Combined Bank Senior Officer (IT/ICT) MCQ Test-31-11-2018

1.	Which operator is used to declare the destructor in C++? a)# b) \sim c) @ d) $\$$	Ans. b
2.	Which alternative can replace the throw statement in c++? a) for b) break c) return d) exit Explanation: throw and return does the same job as return a value. So it can be replaced.	Ans. c
3.	What type of reference should be used in vector arithmetic in C++? a)Dynamic b) const c) a and b d) none of the mentioned Explanation: As we are using the vector and it will give accurate result if we use const reference.	Ans. b
4.	Which of these data types is used by operating system to manage the Recursion in Java? a)Array b) Stack c) Queue d) Tree Explanation: Recursions are always managed by using stack.	Ans. b
5.	Which of the following is an incorrect statement about packages? a) Package defines a namespace in which classes are stored b) A package can contain other packages within c)Java uses file system directories to store packages d) A package can be renamed without renaming the directory, in which the classes are stored	Ans. d
6.	A derived class inherits attributes from a a) Super Class b) Sub Class c) Inner Class d)Upper Class	Ans. a
7.	Multiple inheritances in Java can be implemented using which of the following? a) Interfaces b) Multithreading c) Protected methods d) Private methods Explanation: Multiple inheritances in java is implemented using interfaces. Multiple interfaces can be implemented by a class.	Ans. a
8.	Which component is used to compile, Debug and execute java program? a) JVM b) JDK c) JIT d) JRE Explanation: JDK is a core component of Java Environment and provides all	Ans. b

Cloud IT Solution	Page ii
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	the tools, executables and binaries required to compile, debug and execute a Java Program.	
9.	Which of the following statements is the negation of the statements "4 is odd or -9 is positive"? a) 4 is even or -9 is not negative b) 4 is odd or -9 is not negative c) 4 is even and -9 is negative d) 4 is odd and -9 is not negative Explanation: Using De Morgan's Law ~(A V B) <-> ~A A ~B.	Ans. c
10.	Which of the following options is suitable, if A is"10110110", B is "11100000" and C is"10100000"? a) C=A or B b) C=~A c) C=~B d) C=A and B Explanation: Output of and is 1 when both other inputs are one.	Ans. o
11.	If A={1,2,3} and B={1,2,5} then A-B=? a){1} b) {5} c) {3} d) {2}	Ans. o
12.	If set A={1,2} and C={3,4}, then AXB(Cartesian product of set A and B) is a){1,2,3,4} b) {(1,3),(2,4)} c) {(1,3),(2,4),(1,4),(2,3)} d) {(3,1),(4,1)}	Ans. o
13.	If determinant of a matrix A is Zero then a) A is a Singular matrix b) A is a non-Singular matrix c) First and last rows of the matrix must be same d) First and last columns of the matrix must be same	Ans, a
14.	The complexity of Binary search algorithm is a) O(n) b) O(log n) c) O(n²) d) O(nlog n)	Ans. l
15.	A non standard HTML extension that causes scrolling text to appear as pan of a Web page is a) DHCP b) mask off c) Dhrystone d) marquee Explanation: This marquee causes the text to scroll continuously from right to left. Once it disappears from the left, it reappears from the right.	Ans. o
16.	Object being passed to a copy constructor a) Must be passed by reference b) Must be passed by value c) Must be passed with integer type d) Must not be mentioned in parameter list	Ans. a
17.	Why do we need to handle exceptions? a) To prevent abnormal termination of program b) To encourage exception prone program	Ans. a

	Cloud IT Solution Pa	ge iii
	c)To avoid syntax errors d)To save memory	
18.	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 Explanation: The feature defined in question defines polymorphism feature. Here the different objects are capable of responding to the same message in different ways, hence polymorphism.	Ans. c
19.	Does constructor overloading include different return types for constructors to be overloaded? a) Yes, if return types are different, signature becomes different b) Yes, because return types can differentiate two functions c) No, return type can't differentiate two functions d) No, constructors doesn't have any return type Explanation: The constructors don't have any return type. When we can't have return type of a constructor, overloading based on the return type is not possible. Hence only parameters can be different.	Ans. d
20.	2019 in Binary is	Ans. d
21.	An array contains the following letters, Color = {E,L,E,C,T,I,O,N} The value of the variable, E=3. Color [E] points to which value? a) E b) C c) T d) 1	Ans. b
22.	How to access the overridden method of base class from the derived class? a) Using arrow operator b) Using dot operator c) Using scope resolution operator d) Can't be accessed once overridden	Ans. b
23.	11100010 has a decimal value of	Ans. c
24.	When two variables is logically compared, the logic gate that tests the equivalence is————————————————————————————————————	Ans. a
25.	Which of the following is not a malware? a) Virus b) Worm c) Bug d) Trojan horse	Ans. c

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Page iv

	Explanation: Bug is the logical error of a program. Virous, worm and Trojan horse are malicious program.	
26.	Dark data represents a) Unused data b)Harmful data c) Highlighted data d)Important data	Ans. a
27.	a) Program b) List of commands c) Source of variables d) Explanation of the algorithm	Ans. a
28.	Which of the following defines the addressing capabilities of the networking? a) OSL b) NAT c) TCP d) UDP Explanation: Network address translation (NAT) is a method of remapping one IP address space into another by modifying network address information in the IP header of packets while they are in transit across a traffic routing device.	Ans. b
29.	How many layers are there in the software part of networking framework? a) Three b) Sever c) Four d) Five Explanation: Software layer: Application, Presentation, Session, Transport and Network. Hardware layer: Datalink and physical. Host layer: Application, Presentation, Session, Transport. Media layer: Network, Datalink and physical.	Ans, b
30.	AR refers to which of the following environment a) Artificial Reality b) Augmented Report c) Artificial Report d) Augmented Reality Explanation: Augmented reality (AR) is an interactive experience of a real- world environment where the objects that reside in the real-world are augmented by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory, haptic, somatosensory, and olfactory	Ans. d
31.	Memory management scheme by which a computer stores and retrieves data from secondary storage for use in main memory is a)Paging b)Scheduling c)Batch processin d)Virtual storage	Ans. a
32.	A single communication system that transfers and connects the data between major components inside a computer is a) Address Bus b)Data Bus c) System Bus d) Control Bus	Ans. b
33.	A primary key must also be	Ans. b

	Cloud IT Solution	Page v
	a) Foreign key b) Unique c) Identical d) Case sensitive	
34.	a) Universal Serial Bus b)Universal Series Bus c) Universal Serial Bits c)Universal Series Bits	Ans. a
35.	Which of the following is the smallest size in the list? a) Zettabyte b) Gigabyte c) Petabyte d) Terabyte	Ans. b
36.	Int C=10; System.out.println(C); gives a output of a)10 b) 11 c) 9 d) 8	Ans. a
37.	What represents a row in a relational database? a) variable b)tuple c) entity d)field	Ans. b
38.	All of the following are considered gaming engine except a)Hex Editor b)Unity c)HTML 5 d)Adobe Flash	Ans. c
39.	All of the following logical connectives are included in SQL except a)And b) or c) nor d) not	Ans. c
40.	The full form of "Wi-fi" is a)Wireless Internet b)Wireless-Fidelity c)Wireless Field d)Wireless Fiction	Ans. b

Combined Bank Maintenance Engineer MCQ Test-30-11-2018

1.	command is the most a	ole to communicate with google server. Which oppropriate to run at host machine to determine e is responsible for this failure?	
	a) telnet 192.168.1.1	b) ping 192.168.1.1	
	c) tracert 192.168.1.1	d) ftp 192.168.1.1	
		s a command which can show you the path a packet your computer to one you specify. It will list all the	

Cloud IT Solution Page vi

	routers it passes through until it reaches its destination, or fails to and is discarded. In addition to this, it will tell you how long each 'hop' from router to router takes.	
2.	Which one is modern lightweight message exchange format? a) JSON b)MX c) HTML d) XML	Ans. a
3.	A shared lock allows which of the following type of transaction to occur? a)Delete b) Insert c) Read d) Update Explanation: When resource is locked you can only read this data but you can't update or modify data.	Ans. C
4.	Which is not a feature of object oriented programming? a)inheritance b) recursion c) encapsulation d) abstraction	Ans. b
5.	Which of the following protocols uses both TCP and UDP ports? a)SMTP b) Telnet c) FTP d) DNS Explanation: DNS uses TCP for zone exchanges between servers and UDP when a client is trying to resolve a hostname to an IP address.	Ans. d
6.	To divide a class C network into a maximum of 14 subnets- each capable of having up to 14 hosts. The subnet mask used should be	Ans. a
7.	The result of a SQL SELECT statement is a	Ans. d
8.	Email is a protocol of following layer a)Physical layer b) Data Link Layer c) Application layer d) TCP layer	Ans. c
9.	Which protocol is used for secure web browsing? a)WWW b) RSA c) ftp d)http	Ans. d
10.	Which software is mostly used for virtualization? a)VMWare b) Oracle DBMS c) Windows XP d) Linux Explanation: VMware, Inc. is a subsidiary of Dell Technologies that provides cloud computing and platform virtualization software and services. It was one of the first commercially successful companies to virtualize the x86 architecture.	Ans, a

Cloud IT Solution Page vii

11.	To remove the duplicate rows from the result of an SQL Select statement, the qualifier specified include. a)Only b) distinct c) Unique d) Single	Ans. b
12.	The complexity of Bubble sort algorithm is a) $O(n)$ b) $O(\log n)$ c) $O(n^2)$ d) $O(n\log n)$	Ans. c
13.	Which control statement can be executed at least once? a) While b)for c) do—while d) All of the above Explanation: A loop will only execute while its condition is true. Since a for loop and a while loop both check the condition before the body is executed they will never execute if the condition is false. Because of that a do while loop will always execute at least once.	Ans. c
14.	The operation of processing each element in the list is known asa)Sorting b)Merging c) Inserting d) Traversal	Ans. d
15.	Which of the following data structure are index structures? a)Linear array b) link list c) both a and b d) none	Ans. a
16.	The term push and pop related to a)Array b) list c) stack d) all of this	Ans. c
17.	is a statement that is executed automatically by the system. a)Trigger constraint b) assertion c) durability d) integrity	Ans. a
18.	What does a COMMIT statement do to a CURSOR a)Open the cursor b) Fetch the cursor c) Close the cursor d) None of this Explanation: The COMMIT statement makes permanent any changes made to the database during the current transaction.	Ans. d
19.	Which data structure is used for indexing? a)Binary tree b) B+ tree c) Stack d) Link List	Ans. b
20.	Trojan can be introduced through? a)Internet browsing b) Database accessing c) emails d) troubleshooting Explanation: Mostly Trojans are introduced via email attachments. These emails are disguised in a way that they look authentic. Once the user downloads the attached file and runs it, the file starts corrupting the system. A Trojan can also come as a payload with freeware and shareware available on the Internet.	Ans. c
21.	How many layer internet protocol suites? a)7 b) 5 c) 3 d) 4	Ans. b

Cloud IT Solution Page viii

22.	The step by step instruction that solved a problem are calleda)An algorithm b) A list c) A plan d) None of the above	Ans. a
23.	An acronym for Conference/Committee on Data Systems Languages is? a) Collute b)CCD c) CODASYL d) DASD Explanation: CODASYL, the Conference/Committee on Data Systems Languages, was a consortium formed in 1959 to guide the development of a standard programming language that could be used on many computers. This effort led to the development of the programming language COBOL and other technical standards.	Ans. c
24.	According to Boolean algebra the value of (A+AB).(B+AB) is a)A b) B c) AB d) 1 Explanation: (A+AB).(B+AB)=A(1+B).B(1+A)=AB; because 1+A=1	Ans. c
25.	Which of the following correctly shows the hierarchy of algorithm operation in C? a) / +*- b) *-/+ c) +-/* d) /*+- Explanation: The hierarchy of operations is as follows are Parentheses, Exponents, Multiply or Divide, Addition or Subtraction.	Ans. d
26.	Consider the following code #include <stdio.h> int main (int argc, char *argv[]) { return 0; } What is the maximum length of character array argv in the above code? a)0 b) 1 c) Undefined d)-1 Explanation: argv is an array of pointers to char (i.e. array of strings). The length of this array is stored in argv argument. The length of argv is 6.</stdio.h>	Ans. None
27.	Which is the value of "d" after this line of code has been executed? double d=Math.round(2.5+Math.random()); a)2 b) 2.5 c) 3 d) 4 Explanation: The Math.random() method returns a number greater than or equal to 0 and less than 1. Since we can then be sure that the sum of that number and 2.5 will be greater than or equal to 2.5 and less than 3.5, we can be sure that Math.round() will round that number to 3. So Option B is the answer.	Ans. c
28.	Which O/S is recommended for real time system? a)Windows b) Unix c) Oracle d) C/OS Explanation: Some real time OS are RTLinux, VxWorks, Windows CE	Ans. a
29.	According to Boolean algebra the value of (A+AB).(B+AB) is	Ans. c

Cloud IT Solution Page	Cloud IT Solution
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	a)A b) B c) AB d) 1	
30.	Which one of the following is not an example redundancy? a)Data center b) Aero plane c) Motor Car d) None of this	Ans. d
31.	Compared to CISC, RISC processors (at the same clock are) a)Faster b) slower c) similar d) undefined Explanation: CISC has the capacity to perform multi-step operations or addressing modes within one instruction set. It is the CPU design where one instruction works several low-level acts. For instance, memory storage, loading from memory, and an arithmetic operation. Reduced instruction set computing is a Central Processing Unit design strategy based on the vision that basic instruction set gives a great performance when combined with a microprocessor architecture which has the capacity to perform the instructions by using some microprocessor cycles per instruction.	Ans. b
32.	Which one of the following is not a type of Web search engine? a)Computer-created b) Human -organized c) Hybrid d) Portal Explanation: Search engines are classified into the following three categories based on how it works. ✓ Crawler based search engines ✓ Human powered directories ✓ Hybrid search engines ✓ Other special search engines	Ans. a
33.	Where can javaScript code be placed in an html page? a) < head > b) < body > c) both a and b d) none	Ans. c
34.	What is the value of variable x after the following statement is executed in javaScript? var x2="3"+ "4"? a)34 b)7 c)0 d) undefine Explanation: <html> <body> <h2>JavaScript Variables</h2> in this example, x, y, and z are variables. id="demo"> <script> var x = 5; var y = 6;</td><td>Ans. a</td></tr></tbody></table></script></body></html>	

Page x

_		ige A
	"The value of z is: " + x2; 	
35.	In java, which operator is used to create an object? a)Class b) scanf c) print d) None Explanation: new is akey to create object ClassName objectName=new ClassName();	Ans. a
36.	Distributed Queue Dual Bus is a standard for	Note
37.	Which of the following produce an answer that is closest in value to a double, d, while not being greater than d? a) (int.Math.min(d)) b) (int.Math.max(d)) c) (int.Math.abs(d)) d) (int.Math.floor(d)) Explanation: ✓ Option A and B are wrong because both the min() and max() methods require 2 arguments whereas here they are passed only one parameter. ✓ Option C is wrong because it could return a value greater than d (if d was negative). ✓ Option D is the correct answer, it is syntactically correct and will consistently return a value less than d.	Ans. d
38.	Which one is a universal logic gate? a)NAND b) AND c) OR d) NOT Explanation: Two universal gate is NAND and NOR	Ans. a
39.	Domain name to IP address mapping is done by a)Web server b) Database server c) DNS server d) Proxy Server	Ans. c
40.	How many 1's will be there in the binary representation of the following expression (assume 16 bit number) 12+64+128+256+1024 a)10 b) 8 c) 6 d)9	Ans. c

Page xi

Dutch-Bangla Bank PO (software)

Written Test-2018

 Write a program in pl/sql to find the highest paid employees from employee table and store the data in HighestPaidEmp table.

Solution:

```
DECLARE
id number;
salary number;
BEGIN
select count(id) into id from HighestPaidEmp;
select max(salary) into salary from employee;
insert into HighestPaidEmp(id,salary)
values(id+1,salary);
END:
```

- 2. Define them in one sentence
 - a. Left outer join
 - b. Right outer join
 - c. Full outer join
 - d. One to many
 - e. Many to one

Solution: Show details in Book

- 3. Write query:
 - a. Find the names who bought products which are american made.
 - What is the number and sum of product those sales by country of origin.
 Product(pname, price, stock, maker)

Purchase(buyer, seller, product)

Company(cname, country)

Person(per-name, address)

- *** Product and Company table have relation on maker and cname.
- *** Product and Purchase table have relation on pname and product.
- *** Purchase and person table have relation on seller and per-name.
- a. Solution:

```
Select per-name from Person pr inner join Purchase pd
on(pr.per-name=pd.seller) inner join Product p
on(pd.product=p.pname) where p.maker='amerian';
```

b. Solution:

Select count(pr.product) number, sum(p. price) from Purchase pr inner join Product p on(pr. Product=p. pname)

Page xii

4. RAID

Solution: See details on Book

5. Construct a mean heap from a given dataset.

Solution: See details on Book

6. Give an OOP scenario. Design and Implement it using java code.

Solution: See details Book on OOP section

7. Write a recursive algorithm implementation using iterative way.

Solution:

Recursive and iteration for factorial

Recursive

```
factorial(0) = 1;
factorial(N) = N * factorial(N-1);
```

Iterative implementation

```
int factorial( int N )
{
  int product = 1;
  for ( int j=1; j<=N; j++ )
    product *= j;
  return product;
}</pre>
```

8. Create a class Rational and

- a. Create two private int type property named numerator and denominator and Create a constructor having no arguments and set numerator and denominator value to 1.
- Create a constructor with two int type argument and set these arguments to numerator and denominator.

a. Solution:

```
public class GetterAndSetter {
    private int numerator;
    private int denominator;

public int getnumerator() {
        return this.numerator;
}

public void setnumerator(int numerator) {
        this.numerator = numerator;
}

public int getdenominator() {
        return this.denominator;
}
```

Page xiii

```
public void setdenominator (int denominator) {
                  this.denominator = denominator;
          public class Rational {
          //creating a default constructor
          Rational ()()
          //main method
          public static void main (String args[]) (
          GetterAndSetter s=new GetterAndSetter();
          s.setnumerator(1);
          s. setdenominator (1);
b.
    Solution:
          public class GetterAndSetter {
              private int numerator;
              private int denominator ;
              public int getnumerator() (
                  return this.numerator;
              public void setnumerator(int numerator) {
                  this.numerator = numerator;
               public int getdenominator() {
                  return this.denominator;
              public void setdenominator (int denominator) {
                  this.denominator = denominator;
          public class Rational {
          //creating a default constructor
          Rational (int numerator, int denominator) {
          System.out.println("numerator:"+numerator+"denominator:
          "+denominator);
          //main method
          public static void main (String args[]) {
          GetterAndSetter s=new GetterAndSetter();
          s.setnumerator(1);
          s.setdenominator(1);
          Rational (s.getnumerator, s.getdenominator);
```

Write a program to find out the number of occurence of a digit in a number. Explanation if input value n and selection value d

```
Sample Input: 12223
      Sample selection value: 2
      Sample Output: 3
Solution:
#include <stdio.h>
int main ()
  int i, j, value, n, count;
  printf ("Sample Input:");
  scanf ("%d", &n);
  printf ("Sample selection value :");
  scanf ("%d", &value);
  count = 0;
  while (n != 0)
    1
      if (n % 10 == value)
      count++;
      n = n / 10;
  printf ("%d", count);
return 0;
```

- 10. Five statements were given. Check whether True or False.
 - Solution: See detail book on c output problem.
- 12. Write a program to evaluate the series : 1*3 + 2*5 + 3*7 + + n*(2n+1)

Solution:

```
#include <stdio.h>
int main()
{
    int i,j,k,n,sum;
    j=1;
    sum=0;
    scanf("%d",&n);
    for(i=1;i<=n;i++) {
        j=j+2;
        sum=sum+(i*j);
    }
    printf("%d",sum);
    return 0;</pre>
```

Page xv

13. Write a program in any language.

- a) Write a program to find out the second max element in an array without using any library and sorting.
- b) Write a program to print out a diamond pattern. If n = 5 then it prints:

a. Solution:

```
#include <stdio.h>
                       // Maximum array size
#define MAX SIZE 100
int main()
    int arr[MAX SIZE];
    int size;
    int i, j, temp;
    printf("Enter size of array: ");
    scanf("%d", &size);
    printf("Enter elements in array: ");
    for(i=0; i<size; i++)
        scanf("%d", &arr[i]);
    for(i=0; i<size; i++)
        for(j=i+1; j<size; j++)
            if(arr[i] < arr[j])
                       = arr[i];
                temp
                arr[i] = arr[j];
                arr[j] = temp;
    }
        printf("%d", arr[0]);
    return 0;
}
```

b. Solution: See Details in Book C Programming

Page xvi

Combined 3 Banks

Assistant programmer Written Test-01-12-2018

1. Construct a truth table for the following function:

 $(r \ v \ (q \ \land \neg p \)) \ \land \neg (r \ \land \ (q \ \land \ \neg p))$

Is it the same as $r \oplus (q \land \neg p)$?

Where v=OR, Λ = AND, \neg = NOT, \oplus =XOR

Solution:

For equation $(r \ v \ (q \ \Lambda \ \neg p \)) \ \Lambda \ \neg (r \ \Lambda \ (q \ \Lambda \ \neg p))$

p	q	r	¬р	(q ∧ ¬p)	(r v (q ∧ ¬p))	(r ∧ (q ∧ ¬p))	¬(r x (q x ¬p))	(r v (q ∧ ¬p)) ∧ ¬(r ∧ (q ∧ ¬p))
T	Т	Т	F	F	Т	F	Т	Т
T	Т	F	F	F	F	F	Т	F
T	F	T	F	F	T	F	T	Т
Т	F	F	F	F	F	F	Т	F
F	Т	Т	Т	T	Т	Т	F	F
F	Т	F	Т	T	T	F	T	Т
F	F	Т	Т	F	Т	F	Т	Т
F	F	F	Т	F	F	F	Т	F

For equation r ⊕(q ∧ ¬p)

p	q	r	¬р	(q A ¬p)	$(\mathbf{r} \oplus (\mathbf{q} \wedge \neg \mathbf{p}))$
Т	Т	Т	F	F	T
Т	Т	F	F	F	F
Т	F	Т	F	F	T
Т	F	F	F	F	F

Page xvii

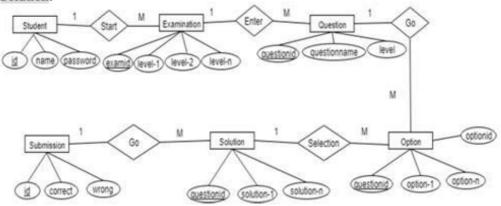
F	T	Т	Т	Т	F
F	Т	F	Т	Т	T
F	F	Т	Т	F	Т
F	F	F	Т	F	F

So that both of the equation is same.

2. Design ER diagram For

Online MCQ examination portal. Your design must contain separate entities for student, examination, question, option, solution and submission. Ensure that normalization is fulfill in your design and identify the primary and foreign key.

Solution:



3. Consider the following program and perform the task that follows:

Cloud IT Solution Page xviii

```
result = "a multiple of 3";
       break;
     }
      case 5:
       result = "acceptable";
       break;
      case 7:
       result = "a multiple of 7";
       break;
      default:
       result = "unacceptable";
       break;
    return result;
  public static void main (String[]args)
    int numbers[] = { 4, 8, 12, 21, 30, 100 };
    for (int i = 0; i < 5; i++)
     System.out.println ("The chosen number, " + numbers[i]
+ ", is " +
                    result (performOperations
(numbers[i])));
     }
 }
```

You are required to trace the changes in value for each of the numbers, before and after each method is called for eache of iterations and finally write down output of the program.

Solution:

```
Ittaration 1:
```

```
When i=0, number[0]=4
So, performOperations(4) method is called with value 4
And its return i = ((10 + (i * 2)) / 2 - \text{original})
= (10+(4*2))/2-4
= 18/2-4
= 9-4
```

= 5

Then result method called with parameter 5 result(5) which is execute **case 5** which is return "acceptable" string So the output is: The chosen number, 4, is acceptable.

So on.... Ittaration 5:

Output:

The Chosen number, 4, is acceptable

The Chosen number, 8, is acceptable

The Chosen number, 12, is acceptable

The Chosen number, 21, is acceptable

The Chosen number, 30, is acceptable

Describe five types of malware threats and mention five known countermeasures. Solution:

Malicious software (malware) is any software that gives partial to full control of the system to the attacker/malware creator.

Types of malware:

Virus: A virus is a program that creates copies of itself and inserts these copies into other computer programs, data files, or into the boot sector of the hard-disk. Upon successful replication, viruses cause harmful activity on infected hosts such as stealing hard-disk space or CPU time.

Worm: A worm is a type of malware which leaves a copy of itself in the memory of each computer in its path.

Trojan: Trojan is a non-self-replicating type of malware that contains malicious code, which upon execution results in loss or theft of data or possible system harm.

Adware: Adware, also known as freeware or pitchware, is a free computer software that contains commercial advertisements of games, desktop toolbars, and utilities. It is a webbased application and it collects web browser data to target advertisements, especially pop-ups.

Spyware: Spyware is infiltration software that anonymously monitors users which enables a hacker to obtain sensitive information from the user's computer. Spyware exploits users and application vulnerabilities that is quite often attached to free online software downloads or to links that are clicked by users.

Rootkit: A rootkit is software used by a hacker to gain admin level access to a computer/network which is installed through a stolen password or by exploiting a system vulnerability without the victim's knowledge.

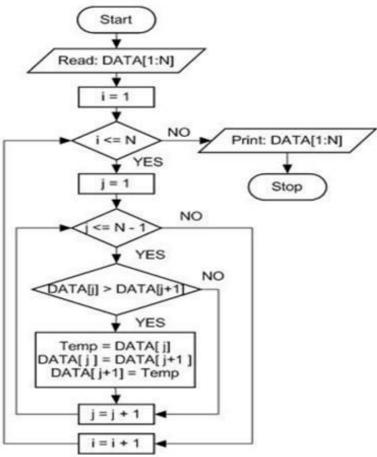
Countermeasures:

- Ensure the operating system and applications are up to date with patches/updates.
- Never open strange e-mails, especially ones with attachments.
- When you download from the internet, always check what you install. Do not simply click OK to dismiss pop-up windows. Verify the publisher before you

Page xx

install application.

- Install anti-virus software.
- · Ensure you scan and update the antivirus programs regularly.
- Install firewall.
- Always enable and use security features provided by browsers and applications.
- Draw a flowchart to input five positive numbers, and sort them is ascending order. Solution:



Note: N=5

What is cloud computing? Describe between IaaS, PaaS & SaaS. Mention five advantages & threats of cloud computing.

Cloud computing: Cloud Computing refers to manipulating, configuring, and accessing the hardware and software resources remotely. It offers online data storage, infrastructure and application. Cloud IT Solution Page xxi



Cloud computing offers platform independency, as the software is not required to be installed locally on the PC. Hence, the Cloud Computing is making our business applications mobile and collaborative.

Service Models

Cloud computing is based on service models. These are categorized into three basic service models which are -

- 1. Infrastructure-as-a-Service (IaaS)
- 2. Platform-as-a-Service (PaaS)
- 3. Software-as-a-Service (SaaS)

INFRASTRUCTURE-AS-A-SERVICE (IAAS)

IaaS provides access to fundamental resources such as physical machines, virtual machines, virtual storage, etc.

PLATFORM-AS-A-SERVICE (PAAS)

PaaS provides the runtime environment for applications, development and deployment tools, etc.

SOFTWARE-AS-A-SERVICE (SAAS)

SaaS model allows to use software applications as a service to end-users.

Benefits

- ✓ One can access applications as utilities, over the Internet.
- ✓ One can manipulate and configure the applications online at any time.
- ✓ It does not require to install a software to access or manipulate cloud application.
- Cloud Computing offers online development and deployment tools, programming runtime environment through PaaS model.
- Cloud resources are available over the network in a manner that provide platform independent access to any type of clients.
- ✓ Cloud Computing offers on-demand self-service. The resources can be used without interaction with cloud service provider.
- ✓ Cloud Computing is highly cost effective because it operates at high efficiency

Page xxii

with optimum utilization. It just requires an Internet connection

✓ Cloud Computing offers load balancing that makes it more reliable.

Threats of cloud computing ✓ Security and Privacy ✓ Lock In

- ✓ Isolation Failure
- ✓ Management Interface Compromise
- ✓ Insecure or Incomplete Data Deletion



Page xxiii

Rooppur Nuclear Power Plant

Executive Trainee(S/W Engineering) Written Test-2018

What is the difference between char and varchar? Solution:

CHAR	VARCHAR
Its full name is CHARACTER	Its full name is VARIABLE CHARACTER
It stores values in fixed lengths and are padded with space characters to match the specified length	VARCHAR stores values in variable length along with 1-byte or 2-byte length prefix and are not padded with any characters
It can hold a maximum of 255 characters.	It can hold a maximum of 65,535 characters.
It uses static memory allocation.	It uses dynamic memory allocation.
mysql>create table emp(name CHAR(20)); Query OK, 0 rows affected (0.25	mysql>create table emp1(name VARCHAR(20)); Query OK, 0 rows affected (0.21

2. What is the difference between primary key and unique key?

Solution: See details in Book

3. Two principle of relational database model. Difference between them. Solution:

The two principal rules for the relational model are as follows:

- 1. Entity integrity: this is used to maintain the integrity at entity level
- Referential integrity: it is used to maintain integrity on all the values which have been referenced.

The differences between them are as follows:

- Entity integrity tells that in a database every entity should have a unique key; on the other hand referential integrity tells that in the database every table values for all foreign keys will remain valid.
- ✓ Referential integrity is based on entity integrity but it is not the other way
 around. For example: if a table is present and there is a set of column out of
 which one column has parent key set then to ensure that the table doesn't contain
 any duplicate values, a unique index is defined on the column that contains the
 parent key.
- 4. Run the BFS algorithm from vertex 1 and draw the BFS tree.

Solution: See details in Book

Cloud IT Solution Page xxiv

Cohesion and coupling? Functional Vs non-functional requirement. Solution:

Coupling: Coupling is the measure of the degree of interdependence between the modules. A good software will have low coupling.

Cohesion: Cohesion is a measure of the degree to which the elements of the module are functionally related. It is the degree to which all elements directed towards performing a single task are contained in the component. Basically, cohesion is the internal glue that keeps the module together. A good software design will have high cohesion.

Functional Requirement Non-functional Requirement **Products** Capacity The system shall display a list of 1 The system shall support 1000 all products offered by the shop. transactions per day. ShouldHave MustHave ✓ The system shall support a peak The system shall organise the list transaction rate of 10 transactions of products by product category. per second. ShouldHave MustHave ✓ The system shall support 5000 concurrent sessions.MustHave The system shall display detailed product descriptions consisting of Availability name, photograph, price and text of description on demand. ✓ The system shall be available 24 MustHave hours per day, 360 days per year. MustHave The system shall allow the items ✓ The system shall not lose any in the catalogue to be searched. transaction data.MustHave ShouldHave. The system shall accept payment and raise an order within 5 The system shall display the seconds in 95% of the cases. number of items currently in the ShouldHave shopping ✓ The system shall log in a customer within 5 Payment seconds.ShouldHave The system shall accept all major credit cards.MustHave The system shall validate payment with the credit card processing company. MustHave

Page xxv

6. What is Supervised and unsupervised learning with example? Solution:

Supervised

- ✓ Predictive model
- ✓ Labelled data
- ✓ It is of two types (a) Regression (b) Classification
- ✓ Common Algoriths are KNN, SVM, Linear Regression etc.

Unsupervised

- ✓ Descriptive Model✓ Unlabelled data
- ✓ It is of two types (a) Clustering (b) Association
- ✓ Some popular algorithms ,k-Means,apriori algorithm

Supervised Learning	Unsupervised Learning
Supervised Classification	Unsupervised Clustering
Known no of classes	unknown no of classes
Based on training set	No prior knowledge
Used to classify future observations	Used to understand (expose) data

7. What is Transaction? Name of properties of ACID?

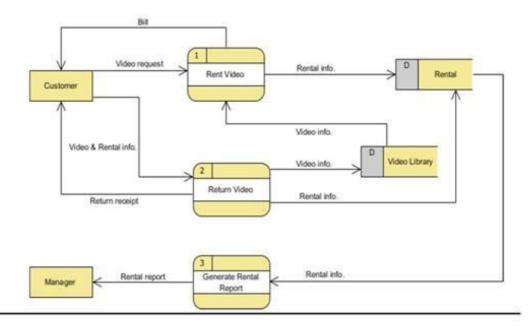
Solution: See details in Book

Difference among DDL ,DML and DCL SQL 8.

Solution: See details in Book

9. First top level DFD create for a system

Solution:



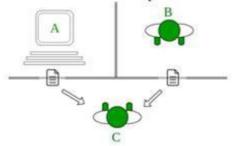
Page xxvi

10. What is Turing test?

Solution:

Turing Test

- ✓ The Turing test developed by Alan Turing (Computer scientist) in 1950. He proposed that Turing test is used to determine whether or not computer (machine) can think intelligently like human?
- ✓ Imagine a game of three players having two humans and one computer, an interrogator (as human) is isolated from other two players. The interrogator job is to try and figure out which one is human and which one is computer by asking questions from both of them. To make the things harder computer is trying to make the interrogator guess wrongly. In other words computer would try to indistinguishable from human as much as possible



The conversation between interrogator and computer would be like this:

C(Interrogator): Are you a computer?

A(Computer): No

C: Multiply one large number to another, 158745887 * 56755647

A: After a long pause, an incorrect answer!

C: Add 5478012, 4563145

A: (Pause about 20 second and then give as answer) 10041157

✓ If interrogator wouldn't be able to distinguish the answers provided by both human and computer then the computer passes the test and machine (computer) is considered as intelligent as human. In other words, a computer would be considered intelligent if it's conversation couldn't be easily distinguished from a human's. The whole conversation would be limited to a text-only channel such as a computer keyboard and screen.



Page xxvii

Bangladesh Steel & Engineering Corporation (BSEC)

Assistant Programmer Written Test-2018

1. Hexadecimal to Octal conversion

 $(25A.25B)_{16}=(?)_8$

Hexadecimal to Binary conversion

(3DC.8)16=(?)2

Octal to Binary conversion

 $(607.52)_8 = (?)_2$

Solution:

Hexadecimal to Octal conversion:

Hexadecimal	2	5	A	2	5	В
Binary	0010	0101	1010	1000	1010	1011

Binary-001001011010.100010101011

Octal-1132.4253

(25A.25B)₁₆=(1132.4253)₈

Hexadecimal to Binary conversion:

Hexadecimal	3	D	C	8
Binary	0011	1101	1100	1000

 $(3DC.8)_{16} = (001111011100.1000)_2$

Octal to Binary conversion:

Octal	6	0	7	5	2
Binary	110	000	111	101	100

 $(607.52)_8 = (110000111. 101100)_2$

2. Write an algorithm for factorial

Solution:

Input: A positive integer num

- 1. Set FactN to 1
- 2. Set i to 1
- 3. while (i is less than or equal to num)
 - 3.1 Set FactN to FactN x I
 - 3.2 Increment i

End while

4. Return FactN

End

Cloud IT Solution Page xxviii

```
Begin
            if n == 1 then
           Return ;
            else
           Return n*Call Fact(n-1);
            end if
           End
3. Give two inputs and show multiply using c programming
    Solution:
           #include <stdio.h>
           int main ()
              int a, b, c;
              scanf ("%d", &a);
              scanf ("%d", &b);
             printf ("%d", a * b);
             return 0;
    What is degree of relationship? Types of degree of relationship
    Solution:
        1
           The degree of relationship (also known as cardinality)
           See details in book database section.
5. Name of the universal gate
    Solution: NAND and NOR
    Abriviation : OSI and UTF
    Solution:
    OSI- Open Systems Interconnection
    UTF- Unicode character encodings
    MCQ
    Which is bitwise operator?
       a) <= b) >= c) & d) &&
    Ans: c
    Which header file use sqrt function?
       a) #include<conio.h>
                                b) #include<stdio.h>
       b) #include<math.h>
                                d) #include < string.h>
    Ans: c
    What is the data type int, float, char, double?
       a) build in
                     b) drived c) user define d) characete data type
    Ans: a
```

Alternative Option: Fact (n)

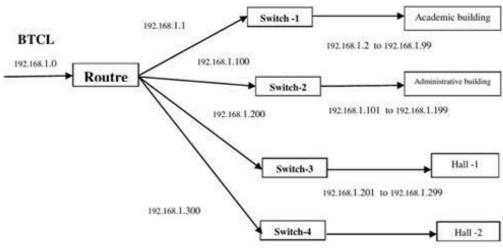
Jessore University of Science & Technology

Assistant Programmer Written Test-2017

 What do you know about Topology? Give a comparative study among various Topologies.

Solution: See Detail on Book

- Take 10 characters from the keyboard randomly and ascending order in an array.Solution: See Detail Book on C Programming
- Identify the software development life cycles
 Solution: See Detail Book on Software Engineering
- You have one academic, one administrative and two hall buildings. Each of the building contains 100 computers. Now design a network, having internet connection from the BTCL(With proper class and IP address)



192.168.1.301 to 192.168.1.399

Notes:

- ✓ BTCL is used c class ip address=192.168.1.0
- ✓ Subnet mask=255.255.255.0
- ✓ Switch-1, Switch-2, Switch-3 and Switch-4 defult gateway are assigned 192.168.1.0
- ✓ Academic building is assigned defult gateway is 192.168.1.1
- ✓ Administrative building is assigned defult gateway is 192.168.1.100
- ✓ Hall-1 is assigned defult gateway is 192.168.1.200
- ✓ Hall-2 is assigned defult gateway is 192.168.1.300

Page xxx

5. What do you know about Normalization. Give an example where data duplicacy is important. What is ER diagram and schema?

Solution: See Detail Book on Database Management System

- ✓ The database schema of a database system is its structure described in a formal language supported by the database management system (DBMS). The term schema refers to the organization of data as a blueprint of how the database is constructed (divided into database tables in the case of relational databases)
- What is the difference between Router and Switch.Draw the diagrams of OSI and TCP/IP Models

Solution: See Detail Book on Data Communication and Networking



Page xxxi

Northern Electricity Supply Company Limited (NESCO)

Manager (Software) Written Test-2018

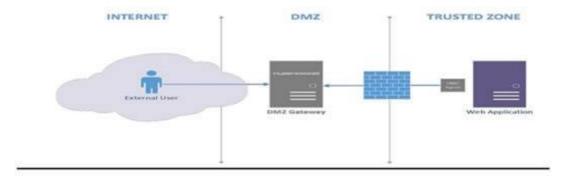
What is DMZ? Explain with appropriate figure. Solution:

DMZ (Demilitarized Zone)

- ✓ Computer host or small network inserted as a neutral zone between a company's private network and the outside public network
- Network construct that provides secure segregation of networks that host services for users, visitors, or partners
- ✓ DMZ has proven to be more secure and to offer multiple layers of protection for the security of the protected networks and machines

How it Works

- ✓ The DMZ Gateway server is placed in the DMZ where it is able to provide services to your external users. Taking our previous example, this application can now be moved into the Trusted Zone so that it may connect directly to the Active Directory service.
- ✓ The firewall configuration previously required can be removed as the
 connectivity between the DMZ and the web server is provided through the
 installation of the DMZ Agent. The agent connects out to the DMZ Gateway and
 provides a secure tunnel to proxy traffic from the DMZ to the Trusted Zone.
- ✓ The gateway can then be configured to route traffic from its external interfaces back to the DMZ Agent and onto to the secured service. Providing an external service within the DMZ that has no direct access to the physical server.



Page xxxii

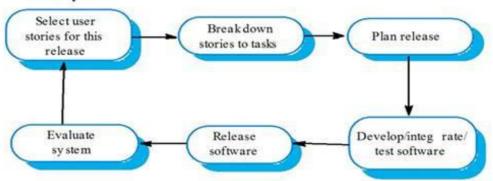
2. Explain Extreme Programming

Solution:

Extreme Programming

- ✓ XP is a lightweight (agile) process
- ✓ Code in Pairs
- ✓ Stay in Contact with the Customer
- ✓ Create Tests before Coding then Test Heavily
- ✓ Short Iterations
- ✓ Keep it Simple
- ✓ Don't Anticipate: Code for Current Needs
- ✓ Collective Ownership

XP release cycle



Four principles of XP

- Communication
- Simplicity
- Feedback
- Courage

How XP Solve Some S/W Engineering Problems

Problem	Solution		
Slipped schedule	Short development cycles		
Cancelled project	Intensive customer presence		
Cost of changes	Extensive, ongoing testing, system alway running		
Defect rates	Unit tests, customer tests		
Misunderstand the business	Customer part of the team		
Business changes	Changes are welcome		
Staff turnover	Intensive teamwork		

3. Define Ransomware Attack

Solution: See details on Book.

4. Explain design Pattern MVC with appropriate figure.

Solution: See details on Book.

Page xxxiii

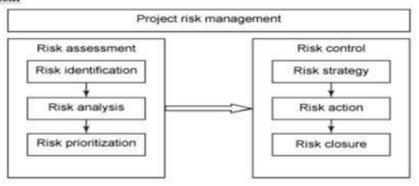
Check String str2 is superscript of string str1. Sample Input:

Input	Output
str1=x str2=x ^x	Yes
str1=x str2=x ²	No

Solution: Try Yourself

6. Draw risk Analysis Diagram

Solution:



7. Qualification of a good Team leader

Solution:

Qualification of a good Team leader

- ✓ Clever (intelligent)
- ✓ Conceptually skilled
- ✓ Creative
- ✓ Diplomatic and tactful
- ✓ Fluent in speaking
- ✓ Knowledgeable about group task
- ✓ Organised (administrative ability)
- ✓ Persuasive
- ✓ Socially skilled

8. Write down Pros and cons over qualification candidate

Solution:

Pros

- ✓ Broaden the talent pool
- ✓ Create a fast track to future responsibilities
- ✓ Achieve a faster return to full productivity
- ✓ Reduce training costs
- ✓ Set higher expectations for the role
- ✓ Reduce management required
- ✓ Increase the stature of the role

Page xxxiv

- Achieve a fast return on investment
- Elevate the whole team
- ✓ Avoid legal questions

Cons

- ✓ Turnover risk is high ✓ Boredom is also a risk
- ✓ Training may not be as simple as you'd like
- ✓ Other employees may be wary
- ✓ Payroll budget may be stretched
- ✓ Skill set may need refreshed

