

Date: January 21, 2012

C++ and Data Structures (60 Minutes)

1. Which of the following correctly describes C++ language?
 1. Statically typed language
 2. Dynamically typed language
 3. Both 1 and 2
 4. Type-less language
2. What will be the output of the following program?


```
#include <stdio.h>
int main()
{
    int x;
    x = 1,2,3;
    printf("%d", x);
    return 0;
}
```

 1. Compile time error
 2. 1
 3. 2
 4. 3
3. What will be the output of the following program?


```
#include<stdio.h>
int main()
{
    printf("C\\question\\bank");
    return 0;
}
```

 1. Cquestionbank
 2. Cuestioank
 3. Cquestioank
 4. cquestionank
4. What will be the output of following program?


```
#include <stdio.h>
void e(int );
int main( )
{
    int a;
    a=3;
    e(a);
    return 0;
}
void e(int n)
{
    if(n>0)
    {
        e(--n);
        printf("%d" , n);
        e(--n);
    }
}
```

 1. 0000
 2. 2100
 3. 0121
 4. 0120
5. What will be the output of following program?


```
#include<stdio.h>
void main()
{
    int y=112;
    const int x=y;
    printf("%d",x);
}
```

1. 112
 2. Compile time error
 3. Run time error
 4. None of the above
6. What will be the output of following program?


```
#include<stdio.h>
void main( )
{
    int n[30];
    n[0] = 100;
    n[29] = 200;
    printf("%d %d", *n, *(n + 29) + *(n + 0));
}
```

 1. 100 200
 2. 100 300
 3. compile time error
 4. 100 100
7. What will be the output of the following program?


```
#include<stdio.h>
printit(int b, int a);
int main()
{
    int a=4,b=5;
    printit(a, b);
    return 0;
}
printit(int b, int a)
{
    printf("%d %d", a, b);
}
```

 1. 4501
 2. 4545
 3. 5401
 4. 5454
8. What will be the output of the following program?


```
#include<stdio.h>
void main()
{
    int a = 10;
    int &n = a;
    n=a++;
    a=n++;
    printf("%d%d",a,n);
}
```

 1. 11 11
 2. 12 13
 3. 11 12
 4. 12 12
9. Which of the following function is/are defined in signal.h?
 1. int sighold(int sig)
 2. int sigelse(int sig)
 3. both 1 and 2
 4. None of the above

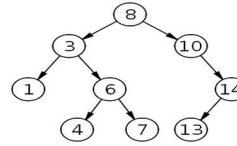
10. When is `std::bad_alloc` exception thrown?
1. When `alloc` function fails
 2. When new operator cannot allocate memory
 3. When type requested for new operation is considered bad, this exception is thrown
 4. When delete operator cannot delete the allocated (corrupted) object
11. What is output of following code?
- ```
int main()
{
 int a=000;
 cout << "R4R:";
 cout << a;
 return 0;
}
```
1. Execution time error
  2. Syntax error
  3. R4R:0
  4. R4R:000
12. What will be the output of following program?
- ```
#include <iostream>
using namespace std;
int operate (int a, int b)
{
    return (a * b);
}
float operate (float a, float b)
{
    return (a/b);
}
int main()
{
    int x=5, y=2;
    float A=5.0, B=2.0;
    cout << operate(x,y);
    cout << operate (A,B);
    return 0;
}
```
1. 10, 5
 2. 10.0, 5.0
 3. 10.0, 5
 4. 10, 2.5
13. Evaluate the following statement and what will be the output?
- ```
!(1 && !(0 || 1)).
```
1. True
  2. False
  3. Unevaluable
  4. None of the above
14. What will be the output of following program?
- ```
#include <iostream>
const int SIZE = 5;
struct St
{
    void foo()
    {
        std::cout << SIZE << std::endl;
    }
    enum
    {
        SIZE = 3
    };
};
int main(int argc, char** argv)
{
```

- ```
 St a;
 a.foo();
 return 0;
}
```
1. 5
  2. 3
  3. Compile time error
  4. Run time error
15. How many times Base's constructor will be called in the following program?
- ```
#include<iostream.h>
class Base
{
    int static i;
public:
    Base(){cout<<"ek";}
};
class Sub1: public virtual Base{};
class Sub2: public Base{};
class Multi: public Sub1, public Sub2 {};
void main()
{
    Multi m;
}
```
1. 4
 2. 3
 3. 2
 4. 1
16. What will be the output of the following program?
- ```
#include<iostream.h>
struct ST
{
 int x;
 int y;
};
int main()
{
 ST t;
 if (&t.x < &t.y)
 {
 cout << "Hello World";
 }
 return 0;
}
```
1. Compile time error
  2. Run time error
  3. Compile but give no output
  4. Hello World
17. Which of the following statement is true about?
1. pre-processor directives end with a semicolon
  2. pre-processor directives are lines read and processed by the preprocessor
  3. pre-processor directives must be written on their own line
  4. pre-processor directives do not produce any code by themselves
18. In addition to `const_cast`, which of the following cast can be used to cast away constness?
1. `const_cast`
  2. c-style casts
  3. `reinterpret_cast`
  4. both 1 and 2

19. Which of the following casts can be used to cast an int into an enum?
1. reinterpret\_cast
  2. dynamic\_cast
  3. static\_cast
  4. const\_cast
20. Which lines of code below should not compile?
1. #include<stdio.h>
  2. struct Foo
  3. {
  4. };
  5. struct Bar
  6. {
  7. };
  8. int main()
  9. {
  10. Foo\* f = new Foo;
  11. Bar\* b1 = dynamic\_cast<Bar\*>(f);
  12. Bar\* b2 = reinterpret\_cast<Bar\*>(f);
  13. return 0;
  14. }
1. Line no 10
  2. Line no 11
  3. Line no 12
  4. None of the above
21. What will be the output of the following program?
- ```
#include<iostream.h>
void main()
{
    int y=0,x;
    x = ++y * --y;
    cout<< ++y << " " << y++ << " " << x << endl;
}
```
1. 2 0 0
 2. 0 0 0
 3. 2 2 2
 4. 3 2 2
22. What will be the output of the following program?
- ```
#include<iostream.h>
void main()
{
 static char a[]="C-DAC";
 char *b="C-DAC";
 cout<<sizeof(a)<<sizeof(b);
}
```
1. 5 4
  2. 6 4
  3. 4 4
  4. 2 2
23. Which of the following is true about template class?
1. Compiler generates classes for only the used types. If the template is instantiated for int type, compiler generates only an int version for the c++ template class.
  2. Templates reduce the effort on coding for different data types to a single set of code.
  3. Testing and debugging efforts are reduced.
  4. All of the above
24. Which of the following is /are important places where a copy constructor is called?
- a. When an object is created from another object of the same type
  - b. When an object is passed by value as a parameter to a function
  - c. When an object is returned from a function
1. all a, b and c
  2. Only a and b
  3. Only b and c
  4. Only c and a
25. What will be the output of the following program?
- ```
#include<iostream.h>
void main()
{
    float me = 2.2;
    double you = 2.2;
    if(me==you)
        cout<<"I like U";
    else
        cout<<"I hate U";
}
```
1. I hate U
 2. I like U
 3. Compile time error
 4. Run time error
26. Which of the following is true statement in C++ inheritance?
1. The constructor and destructor of a base class are not inherited
 2. The assignment operator is not inherited
 3. The friend functions and friend classes of the base class are also not inherited.
 4. All of the above
27. Which kind of functions can access private member variables of a class?
1. Private member functions of the class
 2. Public member functions of the class
 3. Friend functions of the class
 4. All of the above can access private member variables
28. If X is the name of the class, what is the correct way to declare copy constructor of X?
1. X(const X* arg)
 2. X(const X& arg)
 3. X(X* arg)
 4. X(X arg)
29. Which of the following statement is true about this pointer?
1. this pointers are not modifiable
 2. this pointer is counted for calculating the size of the object.
 3. this pointers are accessible for static member functions.
 4. All of the above
30. Which of the following is an Associative container of STL container type?
1. Queue
 2. Map
 3. vector
 4. stack
31. The result of evaluating prefix expression */b+-dacd, where a = 3, b = 6, c = 1, d = 5 is_____.
1. 5
 2. 10
 3. 11
 4. 15
32. Which of the following is the required condition for binary search algorithm?
1. The list must be sorted
 2. there should be the direct access to the middle element in any sublist

3. There must be mechanism to delete and/or insert elements in list
4. Both 1 and 2
33. The _____ process places data at the back of the queue
1. dequeue
 2. enqueue
 3. priority queue
 4. None of the above
34. Which of the following statement is true?
- a. A record is a data structure that can store the non-homogeneous data elements.
 - b. Array is a data structure that can't store the non-homogeneous data elements
1. Only a
 2. Only b
 3. Both a and b
 4. None of the above
35. Which of the following statement is false?
1. Binary search algorithm can be applied to sorted binary trees
 2. Binary search algorithm can be applied to sorted linear array
 3. Binary search algorithm can be applied to sorted linked list
 4. Binary search algorithm can be applied to pointer array
36. What will be the postfix notation of an given Infix notation expression $(A * (B + (C / D)))$
1. $(A (B (C D /)+)*)$
 2. $(A (B (C D /))+)*)$
 3. $(A (B (C D /)+)*)$
 4. $(A (B (C D /)+)*)$
37. Is following statement is true?
 $O(n \log n)$ is time complexity of merge sort algorithm
1. Yes
 2. No
 3. Can not say
 4. None of the above
38. Which of the following applications may use a stack?
1. Parentheses balancing program
 2. Keeping track of local variables at run time
 3. Syntax analyzer for a compiler
 4. All of the above
39. Suppose cursor points to a node in a linked list (using the node definition with member functions called data and link). Which of the following statement changes cursor so that it points to the next node?
1. `cursor++;`
 2. `cursor = link();`
 3. `cursor = cursor->link();`
 4. `cursor += link();`
40. A chained hash table has an array size of 512. What is the maximum number of entries that can be placed in the table?
1. 256
 2. 512
 3. 1028
 4. No limit
41. In a binary tree, certain null entries are replaced by special pointers which point to nodes higher in the tree for efficiency. These special pointers are called _____

1. thread
 2. Leaf
 3. Path
 4. branch
42. Which of the following is example of Queue?
1. Phone answering system
 2. A queue of people at ticket-window
 3. Vehicles on toll-tax bridge
 4. All of the above
43. What is the size of following binary search tree?



1. 3
 2. 4
 3. 9
 4. 8
44. How many different trees are possible with 15 nodes?
1. 32753
 2. 32767
 3. 32768
 4. 32754
45. Which of the following statement is false?
- a. B-tree is a external data structure and binary tree is a main memory data structure
 - b. B-star trees have better data structure and are faster in search than Binary trees
1. Only a
 2. Only b
 3. Both a and b
 4. None of the above
46. Which of the following statement is true?
- a. In a Heap tree values in a node is greater than every value in left sub tree and smaller than right sub tree.
 - b. In a Heap tree values in a node is greater than every value in children of it
1. Only a
 2. Only b
 3. Both a and b
 4. None of the above
47. Which of the following statement is false?
1. The size of a tree is the number of nodes on the tree
 2. A tree can have a duplicate key
 3. The depth of a tree is the no of nodes on a tree
 4. Both 1 and 2
48. If the out degree of every node is exactly equal to M or 0 and the number of nodes at level K is $M^k - 1$ [consider root at level 1], then tree is known as _____
1. Positional m-ary tree
 2. Full m-ary try
 3. Complete m-ary tree
 4. Both 2 and 3
49. Dynamics implementation of stack requires _____ pointer to handle push and pop operations
1. 1
 2. 2
 3. 3
 4. No pointer require

50. Which of the following statement is true?
- a. In a graph if $e = (u, v)$ means 'e' begins at 'u' and ends at 'v'
 - b. In a graph if $e = (u, v)$ means 'u' is processor and 'v' is successor
- 1. Only a
 - 2. Only b
 - 3. Both a and b
 - 4. None of the above