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Semester 5th

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Assignment No (1)

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ASSIGNMENT NO 1.

Q⁽¹⁾ What is the relationship b/w high-level language and machine language :-

Ans :- High-level language program must be translated into machine language before they can be executed. (Machine language instructions are encoded as binary numbers that are meant to be used by a machine, not read or written syntax that is closer to human language.)

Q⁽²⁾ Explain the concept of portability as it applied to programming language.

Ans :- A language whose source program can be compiled and run on a wide variety of computer systems is said to be portable.

Q⁽³⁾ Give the example of an embedded system application.

Ans :- Some examples of embedded system applications are auto mobile fuel and ignition system, air-conditioning control system, security systems, flight control

System, hand-held computers, modems, printer, and other intelligent computer peripherals.

Q4) what is a device driver?

Device drivers are programs that translate general operating system commands into specific references to hardware details that only the manufacturer knows.

Q5) why would a high-level language not be an ideal tool for writing a program that directly accesses a particular brand of printer?

* A high-level language may not provide for direct hardware access. Even if it does, awkward coding techniques must often be used, resulting in possible maintenance problems.

Q6) Translate the following C++ expression to assembly language, using the example presented earlier in this chapter as a guide:

$$X = (Y * 4) + 3$$

Ans :: code for the expression

$$X = (Y * 4) + 3$$

```

mov  eax, Y      ; move Y to EAX
mov  ebx, 4      ; move 4 to EBX
imul ebx         ; EAX = EAX * EBX
add  eax, 3      ; add 3 to EAX
mov  X, eax
mov  X, eax      ; move EAX to X

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Q⁷ In your own words, describe the virtual machine concept?

Ans: Virtual machine concept computers are constructed in layers, so that each layer represented a translation layer from a higher-level instruction set to a lower-level instruction set.

Q¹⁶ Why was unicode invented?

Ans: Unicode is a universal computing standard to represent texts in most writing systems. It was invented to store most of the world's characters. It is started during 1987.

9) In your own word, describe the virtual machine concept.

Ans A virtual machine (VM) is a software program or operating system that not only exhibits the behavior of a separate computer, but is also capable of performing tasks such as running applications and programs like a separate computer.

10) What is the hexadecimal representation of the binary number 1100 1111 0101 0111?

Ans :- $(CF57)_{16}$ Ans

11) What is the binary representation of the hexadecimal number E5B6AED7?

E5B6AED7 ?

Ans :- $(1110 \ 0101 \ 1011 \ 0110 \ 1110 \ 1101 \ 0111)_{2}$

12) What is the unsigned decimal representation of each of the following hexadecimal integers 3A?

Ans 58:

13) what is the sum of binary integer
00001111 + 00001111?

Ans :-

				1	1	1	1
				1	1	1	1
				0	0	0	0

(00011110) sum

14) what is decimal representation of each of the following unsigned binary integer
11111000?

Ans :-

$$1 \times 2^7 + 1 \times 2^6 + 1 \times 2^5 + 1 \times 2^4 + 1 \times 2^3$$

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

=> 128 + 64 + 32 + 16 + 8 + 0 + 0 + 0

=> 128 + 64 + 32 + 16 + 8

=> (248)₁₀

14) Create a truth table to show all possible input and output for the Boolean function described by $\neg(A \vee B)$

Ans

Create a table.

$$\neg(x \vee y)$$

x	$\neg x$	y	$\neg x \vee y$
F	T	F	T
F	T	T	T
T	F	F	F
T	F	T	T

15) what is the value of the Boolean expression $(T \wedge F) \vee T$

Ans

T	F	$T \wedge F$	$(T \wedge F) \vee T$
0	1	0	1
0	1	0	1
1	0	0	0
1	0	0	0

16) what is the decimal representation of the signed binary number 10110101

$$\text{Ans :- } \begin{array}{cccccccc} & 1 & 0 & 1 & 1 & 0 & 1 & 0 & 1 \\ & -128 & 64 & 32 & 16 & 8 & 4 & 2 & 1 \end{array}$$

$$\Rightarrow -128 + 64 + 32 + 16 + 8 + 4 + 2 + 1$$

$$\Rightarrow -128 + 32 + 16 + 4 + 1$$

$$\Rightarrow \boxed{-75} \text{ Ans}$$

17) Convert a 16-bit hexadecimal representation signed number 7F9B to decimal

$$\text{Ans} = 7F9B$$

$$\Rightarrow 7 \times 16^3 + F \times 16^2 + 9 \times 16^1 + B \times 16^0$$

$$\Rightarrow 7 \times 4096 + F \times 256 + 9 \times 16 + 0$$

$$\Rightarrow 7 \times 4096 + 17 \times 256 + 9 \times 16$$

$$\Rightarrow 28672 + 4352 + 144$$

$$\Rightarrow 33168 \text{ Ans}$$

18) What is the 16-bit hexadecimal representation of signed decimal integer -26?

Ans :- 26 \Rightarrow 16 | 26
1 — 10 \Rightarrow -A

26 \Rightarrow 1A

\Rightarrow 1A \Rightarrow 0001 1010

1 1 1 0 0 1 0 1
1 +

1st complement
2nd complement

1 1 1 0 0 1 1 0

↓
E6

\Rightarrow

\Rightarrow -26 = (E6) Ans

