties

Discrete electrical voltage levels are used to encode input.

Computation

Performed in real-time

large delays can occur.

Accuracy

low

high

Circuitry

Made up of electrical and mechanical components

Consists of a large number of tiny electrical switches

Mechanism

Uses variation of different physical quantities.

Uses binary numbers and binary arithmetic.

Examples

Speedometers, energy meters and traditional washing machine etc

Digital cameras and watches, thermometer scanners, modern computers.

## Hybrid Computer

Hybrid computers are computers that exhibit features of analog computers and digital computer. The digital component normally serves as the controller and provides logical and numerical operations while the analog component often serve as a solver of differential equations and other mathematically complex equations. The first desktop hybrid computing system was the Hycomp 250, released by Packard Bell in 1961.<sup>[11]</sup> Another hybrid computer released by EAI in 1963.<sup>[12]</sup>

## Super Computer

A super computer is a computer with a high level of performance as compared to a general-purpose computer. The performance of a supercomputer is commonly measured in floating-point operations per second [FLOPS] instead of million instruction per second [MIPS]. Since 2007, there are super computer which can perform over  $10^{17}$  FLOPS (a hundred quadrillion FLOPS, 100 peta FLOPS) or world's fastest 500 super computers operating system<sup>[13]</sup>. Additional research is being conducted in the United States, the European Union, Taiwan, Japan, and China to build faster more powerful and technologically superior exascale super computer.

Q2(a) Explain the types of primary and secondary memory in detail: what is ethical hacking: Write down shortcuts keys for copying, deleting some text on MS words.

Answer:-

### Primary Memory

Primary Memory is also known as main memory or may also refer to "Internal memory" and primary storage. All those types of computer memories that are directly accessed by the processor using data bus are called primary memory. That allows a processor to access stores running programs and currently processed data that stored in a memory location.

The use of memories is therefore mandatory in all systems using a microprocessor, including computers. An example of primary memory is RAM and ROM that store programs. These memories are limited in capacity and manufactured by using speed of data accessing is faster than secondary memory. It is more expensive than secondary memory.

## Types of Primary Memory

The word "RAM" stands for random access memory or may also refer to short-term memory. It's called "random" because you can read store data randomly at any time and from any physical location. It is a temporal storage memory. RAM is volatile that only retains all the data as long as computer powered.

### RAM

#### Static RAM

Static RAM is the form of RAM and made with flip flops and used for primary storage. Computer are volatile. It retains data in latch as long as the computer powered. SRAM is more expensive and consumes more power than DRAM. It used as cache memory in a computer system. As compared to DRAM, it is faster compared to DRAM due to the latching arrangement, and they use 6 transistors per data bit as compared to DRAM, which uses one transistor per bit.

#### ROM (Read Only Memory)

ROM is the long time internal memory. ROM is "Non-Volatile Memory" that retains data without the flow of electricity. ROM is an essential chip with permanently written data or programs. It is similar to

Q. to the RAM that is accessed by the CPU. ROM comes with prewritten by the computer manufacture to hold the instructions for booting up the computer.

### • PROM (Programmable Read only Memory)

PROM stands for programmable ROM. It can be programmed only once and read many. Unlike ROM, PROMs retain their contents without the flow of electricity. PROM is also non-volatile memory. The significant difference between a ROM and a PROM is that a ROM comes with pre-written by the computer manufacture whereas PROM manufactured as blank memory. PROM can be programmed by PROM burner and by blowing internal fuses permanently.

### • EPROM (Erasable Programmable)

EPROM is pronounced ee-prom. This memory type retains its contents until it is exposed to intense ultraviolet light that clears its contents. making it possible to reprogram the memory.

• EEPROM (Electrically Erasable Programmable Read Only Memory)

EEPROM can be burned or erased by first electrical (programmed) and then the entire contents of a device or a single byte of a data or erased. To write or erase this memory type you need a device called a PROM burner.

## SECONDARY MEMORY

Secondary Memory is also known as secondary storage. The secondary memory is accessed indirectly via input/output operations. This memory is also called permanent external stable or persistent and cheapness, relative to the RAM and by its permanent appearance.

The CPU does not directly process its content. Firstly copied into RAM and then transferred to CPU. The secondary memory store data that can be easily retrieved only by the main memory and used by the processor. It is slower than RAM but larger storage capacities than primary memory.

Secondary Memory devices are not only convenient for storing backup files, but they also allow computer users to expand their ability to transfer large amount of data to another

Secondary memory devices.

## ETHICAL HACKING

The Certified Ethical Hacker (C|EH) Credentialing and provided by EC-Council is a respected and trusted ethical hacking program in the industry. Since the inception of Certified Ethical Hacker in 2003, the Credential has become one of the best options for industries and companies across the world. The C|EH exam is ANSI 17024 compliant, adding value and credibility to Credential members. It is also listed as a baseline Certification in the US Department of Defense (DOD) Directive 8570 and is a Credentialing and provided by EC-Council is a respected and trusted ethical hacking program in the industry. Since the inception of Certified Ethical Hacker in 2003, the Credential has become one of the best options for industries and companies across the world. The C|EH is ANSI 17024 compliant adding and credibility to Credential members.



# IMPORTANCE OF ETHICAL HACKING

In the dawn of international conflicts, terrorist organizations sending cyber criminals to breach security systems, either to compromise national security features or to extort huge amounts of money by injecting malware and denying access. Resulting in the steady rise of cybercrime. Organizations face the challenges of updating hack-preventing tactics of cybercrime. Installing several technologies to protect their systems before falling victim to international conflicts. Terrorists organizations sending cyber criminals to breach security systems.

6 (b) Write a C code for making a calculator using switch statement.

ANSWER:

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

```
int main () {
```

```
    char operator;
```

```
    double first, second;
```

```
    printf ("Enter an operator (+, -, *, /): ");
```

```
    scanf ("%c", &operator);
```

```
    printf ("Enter two operands: ");
```

```
    scanf ("%lf %lf", &first, &second);
```

```
    switch (operator) {
```

```
        case '+':
```

```
            printf ("%lf + %lf = %lf", first, second, first + second);
```

```
            break;
```

```
        case '-':
```

```
            printf ("%lf - %lf = %lf", first, second, first - second);
```

```
            break;
```

```
        case '*':
```

```
            printf ("%lf * %lf = %lf", first, second, first * second);
```

```
            break;
```

```
        case '/':
```

```
            printf ("%lf / %lf = %lf", first, second, first / second);
```

```
            break;
```

```
        case '!':
```

```
            printf ("%lf ! %lf = %lf", first, second, first * second);
```

```
            break;
```

```
case '!':  
    printf("%d %d\n", first,  
           second, first / second);  
    break;
```

```
if operator doesn't match any default  
printf("Error! operator is not correct");  
}
```

```
return 0;
```

```
}
```

out put

Enter an operator (+, -, \*, /): \*

Enter two operands 1.5

4.5

$1.5 * 4.5 = 6.75$

Q3(a)

1010010 Convert this binary number into hexadecimal.

$$0010 = 0 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 = 2$$

$$0101 = 0 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = 5$$

$$1010010 = 24_{16}$$

Q(b)

1010010 Convert this binary number into octal.

$$1010010$$

by 3 bits

$$010 = 0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 = 2$$

$$010 = 0 \times 2^2 + 1 \times 2^1 + 0 \times 2^0 = 2$$

$$001 = 0 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = 1$$

$$1010010 = 226_8$$