

All Practices Problems

Cloud IT Online

**Practices Problem****C Programming**

In the standard library of C programming language, which of the following header file is designed for basic mathematical operations?

- a) math.h
- b) conio.h
- c) dos.h
- d) stdio.h

Ans. : a

Explanation

math.h is a header file in the standard library designed for basic mathematical operations

Linker generates ___ file.

- a) Object code
- b) Executable code
- c) Assembly code
- d) None of the above.

Ans.:b

Explanation

Linker links the object code of your program and library code to produce executable.

printf("%c", 100);

- a) prints 100
- b) prints ASCII equivalent of 100
- c) prints garbage
- d) none of the above

Ans.: b

`printf ("%d\n", 100); // prints 100`

`printf ("%c \n", 100) / prints "d" the ASCII character represented by 100`

The default parameter passing Mechanism is called as

- a) Call by Value
- b) Call by Reference
- c) Call by Address
- d) Call by Name

Ans.: a

The call by value method of passing arguments to a function copies the actual value of an argument into the formal parameter of the function. In this case, changes made to the parameter inside the function have no effect on the argument. By default, C programming language uses call by value method to pass arguments.

Which of the following has compilation error in C?

- a) int n = 32;
- b) char ch = 65;
- c) float f= (float) 3.2;
- d) none of the above

Ans.: d

All are valid declarations.

Which of the following variable cannot be used by switch-case statement?

- a) char
- b) int
- c) float
- d) string

Ans.: c

Explanation

Switch Case only accepts integer values for case label, float values can't be accepted in case of Switch Case.

What does the following declaration mean?

```
int (*ptr) [10];
```

- a) ptr is an array of pointers of 10 integers.
- b) ptr is a pointer to an array of 10 integers.
- c) ptr is an array of 10 integers.
- d) none of the above.

Ans.: b

Int (*ptr) [10]

Ptr is a pointer to an array of 10 integer

Determine Output?

```
void main()  
{  
    int const *p=5;  
    printf("%d", ++(*p));  
}
```

- a) 6
- b) 5
- c) Garbage Value
- d) Compiler Error

Ans.: d

Explanation: p is a pointer to a "constant integer". We can not change the value of constant. But we tried to change the value of the "constant integer".

'ptr data' is a pointer to a data type. The expression *ptr data++ is evaluated as (in C++):

- a) *(ptr data++)
- b) (*ptr data)++
- c) *(ptr data)++
- d) Depends on compiler

Ans: (a)

What is the output of the following program?

```
main()
{
    char s[20] = "Hello\0Hi";

    printf("%d %d", strlen(s), sizeof(s));
}
```

- a) 5 9
- b) 7 20
- c) 5 20
- d) 8 20

Ans.: c

Explanation

Length of the string is count of character upto '\0'. sizeof – reports the size of the array.

Consider an array representation of an n element binary heap where the elements are stored from index 1 to index n of the array. For the element stored at index i of the array ($i \leq n$), the index of the parent is:

- a) floor $(i+1)/2$
- Ceiling $(i+1)/2$
- Floor $(i/2)$
- Ceiling $(i/2)$

Ans: (c)

The ----- memory allocation function modifies the previous allocated space

- a) calloc() b) free() c) malloc d) realloc()

Ans.: d

malloc () and calloc () are used to allocate dynamic memory.

free () is used to frees allocated memory.

realloc () is used to reallocates or modifies the previous allocated space.

Important advantage of using new and delete operators in C++ is

- a) Allocation of memory
b) Frees the memory previously allocated
c) Initialization of memory easily
d) Allocation of memory and frees the memory previously allocated.

Ans.: d

Data Structure

Heap allocation is required for languages that:

- a) Use dynamic scope rules
b) Support dynamic data structure
c) Support recursion
d) Support recursion and dynamic data structures

Ans: (b)

Explanation:

Heap allocation is required to languages that support dynamic data structure.

A text is made up, of the characters a, b, c, d, e each occurring with the probability 0.11, 0.40, 0.16, 0.09 and 0.24 respectively. The optimal Huffman coding technique will have the average length of:

- a) 2.40
b) 2.16
c) 2.26
d) 2.15

Ans: (b)

The following numbers are inserted into an empty binary search tree in the given order : 10, 1, 3, 5, 15, 12, 16. What is the height of the binary search tree?

- a) 3
b) 4
c) 5
d) 6

Ans: (a)

A list of n strings, each of length n, is sorted into lexicographic order using merge - sort algorithm.

The worst case running time of this computation is:

- a) $O(n \log n)$
- b) $O(n^2 \log n)$
- c) $O(n^2 + \log n)$
- d) $O(n^3)$

Ans: (b)

Explanation:

Since the list contains 'n' string, each of length 'n'. Take 1st character of each string and sort it and place sorted strings into output list, doing this for n times will sort all the strings into one list, so time complexity = $n \cdot (n \log n) = O(n^2 \log n)$

Note: First sort each string individually in list will take $O(n \log n)$ time more.

Big – O estimate for $f(x) = (x + 1) \log(x^2 + 1) + 3x^2$ is given as

- a) $O(x \log x)$
- b) $O(x^2)$
- c) $O(x^3)$
- d) $O(x^2 \log x)$

Ans.: b

Given $f(x) = (x+1) \log(x^2+1) + 3x^2$

Or equal $x \log x^2 + 3x^2$

$= 2x \log x + 3x^2$

$= O(3x^2)$ [$3x^2$ is greater than $2x \log x$]

$= O(x^2)$

Postorder traversal of a given binary search tree T produces following sequence of keys:

3, 5, 7, 9, 4, 17, 16, 20, 18, 15, 14

Which one of the following sequences of keys can be the result of an in-order traversal of the tree T?

- a) 3, 4, 5, 7, 9, 14, 20, 18, 17, 16, 15
- b) 20, 18, 17, 16, 15, 14, 3, 4, 5, 7, 9
- c) 20, 18, 17, 16, 15, 14, 9, 7, 5, 4, 3
- d) 3, 4, 5, 7, 9, 14, 15, 16, 17, 18, 20

Ans: (d)

Dijkstra's algorithm is based on

- a) Divide and conquer paradigm
- b) Dynamic programming
- c) Greedy Approach
- d) Backtracking paradigm

Ans: (c)

Match the following with respect to algorithm paradigms:

List-I

- A. Merge sort
- B. Huffman coding
- C. Optimal polygon triangulation
- D. Subset sum problem

List-II

1. Dynamic programming

2. Greedy approach
3. Divide and conquer
4. Back tracking

Codes:

- | | A | B | C | D |
|----|---|---|---|---|
| a) | 3 | 1 | 2 | 4 |
| b) | 2 | 1 | 4 | 3 |
| c) | 2 | 1 | 3 | 4 |
| d) | 3 | 2 | 1 | 4 |

Ans: (d)

Explanation:

Merge sort based on divide and conquer paradigm.

Huffman coding based on a greedy approach.

Subset sum problem based on back-tracking.

Optimal polygon triangulation based on dynamic programming.

To represent hierarchical relationship between elements, which data structure is suitable?

- a) Dequeue
- b) Priority queue
- c) Tree
- d) All of these

Ans.: c

A binary search tree is a binary tree:

- a) All items in the left subtree are less than root
- b) All items in the right subtree are greater than or equal to the root
- c) Each subtree is itself a binary search
- d) All of the above

Ans.: d

A binary search tree (BST) also known as an ordered binary tree, where the left subtree of a node contains only nodes with keys less than the node's key and right subtree of a node contains only nodes with keys greater than or equal to the node's key. The left and right subtree each must also be a binary search tree.

Leaves of which of the following trees are at the same level?

- a) Binary tree
- b) AVL-tree
- c) B-tree
- d) Expression tree

Ans.: b

A binary tree is a tree data structure in which each node has at most two children, which one referred as the left child and the right child.

In an AVL tree, the heights of the tree child subtrees of any node differ by at most one.

A binary expression tree is a specific kind of a binary tree used to represent expressions.

According to Knuth's definition, a B-tree of order m is a tree which satisfies the following properties:

- ✓ Every node has at most m children.
- ✓ Every non-leaf node (except root) has at least $\lceil m/2 \rceil$ children.
- ✓ The root has at least two children if it is not a leaf node.
- ✓ A non-leaf node with k children contains $(k-1)$ keys.
- ✓ All leaves appear in the same level.

It can not be guaranteed in binary tree, AVL tree and expression tree.

The time complexities of some standard graph algorithms are given. Match each algorithm with its time complexity ? (n and m are no. of nodes and edges respectively)

List-I

- A. Bellman Ford algorithm
- B. Kruskals algorithm
- C. Floyd Warshall algorithm
- D. Topological sorting

List-II

- 1. $O(m \log n)$
- 2. $O(n^3)$
- 3. $O(mn)$
- 4. $O(m+n)$

Code :

A B C D

- (a) 3 1 2 4
- (b) 2 4 3 1
- (c) 3 4 1 2
- (d) 2 1 3 4

Ans.: a

Number of binary trees formed with 5 nodes are

- a) 32 b) 36 c) 10 d) 42

Ans.: d

Which of the following is true for computation time in insertion, deletion and finding maximum and minimum element in a sorted array?

- a) Insertion - $O(1)$, Deletion - $O(1)$, Maximum - $O(1)$, Minimum - $O(1)$.
- b) Insertion - $O(1)$, Deletion - $O(1)$, Maximum - $O(n)$, Minimum - $O(n)$.
- c) Insertion - $O(n)$, Deletion - $O(n)$, Maximum - $O(1)$, Minimum - $O(1)$.
- d) Insertion - $O(n)$, Deletion - $O(n)$, Maximum - $O(n)$, Minimum - $O(n)$.

Ans: (c)

Explanation:

For sorted array:

Insertion will take = $O(n)$

Deletion will take = $O(n)$

Maximum will take = $O(1)$

Minimum will take = $O(1)$

The seven elements A, B, C, D, E, F and G are pushed onto a stack in reverse order, i.e., starting from G. The stack is popped five times and each element is inserted into a queue.

Two elements are deleted from the queue and pushed back onto the stack. Now, one element is popped from the stack. The popped item is _____.

- a) A
- b) B
- c) F
- d) G

Ans: (b)

Which of the following statements is false?

- a) Optimal binary search tree construction can be performed efficiently using dynamic programming.
- b) Breadth-first search cannot be used to find the connected components of a graph.
- c) Given the prefix and postfix walks of a binary tree, the tree cannot be re-constructed uniquely.
- d) Depth-first-search can be used to find the connected components of a graph.

Ans: (b)

The number of different binary trees with 6 nodes is _____.

- a) 6
- b) 42
- c) 132
- d) 256

Ans: (c)

What is the value of the postfix expression?

$abcd+.*$ (where $a=8, b=4, c=2$ and $d=5$)

- a) $-3/8$ b) $-8/3$ c) 24 d) -24

Ans.: d

Given, postfix expression:

$= abcd+.*$

$= 8\ 4\ 2\ 5\ +\ -\ *$

$= 8\ 4\ 7\ -.*$

$= 8\ -3\ *$

$= -24$

Which of the following is not an inherent application of stack?

- a) Implementation of recursion
- b) Evaluation of a postfix expression
- c) Job scheduling
- d) Reverse a string

Ans: (c)

In link state routing algorithm after construction of link state packets, new routes are computed using;

- a) DES algorithm
 - b) Dijkstra's algorithm
-

- c) RSA algorithm
- d) Packets

Ans: (b)

Which of the following is not a Clustering method?

- a) K-Mean method
- b) Self Organizing feature map method
- c) K-nearest neighbor method
- d) Agglomerative method

Ans: (c)

Networking

If a file consisting of 50,000 characters takes 40 seconds to send, then the data rate is

- a) 1 kbps
- b) 1.25 kbps
- c) 2 kbps
- d) 10 kbps

Ans: (d)

Match the following:

- | | | |
|----|--------------------|-----------------------|
| | List-1 | List-2 |
| A. | Data link layer | 1. Encryption |
| B. | Network layer | 2. Connection control |
| C. | Transport layer | 3. Routing |
| D. | Presentation layer | 4. Framing |

Codes:

- | | A | B | C | D |
|----|---|---|---|---|
| a. | 4 | 3 | 1 | 2 |
| b. | 3 | 4 | 2 | 1 |
| c. | 4 | 2 | 3 | 1 |
| d. | 4 | 3 | 2 | 1 |

Ans: (d)

Explanation:

- . Data link layer-Framing
- . Network layer-Routing
- . Transport layer-Connection control
- . Presentation layer-Encryption

Which of the following device and takes data sent from one network device and forwards it to the destination node based on MAC address?

- a) Hub
- b) Modem
- c) Switch
- d) Gateway

Ans: (c)

_____ do not take their decisions on measurements or estimates of the current traffic and topology.

- a) Static algorithms

- b) Adaptive algorithms
- c) Non-adaptive algorithms
- d) Recursive algorithms

Ans: (c)

Which of the following layers of the OSI Reference model is also called end-to-end layer?

- a) Network layer
- b) Data Link layer
- c) Session layer
- d) Transport layer

Ans: (d)

Explanation:

Data link layer: Node to Node

Network layer: Host to Host

Transport layer: End to End

In a packet switching network, if the message size is 48 bytes and each packet contains a header of 3 bytes. If 24 packets are required to transmit the message, the packet size is ____

- a) 2 bytes
- b) 1 byte
- c) 4 bytes
- d) 5 bytes

Ans: (d)

Match the following Layers and Protocols for a user browsing with SSL:

	List-1	List-2
A.	Application of layer	1. TCP
B.	Transport layer	2. IP
C.	Network layer	3. PPP
D.	Data Link layer	4. HTTP

Codes:

- | | A | B | C | D |
|----|---|---|---|---|
| a) | 4 | 1 | 2 | 3 |
| b) | 3 | 2 | 1 | 4 |
| c) | 2 | 3 | 4 | 1 |
| d) | 3 | 1 | 4 | 2 |

Ans: (a)

Explanation:

- ✓ **HTTP** is an application layer protocol.
- ✓ **TCP** is a transport layer protocol.
- ✓ **IP** is a network layer protocol.
- ✓ **PPP** is a data link layer protocol.

Match the following:

List-1

- A. Line coding
 - B. Block coding
 - C. Scrambling
 - D. Pulse code modulation
-

List-2

1. A technique to change analog signals to digital data.
2. Provides synchronization without increasing the number of bits.
3. Process of converting digital data to digital signal.
4. Provides redundancy to ensure synchronization and inherits error detection.

Codes:

- | | A | B | C | D |
|----|---|---|---|---|
| a) | 4 | 3 | 2 | 1 |
| b) | 3 | 4 | 2 | 1 |
| c) | 1 | 3 | 2 | 4 |
| d) | 2 | 1 | 4 | 3 |

Ans: (b)

Match the following:

List-I

- A. Applications layer
- B. Transport layer
- C. Network layer
- D. Data link layer

List-II

1. TCP
2. HDLC
3. HTTP
4. BGP

Code :

- | | A | B | C | D |
|-----|---|---|---|---|
| (a) | 2 | 1 | 4 | 3 |
| (b) | 3 | 4 | 1 | 2 |
| (c) | 3 | 1 | 4 | 2 |
| (d) | 2 | 4 | 1 | 3 |

Ans.: c**HTTP: is a application layer protocol****TCP: is transport layer protocol****BGP: Border Gateway Protocol (BGP) is a network layer protocol****HDLC: High-level Data Link Control (HDLC) is data link layer protocol.**

In classful addressing, an ip address 123.23.156.4 belongs to ----- class format.

- a.
- A**
- b)
- B**
- c)
- C**
- d)
- D**

Ans. a

Networks that use different technologies can be connected by using

- a) Packets
- b) Bridges
- c) Switches
- d) Routers

Ans.: d

Switch are hardware based and bridges are software based both works upto layer 2.

Packet is PDU (protocol data unit) at layer 3 of OSI model.

A router is a networking device that forwards data packets between computer networks.

Routers performs the traffic directing functions on the internet. A data packet is typically forwarded from one router to another through the networks that consitute the internetwork until it reaches its destination node. Router works at layer 3 of OSI model.

Both hosts and routers are TCP/IP protocol software. However, routers do not use protocol from all layers. The layer for which protocol software is not needed by a router is

- a) Layer-5 (Application)
- b) Layer- 1 (Physical)
- c) Layer-3 (Internet)
- d) Layer-2 (Network Interface)

Ans.:a

Routers work upto layer 3 of TCP/IP model means physical, data link and network layer.

Decryption and encryption of data are the responsibility o which of the following layer?

- a) Physical layer
- b) Data link layer
- c) Presentation Layer
- d) Session Layer

Ans. c

Services by Presentation layer:

- ✓ Data conversion
- ✓ Character code translation
- ✓ Compression
- ✓ Encryption and decryption

Services by Session layer:

- ✓ Authentication
- ✓ Authorization
- ✓ Session restoration (checking and recovery)

Which Layer of OSI reference model uses the ICMP (Internet Control Message Protocol)?

- a) Transport layer
- b) Data Link Layer
- c) Network Layer
- d) Application Layer

Ans.: c

In 3G network, W-CDMA is also known as UMTS.

The minimum spectrum allocation required for W-CDMA is _____.

- a) 2 MHz
- b) 20KHz
- c) 5KHz
- d) 5MHz

Ans: (d)

A pure ALOHA Network transmit 200 bit frames using a shared channel with 200 Kbps bandwidth. If the system (all stations put together) produces 500 frames per second, then the throughput of the system is _____.

- a) 0.384
- b) 0.184
- c) 0.286
- d) 0.586

Ans: (b)

In a fully- connected mesh network with 10 computers, a total ____ number of cables are required and ____ number of ports is required for each device.

- a) 40, 9
- b) 45, 10
- c) 45, 9
- d) 50, 10

Ans: (c)

When data and acknowledgment are sent in the same frame, this is called as

a) Piggy packing b) Piggy backing c) Back packing d) Good packing

Ans.: b

An analog signal carries 4 bits in each signal unit. If 1000 signal units are sent per second, then baud rate and bit rate of the signal are-----and-----

- a) 4000 bauds / sec & 1000 bps
- b) 2000 bauds / sec & 1000 bps
- c) 1000 bauds / sec & 500 bps
- d) 1000 bauds / sec & 4000 bps

Ans.: d

Bit rate is the number of bits per second.

Baud rate is the number of signal units per second. Baud rate is less than or equal to the bit rate.

Baud rate=1000 baud / sec

Bit rate = 1000 x 4 = 4000 bps

A subset of a network that includes all the routers but contains no loops is called _____

- a) spanning tree
- b) spider structure
- c) spider tree
- d) special tree

Ans :(a)

Explanation:

Spanning tree protocol (STP) is a network protocol that creates a loop free logical topology for ethernet networks. It is a layer 2 protocol that runs on bridges and switches. The main purpose of STP is to ensure that you do not create loops when you have redundant paths in your network.

Phase Shift Keying (PSK) Method is used to modulate digital signal at 9600 bps using 16 level. Find the line signals and speed (i.e. modulation rate).

- a) 2400 bauds b) 1200 bauds
c) 4800 bauds d) 9600 bauds

Ans.: a

Explanation:

In Phase Shift Keying (PSK) using 16 level = 2^4

Means 4 bits needed for signal unit.

Given, bit rate = 9600 bps

So, baud signal rate

$$=9600/4=2400\text{bauds/s}$$

DHCP uses UDP port _____ for sending data to the server.

- a) 66
b) 67
c) 68
d) 69

Ans :(b)

Explanation:

67 is the UDP port number that is used as the destination port of a server. Whereas UDP port number 68 is used by the client.

What is the main advantage of UDP?

- a) More overload
b) Reliable
c) Low overhead
d) Fast

Ans :(c)

Explanation:

As UDP does not provide assurance of delivery of packet, reliability and other services, the overhead taken to provide these services is reduced in UDP's operation. Thus, UDP provides low overhead and higher speed.

What is the header size of a UDP packet?

- a) 8 bytes
b) 8 bits
c) 16 bytes
d) 124 bytes

Ans :(a)

Explanation:

The fixed size of the UDP packet header is 8 bytes. It contains four two-byte fields: Source port address, Destination port address, Length of packet, and checksum.

First address in a block is used as network address that represents the _____

- a) Class Network
b) Entity
-

- c) Organization
- d) Codes

Ans :(c)

Explanation:

First address in a block is used as a network address that represents the organization. The network address can be found by AND'ing any address in the block by the default mask. The last address in a block represents the broadcast address.

IPv6 does not use _____ type of address.

- a) broadcast
- b) multicast
- c) anycast
- d) unicast

Ans :(a)

Explanation:

There is no concept of broadcast address in IPv6. Instead, there is an anycast address in IPv6 which allows sending messages to a group of devices but not all devices in a network. Anycast address is not standardized in IPv4.

Which of the following IP address class is a multicast address?

- b) Class A
- b) Class B
- c) Class C
- d) Class D

The application-level protocol in which a few manager stations control a set of agents is called _____

- a) HTML
- b) TCP
- c) SNMP
- d) SNMP/IP

Ans :(c)

Explanation:

SNMP stands for Simple Network Management Protocol. It is an application-level protocol in which a few manager stations control a set of agents. It is used under the TCP/IP protocol suite and is used for managing devices on the internet.

To use a Simple Network Management System, we need _____

- a) Servers
- b) IP
- c) Protocols
- d) Rules

Ans :(d)

Explanation:

Rules are a collection of expression containing parameters to observe the attributes of the user's device, and then execute some actions. It specifies the parameters for the managed objects inside the application and performs operations that would support the expression. The input of a rule may be many expressions or even a single expression that end in an output of single object invoking some action.

If you wanted to have 12 subnets with a Class C network ID, which subnet mask would you use?

- a) 255.255.255.252
- b) 255.255.255.255
- c) 255.255.255.240
- d) 255.255.255.248

Ans :(c)

Explanation:

If you have eight networks and each requires 10 hosts, you would use the Class C mask of 255.255.255.240. Why? Because 240 in binary is 11110000, which means you have four subnet bits and four host bits. Using our math, we'd get the following:

$2^4 - 2 = 14$ subnets

$2^4 - 2 = 14$ hosts.

Which of the following explains Cookies nature?

- a) Non Volatile
- b) Volatile
- c) Intransient
- d) Transient

Ans :(d)

Explanation:

Cookies are transient by default; the values they store last for the duration of the web browser session but are lost when the user exits the browser. While the browsing session is active the cookie stores the user values in the user's storage itself and accesses them.

Microprocessor

In 8085 microprocessor the address bus is of _____ bits.

- a) 4
- b) 8
- c) 16
- d) 32

Ans: (c)

Explanation:

8085 microprocessor has an address bus of size 16 bits.

In the architecture of 8085 microprocessor matches the following;

List-I

- A) Processing Unit
- B) Instruction Unit
- C) Storage and Interface Unit

List-II

- 1) Interrupt
- 2) General purpose register
- 3) ALU
- 4) Timing and Control

Codes:

- A
- B
- C

- a) 4 1 2
 b) 3 4 2
 c) 2 3 1
 d) 1 2 4

Ans:(b)

Explanation:

Processing unit-Arithmetic logic unit

Instruction unit-Timing and signal

Storage and interface unit-General purpose register.

Which of the following addressing modes is best suited to access elements of array contiguous memory locations?

- a) Indexed addressing mode
 b) Base Register addressing mode
 c) Relative addressing mode
 d) Displacement mode

Ans: (a)

In __ addressing mode, the operands are stored in the memory. The address of the corresponding memory location is given in a register which is specified in the instruction.

- a) Register direct
 b) Register indirect
 c) Base indexed
 d) Displacement

Ans: (b)

8085 microprocessor has ___ bit ALU.

- a) 32
 b) 16
 c) 8
 d) 4

Ans: (c)

A machine language instruction format consists of

- a) Operand field
 b) Operation code field
 c) Operation code field & operand field
 d) none of the mentioned

Ans: (c)

In a machine instruction format, S-bit is the

- a) status bit
 b) sign bit
 c) sign extension bit
 d) none of the mentioned

Ans: (c)

Match the following :

List-I	List-II
a. Indexed	i. is not used when an operand is moved

Addressing	from memory into a register or from a register to memory.
b. Direct Addressing	ii. Memory address is computed by adding up two registers plus an (optional) offset.
c. Register Addressing	iii. Addressing memory by giving a register plus a content offset.
d. Base-Indexed Addressing	iv. can only be used to access global variables whose address is known at compile time.

Codes :

- a b c d
- a) ii i iv iii
 b) ii iv I iii
 c) iii iv i ii
 d) iii i iv ii

Ans.: c

Identify the addressing modes of below instructions and match them :

- | | |
|--------|-------------------------|
| List-I | List-II |
| A. ADI | 1. Immediate addressing |
| B. STA | 2. Direct addressing |
| C. CMA | 3. Implied addressing |
| D. SUB | 4. Register addressing |

Codes:

- A B C D
- a) 1 2 3 4
 b) 2 1 4 3
 c) 3 2 1 4
 d) 4 3 2 1

Ans.: a

ADI means add immediate, so it is immediate addressing.

STA means copy content of accumulator to the memory location this is related with direct addressing.

CMA means to complement the content of the accumulator. It's related with implied addressing.

SUB is subtraction, it's related to register addressing.

While programming for any type of interrupt, the interrupt vector table is set

- a) externally
 b) through a program
 c) either externally or through the program
 d) externally and through the program

Ans: (c)

Explanation:

The programmer must, either externally or through the program, set the interrupt vector table for that type preferably with the CS and IP addresses of the interrupt service routine.

The technique that is used to pass the data or parameter to procedures in assembly language program is by using

- a) global declared variable
- b) registers
- c) stack
- d) all of the mentioned

Ans: (d)

Explanation:

The techniques that are used to pass the data or parameter to procedures are by using global declared variable, registers of CPU, memory locations, stack, PUBLIC & EXTRN.

The instructions which after execution transfer control to the next instruction in the sequence are called

- a) Sequential control flow instructions
- b) control transfer instructions
- c) Sequential control flow & control transfer instructions
- d) none of the mentioned

Ans: (a)

Explanation:

The sequential control flow instructions follow sequence order in their execution.

Which of the following is not a data copy/transfer instruction?

- a) MOV
- b) PUSH
- c) DAS
- d) POP

Ans: (c)

Explanation:

DAS (Decimal Adjust after Subtraction) is an arithmetic instruction.

In PUSH instruction, after each execution of the instruction, the stack pointer is

- a) incremented by 1
- b) decremented by 1
- c) incremented by 2
- d) decremented by 2

Ans: (d)

Explanation:

The actual current stack-top is always occupied by the previously pushed data. So, the push operation decrements SP by 2 and then stores the two bytes contents of the operand onto the stack.

The instructions that are used for reading an input port and writing an output port respectively are

- a) MOV, XCHG
 - b) MOV, IN
 - c) IN, MOV
 - d) IN, OUT
-

Ans: (d)

Explanation:

The address of the input/output port may be specified directly or indirectly.

Example for input port: IN AX, DX; This instruction reads data from a 16-bit port whose address is in DX and stores it in AX

Example for output port: OUT 03H, AL; This sends data available in AL to a port whose address is 03H.

The instruction that pushes the flag register on to the stack is

- a) PUSH
- b) POP
- c) PUSHF
- d) POPF

Database Management System

Which of the following is not a type of Database Management System?

- a) Hierarchical
- b) Network
- c) Relational
- d) Sequential

Ans.: d

There are four structural types of database management systems.

- ✓ Hierarchical database.
- ✓ Network database.
- ✓ Relational database.
- ✓ Object oriented database.

But sequential is not a database model.

If every non-key attribute is functionally dependent on the primary key, then the relation is in

- a) First normal form
- b) Second normal form
- c) Third normal form
- d) Fourth normal form

Ans: (b)

Which of the following is/are true with reference to 'view' in DBMS?

- A. A 'view' is a special stored procedure executed when a certain event occurs.
- B. A 'view' is a virtual table, which occurs after executing a pre-compiled query.

Code:

- a) Only (A) is true
 - b) Only (B) is true
 - c) Both (A) and (B) are true
 - d) Neither (A) or (B) are true
-

Ans: (b)

In SQL, _____ is an Aggregate function.

- a) SELECT
- b) CREAT
- c) AVG
- d) MODIFY

Ans: (c)

Which level of Abstraction describes wha data are stored in the Database?

- a) Physical level
- b) View Level
- c) Abstraction level
- d) Logical level

Ans.: d

Match the following with respect to RDBMS:

List-1

- A. Entity integrity
- B. Domain integrity
- C. Referential integrity
- D. User Defined integrity

List-2

- 1. Enforces some specific business rules that do not fall into entity or domain.
- 2. Rows can't be deleted which are used by other records.
- 3. Enforces valid entries for a column
- 4. No duplicate rows in a table.

Code:

- | | A | B | C | D |
|----|---|---|---|---|
| A) | 3 | 4 | 1 | 2 |
| b) | 4 | 3 | 2 | 1 |
| c) | 4 | 2 | 3 | 1 |
| d) | 2 | 3 | 4 | 1 |

Ans: (b)

Explanation:

. **Entity integrity** is the mechanism the system provides to maintain primary keys. Also ensures the primary key of a row is unique and it does not match the primary key of any other row in the table.

. **Domain integrity** specifies that all columns in a relational database must be declared upon a defined domain i.e. enforce valid entries for a domain.

. **Referential integrity** is RDBMS concept which says the relationship between tables must be consistent i.e. any foreign key that is referenced by the foreign key. Also force that rows can't be deleted which are used by other records.

. **User defined integrity** enforce some specific business rules that do not fall into entity or domain.

In RDBMS, different classes of relations are created using _____ technique to prevent modification anomalies.

- a) Functional Dependencies
 - b) Data integrity
-

- c) Referential integrity
- d) Normal Forms

Ans: (d)

Based on the cardinality ratio and participation----- associated with a relationship type, choose either the Foreign Key Design, the Cross Referencing Design or Mutual Referencing Design.

- a) Entity b) Constraints
- c) Rules d) Keys

Ans. b

_____ SQL command changes one or more fields in a record.

- a) LOOL_UP
- b) INSERT
- c) MODIFY
- d) CHANGE

Ans: (c)

Which one is correct w.r.t. RDBMS?

- a) Primary key super key candidate key
- b) Primary key candidate key super key
- c) Super key candidate key primary key
- d) Super key primary key candidate key

Ans:(b)

An attribute A of data type varchar (20) has value 'Ram' and the attribute B of data type char (20) has value 'Sita' in oracle. The attribute A has _____ memory spaces and B has _____ memory spaces.

- a) 20, 20
- b) 3, 20
- c) 3, 4
- d) 20, 4

Ans: (b)

Explanation:

Varchar (20): Variable size character which can store character of size 0 to 20 i.e., almost 20 character, if character less than 20 then memory space taken by char = | Number of characters |.

Char(20): Fixed size character, i.e., size either less or more it can store 20 characters if character size less than 20 then till 20 memory space padding is stored, but more than 20 then character is stored till 20 and rest is skipped.

So, |Sita| = 20 (with 16 memory space is padding).

9) Integrity constraints ensure that changes made to the database by authorised users do not result in loss of data consistency. Which of the following statements(s) is (are) true w.r.t. The examples of integrity constraints?

- 1. An instructor Id. No. cannot be null, provided Instructor Id No. being primary key.
 - 2. No two citizens have the same Adhar-Id.
 - 3. Budget of a company must be zero.
- a. (1), (2) and (3) are true.
 - b. (1) false, (2) and (3) are true.

- c. (1) and (2) are true; (3) false.
 d. (1), (2) and (3) are false.

Ans: (c)

Explanation:

According to **integrity constraints** no two records can have the same values and primary key value can not be null (0). So, here Instructor id, which is the primary key cannot be null. Since Adhar is also unique for two people so two citizens cannot have unique for two people so two citizens cannot have the same adhar-id, But the budget of the company cannot be null, since the company exists so the budget value must be non-null.

In RDBMS, the constraint that no key attribute (column) may be NULL is referred to as:

- a) Referential integrity
 b) Multi-valued dependency
 c) Entity Integrity
 d) Functional dependency

Ans: (c)

Which of the following creates a temporary relation for the query on which it is defined?

- a) With
 b) From
 c) Where
 d) Select

Ans: (a)

Explanation:

The with clause provides a way of defining a temporary relation whose definition is available only to the query in which the with clause occurs.

Consider the following schemas :

Branch = (Branch-name, Assets, Branch-city)

Customer = (Customer-name, Bank_name, Customer-city)

Borrow = (Branch_name, loan_number, customer account_number)

Deposit = (Branch-name, Accountnumber, Customer_name, Balance)

Using relational Algebra, the Query that finds customers who have balance more than 10,000 is

- a) $\pi_{\text{customer_name}} (\sigma_{\text{balance} > 10000}(\text{Deposit}))$
 b) $\sigma_{\text{customer_name}} (\sigma_{\text{balance} > 10000}(\text{Deposit}))$
 c) $\pi_{\text{customer_name}} (\sigma_{\text{balance} > 10000}(\text{Borrow}))$
 d) $\sigma_{\text{customer_name}} (\pi_{\text{balance} > 10000}(\text{Borrow}))$

Ans.: a

Using relational algebra, the query that finds Customers who have balance more than 10,000 is:

- (i) From deposit
 (ii) Apply condition balance > 10,000
 (iii) Project customer name

Therefore,

$\pi_{\text{customer_name}} (\sigma_{\text{balance} > 10000}(\text{Deposit}))$

Consider the table Student (stuid, name, course, marks). Which one of the following two queries is correct to find the highest marks student in course 5 ?

- Q.1. Select S.stuid From student S Where not exists
(select * from student e where e course = '5' and e marks \geq s marks)
Q.2. Select s.stu.id From student S Where s · marks > any
(select distinct marks from student S where s · course = 5)

- a) Q. 1
b) Q. 2
c) Both Q. 1 and Q. 2
d) Neither Q. 1 nor Q. 2

Both the queries are not correct since, first query will not retrieve any tuple since N condition is used. Second query gives stuid of students whose marks are greater than any who is student taking course 5.

Correct queries should be as following:

Q: Select S.stuid From student S where not exist (select * From student e where e.course%='5' and e.marks > S.marks)

Q,: Select S.stuid From student S where S.marks 2 All (select distinct marks From student S where S.course = '5')

Which of the following creates a virtual relation for storing the query?

- a) Function
b) View
c) Procedure
d) None of the mentioned

Ans: (b)

Explanation:

Any such relation that is not part of the logical model, but is made visible to a user as a virtual relation, is called a view.

What type of join is needed when you wish to include rows that do not have matching values?

- a) Equal-join
b) Natural join
c) Outer join
d) All of the mentioned

Ans: (c)

Explanation:

An outer join does not require each record in the two joined tables to have a matching record.

The deadlock state can be changed back to stable state by using _____ statement.

- a) Commit
b) Rollback
c) Savepoint
d) Deadlock

Ans: (b)

Explanation:

Rollback is used to rollback to the point before lock is obtained.

The situation where the lock waits only for a specified amount of time for another lock to be released is

- a) Lock timeout
- b) Wait-wound
- c) Timeout
- d) Wait

Ans: (a)

Explanation:

The timeout scheme is particularly easy to implement, and works well if transactions are short and if longwaits are likely to be due to deadlocks.

If we want to retain all duplicates, we must write _____ in place of union.

- a) Union all
- b) Union some
- c) Intersect all
- d) Intersect some

Ans: (a)

A _____ is a special kind of a stored procedure that executes in response to certain action on the table like insertion, deletion or update of data.

- a) Procedures
- b) Triggers
- c) Functions
- d) None of the mentioned

Ans: (b)

Which of the following is NOT an Oracle-supported trigger?

- a) BEFORE
- b) DURING
- c) AFTER
- d) INSTEAD OF

Ans: (b)

_____ refers to the ability of the system to recover committed transaction updates if either the system or the storage media fails.

- a) Isolation
- b) Atomicity
- c) Consistency
- d) Durability

Ans: (d)

Explanation:

In database systems, durability is the ACID property which guarantees that transactions that have committed will survive permanently.

Which of the following object types below cannot be replicated?

- a) Data
 - b) Trigger
 - c) View
 - d) Sequence
-

Ans: (d)

Explanation:

Sequence is a series of items which is like a unique index.

Software Engineering

What is the normal order of activities in which traditional software testing is organized?

- a) Integration Testing
- b) System Testing
- c) Unit Testing
- d) Validation Testing

Code:

- a. 3, 1, 2, 4
- b. 3, 1, 4, 2
- c. 4, 3, 2, 1
- d. 2, 4, 1, 3

Ans: (d)

Which of the following testing techniques ensures that the software product runs correctly after the changes during maintenance?

- a) Path Testing
- b) Integration Testing
- c) Unit Testing
- d) Regression Testing

Ans: (d)

The factors that determine the quality of a software system are

- a) correctness, reliability
- b) efficiency, usability, maintainability
- c) testability, portability, accuracy, error tolerances, expendability, access control, audit.
- d) All of the above

Ans.: d

Software quality model has main quality characteristics: Functionality, reliability. Usability, efficiency, maintainability and portability. So, all are given to determine the quality of a software system.

Reliability of software is directly dependent

- a) quality of the design
- b) number of errors present
- c) software engineers experience
- d) user requirement

Ans.: b

Software reliability is measured in terms of MTBF(mean time between failures). Reliability of software is a number between 0 and 1. Reliability increases when errors or bugs from the program are removed.

Main aim of software engineering is to produce

- (a) program
- (b) software
- (c) within budget
- (d) software within budget in the given schedule

Ans. : d

Goal of software engineering is to produce program software within budget and in the given schedule, Software engineering aims to deliver fault free software, on time and within budget, meeting the requirements and needs of the client. The software is developed keeping in mind the future maintenance that is involved.

Are we building the right product? This statement refers to

- a) Verification
- b) Validation
- c) Testing
- d) Software quality assurance

Ans.: b

Validation: Are we building the right product?

Verification: Are we building the product right?

The ___ model is preferred for software development when the requirements are not clear.

- a) Rapid Application Development
- b) Rational Unified Process
- c) Evolutionary Model
- d) Waterfall Model

Ans: (c)

Which of the following is not included in the waterfall model?

- a) Requirement analysis
- b) Risk analysis
- c) Design
- d) Coding

Ans: (b)

Explanation:

The **waterfall model** is a sequential (non-iterative) process, it includes requirements, design, implementation, verification and maintenance. **Risk analysis** used in spiral models.

Debugging is:

- a) creating program code
- b) finding and correcting errors in the program code
- c) identifying the task to be computerized
- d) creating the algorithm

Ans: (b)

Explanation:

Debugging is a methodical process of finding and reducing the number of bugs, or defects, in a computer program or a piece of electronic hardware, thus making it behave as expected.

Which two models don't allow defining requirements early in the cycle?

- a) Waterfall & RAD
- b) Prototyping & Spiral
- c) Prototyping & RAD
- d) Waterfall & Spiral

Ans: (b)

Explanation:

Prototyping Model starts with a requirements analysis phase including techniques like FAST, QFD, Brainstorming. In case of Spiral model the first phase involves activities related to customer communication like determining objectives.

What is Cyclomatic complexity?

- a) Black box testing
- b) White box testing
- c) Yellow box testing
- d) Green box testing

Ans: (b)

Explanation:

Cyclomatic complexity measures the amount of decision logic in the program module. Cyclomatic complexity gives the minimum number of paths that can generate all possible paths through the module.

Equivalence partitioning is a _____ method that divides the input domain of a program into classes of data from which test cases can be derived

- a) White-box testing
- b) Black-box testing
- c) Orthogonal array testing
- d) Stress testing

Ans.: b

Acceptance testing is also known as

- a) Grey box testing
- b) White box testing
- c) Alpha Testing
- d) Beta testing

Ans: (d)

Explanation:

Acceptance testing is a test conducted to determine if the requirements of a specification or contract are met and is done by users.

Which of the following is non-functional testing?

- a) Black box testing
 - b) Performance testing
 - c) Unit testing
 - d) None of the mentioned
-

Ans: (b)

Explanation:

Performance testing is in general testing performed to determine how a system performs in terms of responsiveness and stability under a particular workload.

Which one of the following is not a step of requirement engineering?

- a) Requirement elicitation
- b) Requirement analysis
- c) Requirement design
- d) Requirement documentation

Ans.: c

Testing of software with actual data and in actual environment is called

- a) Alpha testing
- b) Beta testing
- c) Regression testing
- d) None of the above

Ans.: b

A beta test is the second phase of software testing in which a sampling of the intended the audience tries the product-out.

Alpha test meant the first phase of testing in a software development process.

Which one of the following is a requirement that fits in a developer's module ?

- a) Availability
- b) Testability
- c) Usability
- d) Flexibility

Ans: (b)

Explanation:

A developer needs to test his product before launching it into the market.

The SRS document is also known as _____ specification.

- a) black-box
- b) white-box
- c) grey-box
- d) none of the mentioned

Ans: (a)

Explanation:

The system is considered as a black box whose internal details are not known that is, only its visible external (input/output) behavior is documented.

Which one of the following is not a software process quality?

- a) Productivity
 - b) Portability
 - c) Timeliness
 - d) Visibility
-

Ans: (b)

Explanation:

Portability is a software product quality which means software can run on different hardware platforms or software environments.

A company is developing an advanced version of their current software available in the market, what model approach would they prefer ?

- a) RAD
- b) Iterative Enhancement
- c) Both RAD & Iterative Enhancement
- d) Spiral

Ans: (c)

FAST stands for

- a) Functional Application Specification Technique
- b) Fast Application Specification Technique
- c) Facilitated Application Specification Technique
- d) None of the mentioned

Ans: (c)

Beta testing is done at

- a) User's end
- b) Developer's end
- c) User's & Developer's end
- d) None of the mentioned

Ans: (a)

Explanation:

In beta testing the user evaluates the product and gives his feedback.

What DFD notation is represented by the Rectangle?

- a) Transform
- b) Data Store
- c) Function
- d) None of the mentioned

Ans: (b)

Which one of the following is not an agile method?

- a) XP
- b) 4GT
- c) AUP
- d) All of the mentioned

Ans: (b)

How many phases are there in Scrum?

- a) Two
- b) Three
- c) Four
- d) Scrum is an agile method which means it does not have phases

Ans: (b)

Explanation:

There are three phases in Scrum. The initial phase is an outline planning phase followed by a series of sprint cycles and project closure phase.

The spiral model has two dimensions namely _____ and _____

- a) diagonal, angular
- b) radial, perpendicular
- c) radial, angular
- d) diagonal, perpendicular

Ans: (c)

Explanation:

The radial dimension of the model represents the cumulative costs and the angular dimension represents the progress made in completing each cycle. Each loop of the spiral from X-axis clockwise through 360° represents one phase.

Which of the following is a design pattern?

- a) Behavioral
- b) Structural
- c) Abstract Factory
- d) All of the mentioned

Ans: (d)

Computer Architecture

Pipelining improves performance by:

- a) Decreasing instruction latency
- b) Eliminating data hazards
- c) Exploiting instruction level parallelism
- d) Decreasing the cache miss rate

Ans: (c)

Assume that we need to download text documents at the rate of 100 pages per minute. A page is an average of 24 lines with 80 characters in each line and each character requires 8 bits. Then the required bit rate of the channel is _____.

- a) 1.636 Kbps
- b) 1.636 Mbps
- c) 3.272 Mbps
- d) 3.272 Kbps

Ans: (*)

The small extremely fast, RAM's are called as _____

- a) Cache
- b) Heaps
- c) Accumulators
- d) Stacks

Ans: (a)

Explanation:

These small and fast memory devices are compared to RAM because they optimize the performance of the system and they only keep files which are required by the current process in them.

To reduce the memory access time we generally make use of _____

- a) Heaps
- b) Higher capacity RAM's
- c) SDRAM's
- d) Cache's

Ans: (d)

Explanation:

The time required to access a part of the memory for data retrieval.

An 24 bit address generates an address space of _____ locations.

- a) 1024
- b) 4096
- c) 512
- d) 16,777,216

Ans: (d)

Explanation:

The number of addressable locations in the system is called address space.

The difference between the EPROM and ROM circuitry is _____

- a) The usage of MOSFET over transistors
- b) The usage of JFET over transistors
- c) The usage of an extra transistor
- d) None of the mentioned

Ans: (c)

Explanation:

The EPROM uses an extra transistor where the ground connection is there in the ROM chip.

When generating physical addresses from a logical address the offset is stored in _____

- a) Translation look-aside buffer
- b) Relocation register
- c) Page table
- d) Shift register

Ans: (b)

Explanation:

In the MMU the relocation register stores the offset address.

- a) **The disadvantage of DRAM over SRAM is/are _____**
- b) Lower data storage capacities
- c) Higher heat dissipation
- d) The cells are not static
- e) All of the mentioned

Ans: (c)

Explanation:

This means that the cells won't hold their state indefinitely.

The register used to store the flags is called as _____

- a) Flag register
- b) Status register
- c) Test register
- d) Log register

Ans: (b)

Explanation:

The status register stores the condition codes of the system.

The program is divided into operable parts called as _____

- a) Frames
- b) Segments
- c) Pages
- d) Sheets

Ans: (b)

Explanation:

The program is divided into parts called segments for ease of execution.

The virtual memory basically stores the next segment of data to be executed on the

- _____
- a) Secondary storage
 - b) Disks
 - c) RAM
 - d) ROM

Ans: (a)

To resolve the clash over the access of the system BUS we use _____

- a) Multiple BUS
- b) BUS arbitrator
- c) Priority access
- d) None of the mentioned

Ans: (b)

Explanation:

The BUS arbitrator is used to allow a device to access the BUS based on certain parameters.

The fastest data access is provided using _____

- a) Caches
- b) DRAM's
- c) SRAM's
- d) Registers

Ans: (d)

Explanation:

The fastest data access is provided using registers as these memory locations are situated inside the processor.

Each stage in pipelining should be completed within _____ cycle.

- a) 1
- b) 2
- c) 3
- d) 4

Ans: (a)

Explanation:

The stages in the pipelining should get completed within one cycle to increase the speed of performance.

_____ is used as an intermediate to extend the processor BUS.

- a) Bridge
- b) Router
- c) Connector
- d) Gateway

Ans: (a)

Explanation:

The bridge circuit is basically used to extend the processor BUS to connect devices.

The video devices are connected to _____ BUS.

- a) PCI
- b) USB
- c) HDMI
- d) SCSI

Ans: (d)

Explanation:

The SCSI BUS is used to connect the video devices to a processor by providing a parallel BUS.

What is the interface circuit?

- a) Helps in installing of the software driver for the device
- b) Houses the buffer that helps in data transfer
- c) Helps in the decoding of the address on the address BUS
- d) None of the mentioned

Ans: (d)

Explanation:

Once the address is put on the BUS the interface circuit decodes the address and uses the buffer space to transfer data.

During the execution of the instructions, a copy of the instructions is placed in the _____

- a) Register
- b) RAM
- c) System heap
- d) Cache

Ans: (d)

The USB device follows _____ structure.

- a) List
- b) Huffman
- c) Hash
- d) Tree

Ans: (d)

Explanation:

The USB has a tree structure with the root hub at the centre.

The time between the receiver of an interrupt and its service is _____

- a) Interrupt delay
 - b) Interrupt latency
-

- c) Cycle time
- d) Switching time

Ans: (b)

Explanation:

The delay in servicing of an interrupt happens due to the time it takes for the contact switch to take place.

Digital Logic Design

Let $m = (313)_4$ and $n = (322)_4$. Find the base 4 expansion of $m+n$.

- a) (635)
- b) $(32312)_4$
- c) $(21323)_4$
- d) $(1301)_4$

Ans: (d)

Given that $(292)_{10} = (1204)_x$ in some number system x . The base x of that number system is
a) 2 b) 8 c) 10 d) None of the above

Ans.: d

Given, $(292)_{10} = (1204)_x$,

Convert it into decimal

$$= (292)_{10} = 1 \cdot x^3 + 2 \cdot x^2 + 0 \cdot x_1 + 4 \cdot x^0$$

$$\text{Or, } x^3 + 2x^2 + 4x^0 = 292$$

$$\text{Or, } x^3 + 2x^2 + 4 = 292$$

$$\text{Or, } x^3 + 2x^2 - 288 = 0$$

$$\text{Or, } x=6$$

Convert the octal number 0.4051 into its equivalent decimal number.

- a) 0.5100098
- b) 0.2096
- c) 0.52
- d) 0.4192

Ans: (a)

The hexadecimal equivalent of the octal number 2357 is:

- a) 2EE
- b) 2FF
- c) 4EF
- d) 4FE

Ans: (c)

Which of the following is a sequential circuit?

- a) Multiplexer
- b) Decoder
- c) Counter
- d) Full adder

Ans: (c)

Explanation:

The **counter** circuit is usually constructed of a number of flip-flops connected in cascade.

Counter is a sequential logic device that will go through a certain predefined states based on the application of the input pulses.

Multiplexer, decoder and full adder are examples of **combinational circuit**.

A multiplexer combines four 100 Kbps channels using a time slot of 2 bits. What is the bit rate?

- a) 100kbps
- b) 200kbps
- c) 400kbps
- d) 1000kbps

Ans: (c)

Object Oriented Programming

Match the following with respect to programming languages :

List – I	List – II
a. Structured Language	i. JAVA
b. Non-structured Language	ii. BASIC
c. Object Oriented Programming Language	iii. PASCAL
d. Interpreted Programming Language	iv. FORTRAN

Codes:

- a b c d
- a. iii iv i ii
- b. iv iii ii i
- c. ii iv i iii
- d. ii iii iv i

Ans.: a

Function defines with class name are called as:

- e) Inline function b) Friend function c) Constructor d) Static function

A constructor is a kind of member function that initializes an instance of its class. A constructor has the same name as the class and no return value. A constructor can have any number of parameters and a class may have any number of overload-constructors.

A friend function is declared by the class that is granting access. So, friend functions, are part of the class interface, like method. C++ inline function is commonly used with classes, that is expanded in line when it is called.

By declaring a function member as static, you make it independent of any particular object of the class.

The mechanism that binds code and data together and keeps them secure from outside world is known as

- a) Abstraction
- c) Encapsulation
- b) Inheritance
- d) Polymorphism

-----allows to create classes which are derived from other classes, so that they automatically include some of its "parent's" members, plus its own members.

- a) Overloading b) Inheritance
- c) Polymorphism d) Encapsulation

Which function among the following can't be accessed outside the class in java in same package?

- a) public void show()
- b) void show()
- c) protected show()
- d) static void show()

Answer: c

Explanation: The protected members are available within the class. And are also available in derived classes. But these members are treated as private members for outside the class and inheritance structure. Hence can't be accessed.

What is the output of the following java code?

```
Public class Car{
Void run()
{
System.out.println("car is running")
}
}
Public class Audi extends Car{
Void run()
{
System.out.println("Audi is running")
}
}
Public static void main(String[] args)
{
Car b=new Audi();
b.run();
}
}
```

- a) car is running
- b) Audi is running
- c)both
- d)None

Ans.: b

If same message is passed to objects of several different classes and all of those can respond in a different way, what is this feature called?

- a) Inheritance
- b) Overloading
- c) Polymorphism
- d) Overriding

Ans.: c

Other

Identify the incorrect statement :

- a) The overall strategy drives the E-Commerce data warehousing strategy.
- b) Data warehousing in an E-Commerce environment should be done in a classical manner.
- c) E-Commerce opens up an entirely new world of web servers.
- d) E-Commerce security threats can be grouped into three major categories.

Ans.: b

Data warehousing in an E-commerce environment should not be done in the classical manner, that is disjoint from and after the transactional environments with which it is linked.

The threat environment for E-commerce data warehousing applications, security threats can be grouped into three major categories:

- ✓ Loss of data secrecy
- ✓ Loss of data integrity
- ✓ Loss of denial of service

The overall E-commerce strategy drives the e-commerce data warehousing strategy.

Match the following

List-I	List-II
A. OLAP	1. Regression
B. OLTP	2. Data Warehouse
C. Decision Tree	3. RDBMS
D. Neural Network	4. Classification

Codes:

- | | | | | |
|----|---|---|---|---|
| | A | B | C | D |
| a) | 2 | 3 | 1 | 4 |
| b) | 2 | 3 | 4 | 1 |
| c) | 3 | 2 | 1 | 4 |
| d) | 3 | 2 | 4 | 1 |

Ans.: b

In OLTP database there is detailed and current data. In OLTP database schema used to store transactional data (usually 3NF). OLAP (Online Analytical Processing) is characterized by relatively low volume of transactions.

Decision tree is used for classification of data in data mining and AI.

Neural networks are used for the purpose of unsupervised learning, regression or classification.

Data Warehouse provides

- a) Transaction Responsiveness
- b) Storage, Functionality Responsiveness to queries
- c) Demand and Supply Responsiveness
- d) None of the above

And.: b

The increasing processing power and sophistication of analytical tools and techniques have results in the development of what are known as data warehouse. These data warehouses Provide storage, functionality and responsiveness to queries behind the capabilities of transactions oriented databases.

Software Engineering

Which of the following requires the most time in SDLC?

- a) Requirement Analysis b) Testing c) Deployment d) Design Ans. d

Testing of software with actual data and in actual environment is known as?

- a) Regression testing b) Beta testing c) Alpha testing d) None of these Ans. b

Which of the following testing techniques ensures that the software product runs correctly after the changes during maintenance?

- e) Path Testing
f) Integration Testing
g) Unit Testing
h) Regression Testing

Ans: d

What is the normal order of activities in which traditional software testing is organized?

- e) Integration Testing
f) System Testing
g) Unit Testing
h) Validation Testing

Code:

- e. 3, 1, 2, 4
f. 3, 1, 4, 2
g. 4, 3, 2, 1
h. 2, 4, 1, 3

Ans: d

The factors that determine the quality of a software system are

- a) correctness, reliability
b) efficiency, usability, maintainability
c) testability, portability, accuracy, error tolerances, expendability, access control, audit.
d) All of the above

Ans.: d

Software quality model has main quality characteristics: Functionality, reliability. Usability, efficiency, maintainability and portability. So, all are given to determine the quality of a software system.

Reliability of software is directly dependent

- a) quality of the design
b) number of errors present
c) software engineers experience
-

d) user requirement

Ans.: b

Software reliability is measured in terms of MTBF(mean time between failures). Reliability of software is a number between 0 and 1. Reliability increases when errors or bugs from the program are removed.

Main aim of software engineering is to produce

- (a) program
- (b) software
- (c) within budget
- (d) software within budget in the given schedule

Ans. : d

Goal of software engineering is to produce program software within budget and in the given schedule, Software engineering aims to deliver fault free software, on time and within budget, meeting the requirements and needs of the client. The software is developed keeping in mind the future maintenance that is involved.

User Acceptance testing is

- a) White box testing
- b) Black box testing
- c) Gray box testing
- d) None of the above

Ans.b

Are we building the right product? This statement refers to

- a) Verification
- b) Validation
- c) Testing
- d) Software quality assurance

Ans.: b

Validation: Are we building the right product?

Verification: Are we building the product right?

The ___ model is preferred for software development when the requirements are not clear.

- e) Rapid Application Development
- f) Rational Unified Process
- g) Evolutionary Model
- h) Waterfall Model

Ans: c

Which of the following is not included in the waterfall model?

- e) Requirement analysis
 - f) Risk analysis
 - g) Design
-

h) Coding

Ans: b

Explanation:

The **waterfall model** is a sequential (non-iterative) process, it includes requirements, design, implementation, verification and maintenance. **Risk analysis** used in spiral models.

Debugging is:

- e) creating program code
- f) finding and correcting errors in the program code
- g) identifying the task to be computerized
- h) creating the algorithm

Ans: b

Explanation:

Debugging is a methodical process of finding and reducing the number of bugs, or defects, in a computer program or a piece of electronic hardware, thus making it behave as expected.

Which two models don't allow defining requirements early in the cycle?

- e) Waterfall & RAD
- f) Prototyping & Spiral
- g) Prototyping & RAD
- h) Waterfall & Spiral

Ans: b

Explanation:

Prototyping Model starts with a requirements analysis phase including techniques like FAST, QFD, Brainstorming. In case of Spiral model the first phase involves activities related to customer communication like determining objectives.

What is Cyclomatic complexity?

- e) Black box testing
- f) White box testing
- g) Yellow box testing
- h) Green box testing

Ans: b

Explanation:

Cyclomatic complexity measures the amount of decision logic in the program module. Cyclomatic complexity gives the minimum number of paths that can generate all possible paths through the module.

Equivalence partitioning is a _____ method that divides the input domain of a program into classes of data from which test cases can be derived

- e) White-box testing
- f) Black-box testing
- g) Orthogonal array testing
- h) Stress testing

Ans.: b

Acceptance testing is also known as

- e) Grey box testing
- f) White box testing
- g) Alpha Testing
- h) Beta testing

Ans: d

Explanation:

Acceptance testing is a test conducted to determine if the requirements of a specification or contract are met and is done by users.

Which of the following is non-functional testing?

- e) Black box testing
- f) Performance testing
- g) Unit testing
- h) None of the mentioned

Ans: (b)

Explanation:

Performance testing is in general testing performed to determine how a system performs in terms of responsiveness and stability under a particular workload.

Which one of the following is not a step of requirement engineering?

- a) Requirement elicitation
- b) Requirement analysis
- c) Requirement design
- d) Requirement documentation

Ans.: c

Testing of software with actual data and in actual environment is called

- a) Alpha testing
- b) Beta testing
- c) Regression testing
- d) None of the above

Ans.: b

A beta test is the second phase of software testing in which a sampling of the intended the audience tries the product-out.

Alpha test meant the first phase of testing in a software development process.

Which one of the following is a requirement that fits in a developer's module ?

- e) Availability
- f) Testability
- g) Usability
- h) Flexibility

Ans: (b)

Explanation:

A developer needs to test his product before launching it into the market.

The SRS document is also known as _____ specification.

- e) black-box
- f) white-box
- g) grey-box
- h) none of the mentioned

Ans: (a)

Explanation:

The system is considered as a black box whose internal details are not known that is, only its visible external (input/output) behavior is documented.

Which one of the following is not a software process quality?

- e) Productivity
- f) Portability
- g) Timeliness
- h) Visibility

Ans: (b)

Explanation:

Portability is a software product quality which means software can run on different hardware platforms or software environments.

A company is developing an advanced version of their current software available in the market, what model approach would they prefer ?

- e) RAD
- f) Iterative Enhancement
- g) Both RAD & Iterative Enhancement
- h) Spiral

Ans: (c)

FAST stands for

- e) Functional Application Specification Technique
- f) Fast Application Specification Technique
- g) Facilitated Application Specification Technique
- h) None of the mentioned

Ans: (c)

Beta testing is done at

- e) User's end
- f) Developer's end
- g) User's & Developer's end
- h) None of the mentioned

Ans: (a)

Explanation:

In beta testing the user evaluates the product and gives his feedback.

What DFD notation is represented by the Rectangle?

- e) Transform
 - f) Data Store
 - g) Function
-

- h) None of the mentioned

Ans: (b)

Which one of the following is not an agile method?

- e) XP
- f) 4GT
- g) AUP
- h) All of the mentioned

Ans: (b)

How many phases are there in Scrum?

- e) Two
- f) Three
- g) Four
- h) Scrum is an agile method which means it does not have phases

Ans: (b)

Explanation:

There are three phases in Scrum. The initial phase is an outline planning phase followed by a series of sprint cycles and project closure phase.

The spiral model has two dimensions namely _____ and _____

- e) diagonal, angular
- f) radial, perpendicular
- g) radial, angular
- h) diagonal, perpendicular

Ans: (c)

Explanation:

The radial dimension of the model represents the cumulative costs and the angular dimension represents the progress made in completing each cycle. Each loop of the spiral from X-axis clockwise through 360° represents one phase.

Which of the following is a design pattern?

- e) Behavioral
- f) Structural
- g) Abstract Factory
- h) All of the mentioned

Ans: (d)
