TEST

1

Which of the following is an invalid class declaration in C++:

a) class A { int x; };
b) class B { };
c) public class A { };
d) static class B { };

2

What will be the output for the following C++ source code:

```cpp
#include <iostream>
#include<stdio.h>
using namespace std;
class Utils {
public:
        static short method(char* array, short length) {
                short c = 0;
                for (short i = 0; i < length; i++) {
                        if (array[i] != 0) {
                                break;
                        }
                        else {
                                c++;
                        }
                }
                return c;
        }
};
int main(int rgc, char** argv) {
        char v1[8] = { 0, 0, 1, 3, 5, 0, 0, 0 };
        short c = Utils::method(v1, 8);
        for (short i = c; i < sizeof(v1)/sizeof(v1[0]); i++) {
                printf(" %02X,", v1[i]);
        }
        return 0;
}
```

a) There is no output because the source code has the compilation errors.
b) 01, 03, 05
c) 00, 00, 01, 03, 05, 00, 00, 00,
d) 01, 03, 05, 00, 00, 00,

3

Which operator should be overloaded in the following C++ code to make the program error free?

```cpp
#include <iostream>
#include <string>
using namespace std;
class Box{
        int capacity;
public:
        Box(){}
        Box(double capacity){
                this->capacity = capacity;
        }
};
int main(int argc, char const *argv[])
{
        Box b1(10);
        Box b2 = Box(14);
        if(b1 == b2){
                cout<<"Equal";
        }
        else{
                cout<<"Not Equal";
        }
        return 0;
}
```

a) +
b) =
c) ==
d) ()

4
What is the output of the following C program?
```c
#include <stdio.h>
void xyz(int p1, int *p2) {
        ++p1;
        ++*p2;
        printf("%d%d",p1,*p2);
}
void main() {
        int a=10;
        xyz(a++,&a);
        xyz(a++,&a);
        printf("%d",a);
}
```

a) 1011121313
b) 1112131314
c) 1011121213
d) 1112131414

5
What is the output of following C program?

```
#include <stdio.h>
void main(){
        int i;
        for(i=1;i++<=1;i++)
        for(i++;i++<=6;i++)
        i++;
        printf("%d",i);
}
```

a) 12
b) 11
c) 13
d) none of these

6
What will be the output of the following C code:
```
int v[] = {1,2,3,4,5}, n = 5;
for (int i = 0; i < n / 2; i++) {
        v[i] ^= v[n - i - 1];
        v[n - i - 1] ^= v[i];
        v[i] ^= v[n - i - 1];
}
for (int i = 0; i < n; i++) {
        printf("%d ", v[i]);
}
```

a) 5 4 3 2 1
b) 1 2 3 4 5
c) 0 0 0 0 0
d) None of the mentioned

7
What is the output of following C program?
```
#include <stdio.h>
void main(){
        int a=1;
        while(a++<=1)
        while(a++<=2);
        printf("%d",a);
}
```

a) 5
b) 4
c) 1
d) 6

8
What will be the output for the following Java source code:
```
package eu.ase;
import java.io.BufferedInputStream;
import java.io.BufferedOutputStream;
```

```java
import java.io.DataInputStream;
import java.io.DataOutputStream;
import java.io.EOFException;
import java.io.FileInputStream;
import java.io.FileOutputStream;
import java.io.IOException;
public class Test {
        public static void main(String[] args) {
                double[] frequency = {12, 3, 21, 24};
            int[] values = {7, 9, 10, 11};
            try {
                DataOutputStream out = new DataOutputStream(new
BufferedOutputStream(new FileOutputStream("test.txt")));
                for (int i = 0; i < frequency.length; i++) {
                    out.writeDouble(frequency[i]);
                    out.writeInt(values[i]);
                }
                out.flush();
                out.close();
                DataInputStream in = new DataInputStream(new BufferedInputStream(new
FileInputStream("test.txt")));
                try {
                    while (true) {
                        double frecv = in.readDouble();
                        int val = in.readInt();
                        System.out.format("Value %d - %.2f frequency ", val, frecv);
                    }
                } catch (EOFException e) {in.close();}
            } catch (IOException ioe) {ioe.printStackTrace();}
        }
}
```

a) Value 7 - 12.00 frequency Value 9 - 3.00 frequency Value 10 - 21.00 frequency Value 11 - 24.00 frequency
b) The example generates compiler errors
c) The example generates runtime exceptions
d) Value 7 - 24.00 frequency Value 9 - 21.00 frequency Value 10 - 3.00 frequency Value 11 - 12.00 frequency

9
Which of the below is not an implementation of List interface?

a) ArrayList
b) Stack
c) LinkedList
d) SessionList

10
In the following C++ code how many times the string "A's constructor called" will be printed?
```cpp
#include <iostream>
```

```cpp
#include <string>
using namespace std;
class A {
        int a;
public:
        A() {
                cout<<"A's constructor called";
        }
};
class B {
        static A a;
public:
        B() {
                cout<<"B's constructor called";
        }
        static A get() {
                return a;
        }
};
A B::a;
int main(int argc, char const *argv[])
{
        B b;
        A a1 = b.get();
        A a2 = b.get();
        A a3 = b.get();
}
```

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

11
What will be the result of executing the following C++ code:
```cpp
#include <iostream>
using namespace std;
class rect
{
public:
        int area(int x=4,int y=3)
        {
                return (x * y);
        }
};
int area(int x=4,int y=3) { return 2*x*y; }
int main()
{
        rect rect;
        cout << area();
```

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CSIE4 b1

```
            return 0;
      }
```

a) Shows 12
b) Shows 16
c) None of the mentioned
d) Shows 24

12
What is the output of the following C++ code?

```
#include <iostream>
#include <string>
using namespace std;
class Box{
      int capacity;
public:
      Box(){}
      Box(double capacity){
            this->capacity = capacity;
      }
      bool operator<(Box b){
            return b.capacity < this->capacity? true : false;
      }
};

int main(int argc, char const *argv[])
{
      Box b1(10);
      Box b2 = Box(14);
      if(b1 < b2){
            cout<<"B1's capacity is smaller";
      }
      else{
            cout<<"B2's capacity is smaller";
      }
      return 0;
}
```

a) B1's capacity is smaller
b) B2's capacity is smaller
c) Error
d) Segmentation fault

13
What is the output of this C++ program?
```
#include <iostream>
using namespace std;
class MyInterface
{
   public:
```

SIE4 b

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CSIE4 b1

```cpp
    virtual void Display() = 0;
};
class Class1 : public MyInterface
{
    public:
    void Display()
    {
        int  a = 5;
        cout << a;
    }
};
class Class2 : public MyInterface
{
    public:
    void Display()
    {
        cout <<" 5" << endl;
    }
};
int main()
{
    Class1 obj1;
    obj1.Display();
    Class2 obj2;
    obj2.Display();
    return 0;
}
```

a) 5
b) 10
c) None of the mentioned
d) 5 5

14
What is the output of the following Java program:

```java
class B {
    void print() {
        System.out.println("Class B");
    }
}
class A extends B {
    @Override
    public void print() {
        System.out.println("Class A");
    }
}
public class S4405 {
    public static void main(String[] args) {
        B b = new A();
        b.print();
    }
```

CSIE4 b1

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}

a) Class B
b) Class A
c) Compilation error message
d) Runtime error message

15
What will happen when you attempt to compile and run the following Java code?

```java
public class JavaS1 {
    static {
        int a = 10;
    }
    static int a, b;
    public static void main(String args[]) {
        a--;
        myMethod();
        System.out.println(a + b + a++);
    }
    public static void myMethod() {
        b = a++ + ++a;
    }
}
```

a) Compile-time error
b) prints : 3
c) prints : 2
d) prints : 43

16
What will be the output for the following Java source code:

```java
package eu.ase;
class Container {
        private String name;
        private static Container instance = null;
        private Container() {
                this.name = "NA";
        }
        public static Container getInstance() {
                if (instance == null) {
                        instance = new Container();
                }
                return instance;
        }
        public void setName(String x) {
                this.name = x;
        }
        public String getName() {
                return this.name;
        }
    }
```

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CSIE4 b1

```java
public class Test {
        public static void main(String[] args) {
                Container ob1 = Container.getInstance();
                Container ob2 = Container.getInstance();
                ob1.setName("Container 1");
                ob2.setName("Container 2");
                System.out.println("s1=" + ob1.getName() + ", s2=" + ob2.getName());
        }
}
```

a) s1=Container 1, s2=Container 2
b) The example generates compiler errors
c) s1=Container 2, s2=Container 2
d) s1=Container 1, s2=Container 1

17
How many times the below loop will get executed?
```c
#include <stdio.h>
void main() {
        int i,j;
        i = 10;
        for (j=i==10 ; j<=10 ; j++) {
                printf("\n%d",j);
        }
}
```

a) 1
b) Compilation Error
c) 11
d) 10

18
The following C++ program:
```cpp
#include<iostream>
using namespace std;
class Person { public: void Show() { cout << "a person"; } };
class Student : public Person { public: void Show() { cout << "a student"; } };
void main()
{
        Person* p = new Student();
        p->Show();
        delete p;
}
```

a) does not compile because it contains syntax errors
b) outputs "a student"
c) outputs "a person"
d) does not compile because we can't assign a Student to a Person

19
What is the output of the following C++ program?

9 / 14

```cpp
#include <iostream>
using namespace std;
void swap(int &a, int &b);
int main()
{
    int a = 5, b = 10;
    swap(a, b);
    cout << " In main " << a << b;
    return 0;
}
void swap(int &a, int &b)
{
    int temp;
    temp = a;
    a = b;
    b = temp;
    cout << "In swap " << a << b;
}
```

a) In swap 105 In main 105
b) In swap 105 In main 510
c) In swap 510 In main 105
d) None of the mentioned

20

What will be the output for the following C++ source code:

```cpp
#include <iostream>
#include<stdio.h>
using namespace std;
class Utils {
public:
        static void method(const char* array, short length, short* startOff, short* stopOff,
short* newLength) {
                int i = 0;
                *startOff = 0; *stopOff = length; *newLength = length;
                while (array[i] == 0x00)
                        i++;
                *startOff = i;
                while (array[length - 1] == 0x00)
                        length--;
                if (length > i)
                        * newLength = (length - i);
                else
                        *newLength = 0;
                *stopOff = length;
        }
};
int main(int rgc, char** argv) {
        short startOff = 0; short stopOff = 0; short newLength = 0;
        char v1[8] = { 0, 0, 1, 2, 0, 4, 0, 0 };
        Utils::method(v1, 8, &startOff, &stopOff, &newLength);
```

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CSIE4 b1

```
        printf("\n startOff = %d, stopOff = %d, newLength = %d ", startOff, stopOff,
newLength);
        for (short i = startOff; i < stopOff; i++) {
                printf(" %02X,", v1[i]);
        }
        for (short i = 0; i < newLength; i++) {
                printf(" %02X,", (&v1[startOff])[i]);
        }
        return 0;
}
```

a) There is no output because the source code has the compilation errors.
b) startOff = 2, stopOff = 6, newLength = 4 00, 00, 01, 02, 00, 04, 01, 02, 00, 04,
c) startOff = 2, stopOff = 6, newLength = 4 01, 02, 00, 04, 01, 02, 00, 04,
d) startOff = 2, stopOff = 6, newLength = 4 01, 02, 00, 04, 00, 00, 01, 02, 00, 04,

21
Which statement is not true in Java language?

a) A public member of a class can be accessed in all the packages
b) A protected member of a class can be accessed from its derived class
c) A private member of a class cannot be accessed from its derived class
d) A private member of a class cannot be accessed by the methods of the same class

22
What is the output of the following C++ program?

```cpp
#include<iostream>
using namespace std;
class X {
    int m;
public:
        X() : m(10) {}
        X(int mm): m(mm) {}
        int getm() { return m; }
};
class Y : public X
{
    int n;
    public:
    Y(int nn) : n(nn) {}
    int getn() { return n; }
};
int main()
{
    Y yobj(100);
    cout << yobj.getm() << " " << yobj.getn() << endl;
}
```

a) 100 10
b) 10 100
c) 10 10
d) 100 100

23

What will be the result of executing the following C code:

```c
#include <stdio.h>
void main() {
        int i;
        for(i=20, i=10; i<=20; i++) {
                printf("\n %d", i);
        }
}
```

a) Shows 11
b) Runtime Error
c) Shows 1
d) Compilation Error

24

What will be displayed by the following C++ program?

```cpp
#include <iostream>
using namespace std;
class A
{
public:
        int &g()
        {
                static int i=10;
                return i;
        }
};
class B
{
public:
        A &f()
        {
                static A o;
                return o;
        }
};
void main()
{
        B b;
        cout<<b.f().g();
}
```

a) it displays 0
b) it incorrectly addresses a class member

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CSIE4 b1

c) it incorrectly uses the object reference
d) it displays 10

25
Which of the below is not an implementation of Java Set interface?
a) SortedSet
b) TreeSet
c) HashSet
d) LinkedHashSet

26
What is the output of following program?
```
#include <stdio.h>
void abc(int a) {
        printf("%d ",++a);
}

void main(){
        int a=10;
        abc(++a);
        abc(a++);
        printf("%d",a);
}
```

a) 12 13 14
b) 13 14 15
c) 14 14 14
d) 12 12 12

27
In C++, the constructor is executed when:

a) a class is declared
b) an object is used
c) an object is created
d) an object goes out of scope

28
The following program:
```
#include<iostream>
using namespace std;
class Person
{
public:
        Person() { id = counter++; }
        void Show() { cout << "Person #" << id << endl; }
private:
        static int counter;
        int id;
};
int Person::counter = 1;
```

```
void main()
{
        Person p1, p2, p3;
        p2.Show();
}
```

a) outputs "Person #0"
b) outputs "Person #2"
c) outputs "Person #1"
d) does not compile because it uses the variable counter before initialization

29
Which one from the next Java statements is correct:

a) abstract classes can contain non-abstract methods and instance variables
b) interfaces can contain instance variables
c) abstract classes can be instantiated in objects
d) none of these answers

30
Regarding virtual methods which statement is correct in Java:

a) a method is virtual if it has the signature of the method within an interface
b) a method is virtual if the 'virtual' keyword is used
c) none of these answers
d) all non-static methods are virtual by default and design

Notice:
Each right answer has three points. Maximum number of points is 90.

BAREM

Nr.	a	b	c	d
1	○	○	●	○
2	○	○	○	●
3	○	○	●	○
4	○	○	○	●
5	●	○	○	○
6	●	○	○	○
7	●	○	○	○
8	●	○	○	○
9	○	○	○	●
10	●	○	○	○
11	○	○	○	●
12	○	●	○	○
13	○	○	○	●
14	○	●	○	○
15	○	○	●	○
16	○	○	●	○
17	○	○	○	●
18	○	○	●	○
19	●	○	○	○
20	○	○	●	○
21	○	○	○	●
22	○	●	○	○
23	●	○	○	○
24	○	○	○	●
25	●	○	○	○
26	○	○	○	●
27	○	○	●	○
28	○	●	○	○
29	●	○	○	○
30	○	○	○	●

(Left column: 3 puncte each)

Codul variantei (1 - 6)

1	2	3	4	5	6
●	○	○	○	○	○

Modulul de specializare

○
○
○
●
○