

1. Which two statements, added independently at beginning of the program, allow the code to compile?

```
/* Missing statements? */
public class NewTreeSet extends java.util.TreeSet{
public static void main(String [] args) {
java.util.TreeSet t = new java.util.TreeSet();
t.clear();
}
public void clear() {
TreeMap m = new TreeMap();
m.clear();
}
}
No statement is required
import java.util.*;
import java.util.TreeMap;
```

2. Which statement is true?

```
package testpkg.p1;
public class ParentUtil {
public int x = 420;
protected int doStuff() { return x; }
}

package testpkg.p2;
import testpkg.p1.ParentUtil;
public class ChildUtil extends ParentUtil {
public static void main(String [] args) {
new ChildUtil().callStuff();
}
void callStuff() {
System.out.print("this " + this.doStuff() ); /* Line 18 */
ParentUtil p = new ParentUtil();
System.out.print(" parent " + p.doStuff() ); /* Line 20 */
}
}

Output: - If line 20 is removed, the code will compile and run.
```

3. What will be the output of the program?

```
class PassA {
public static void main(String [] args) {
PassA p = new PassA();
p.start();
}
void start() {
long [] a1 = {3,4,5};
long [] a2 = fix(a1);
System.out.print(a1[0] + a1[1] + a1[2] + " ");
System.out.println(a2[0] + a2[1] + a2[2]);
}
long [] fix(long [] a3) {
a3[1] = 7;
return a3;
}
}

Output:- 15 15
```

4. What will be the output of the program?

```
class Test {
public static void main(String [] args) {
Test p = new Test();
p.start();
}
void start() {
boolean b1 = false;
boolean b2 = fix(b1);
System.out.println(b1 + " " + b2);
}
```

```

}
boolean fix(boolean b1) {
b1 = true;
return b1;
}
}

```

Output:- false true

5. What will be the output of the program?

```

class PassS {
public static void main(String [] args) {
PassS p = new PassS();
p.start();
}
void start() {
String s1 = "slip";
String s2 = fix(s1);
System.out.println(s1 + " " + s2);
}
String fix(String s1) {
s1 = s1 + "stream";
System.out.print(s1 + " ");
return "stream";
}
}

```

Output:- slipstream slip stream

6. What will be the output of the program?

```

class SC2 {
public static void main(String [] args) {
SC2 s = new SC2();
s.start();
}
void start() {
int a = 3;
int b = 4;
System.out.print(" " + 7 + 2 + " "); // 72
System.out.print(a + b); // 7
System.out.print(" " + a + b + " "); //3 4
System.out.print(foo() + a + b + " "); //foo 3 4
System.out.println(a + b + foo()); // 7 foo
}
String foo() {
return "foo";
}
}

```

7. What will be the output of the program?

```

class Test {
static int s;
public static void main(String [] args) {
Test p = new Test();
p.start();
System.out.println(s);
}
void start() {
int x = 7;
twice(x);
System.out.print(x + " ");
}
void twice(int x) {
x = x*2;
s = x;
}
}

```

Output:- 7 14

8. What will be the output of the program?

```
class Two {
byte x;
}
class PassO {
public static void main(String [] args) {
PassO p = new PassO();
p.start();
}
void start() {
Two t = new Two();
System.out.print(t.x + " ");
Two t2 = fix(t);
System.out.println(t.x + " " + t2.x);
}
Two fix(Two tt) {
tt.x = 42;
return tt;
}
}
```

Output:- 0 42 42

9. What will be the output of the program?

```
class BoolArray {
boolean [] b = new boolean[3];
int count = 0;
void set(boolean [] x, int i) {
x[i] = true;
++count;
}
public static void main(String [] args) {
BoolArray ba = new BoolArray();
ba.set(ba.b, 0);
ba.set(ba.b, 2);
ba.test();
}
void test() {
if ( b[0] && b[1] | b[2] )
count++;
if ( b[1] && b[(++count - 2)] )
count += 7;
System.out.println("count = " + count);
}
}
```

Output:- count = 3

10. What will be the output of the program?

```
public class Test {
public static void leftshift(int i, int j) {
i <<= j;
}
public static void main(String args[]) {
int i = 4, j = 2;
leftshift(i, j);
System.out.println(i); //4
}
}
```

11. Which statement is true?

```
public void foo( boolean a, boolean b){
if( a ) {
System.out.println("A"); /* Line 5 */
}
```

```

else if(a && b) /* Line 7 */ {
    System.out.println( "A & B");
}
else /* Line 11 */ {
    if( !b ) {
        System.out.println( "notB");
    } else {
        System.out.println( "ELSE" );
    }
}
}
}

```

Output:- If a is false and b is true then the output is "ELSE"

12. What will be the output of the program?

```

public class Switch2 {
    final static short x = 2;
    public static int y = 0;
    public static void main(String [] args) {
        for (int z=0; z < 3; z++) {
            switch (z) {
                case x: System.out.print("0 ");
                case x-1: System.out.print("1 ");
                case x-2: System.out.print("2 ");
            }
        }
    }
}

```

Output:- 2 1 2 0 1 2

13. What will be the output of the program?

```

public class SwitchTest {
    public static void main(String[] args) {
        System.out.println("value = " + switchIt(4));
    }
    public static int switchIt(int x) {
        int j = 1;
        switch (x) {
            case 1: j++;
            case 2: j++;
            case 3: j++;
            case 4: j++;
            case 5: j++;
            default: j++;
        }
        return j + x;
    }
}

```

Output:- value = 8

14. What will be the output of the program?

```

public class If2 {
    static boolean b1, b2;
    public static void main(String [] args) {
        int x = 0;
        if ( !b1 ) /* Line 7 */ {
            if ( !b2 ) /* Line 9 */ {
                b1 = true;
                x++;
                if ( 5 > 6 ) {
                    x++;
                }
            }
            if ( !b1 )
                x = x + 10;
        }
        else if ( b2 = true ) /* Line 19 */
            x = x + 100;
    }
}

```

```

else if ( b1 | b2 ) /* Line 21 */
    x = x + 1000;
}
}
System.out.println(x);
}
}
Output:- 101

```

15. What will be the output of the program?

```

public class Switch2 {
    final static short x = 2;
    public static int y = 0;
    public static void main(String [] args) {
        for (int z=0; z < 3; z++) {
            switch (z) {
                case y: System.out.print("0 "); /* Line 11 */
                case x-1: System.out.print("1 "); /* Line 12 */
                case x: System.out.print("2 "); /* Line 13 */
            }
        }
    }
}
Output:- Compilation fails at line 11

```

16. What will be the output of the program?

```

public class If1 {
    static boolean b;
    public static void main(String [] args) {
        short hand = 42;
        if ( hand < 50 && !b ) /* Line 7 */
            hand++;
        if ( hand > 50 ); /* Line 9 */
        else if ( hand > 40 ) {
            hand += 7;
            hand++;
        } else
            --hand;
        System.out.println(hand);
    }
}
Output:- 51

```

17. What will be the output of the program?

```

int l = 0;
outer:
while (true) {
    l++;
    inner:
    for (int j = 0; j < 10; j++) {
        l += j;
        if (j == 3)
            continue inner;
        break outer;
    }
    continue outer;
}
System.out.println(l); 1

```

18. What will be the output of the program?

```

public class Delta {
    static boolean foo(char c) {
        System.out.print(c);
        return true;
    }
}

```

```

public static void main( String[] argv ) {
    int i = 0;
    for (foo('A'); foo('B') && (i < 2); foo('C')) {
        i++;
        foo('D');
    }
}
}
}
}
ABDCBDCB

```

19. What will be the output of the program?

```

public class Switch2 {
    final static short x = 2;
    public static int y = 0;
    public static void main(String [] args) {
        for (int z=0; z < 4; z++) {
            switch (z) {
                case x: System.out.print("0 ");
                default: System.out.print("def ");
                case x-1: System.out.print("1 ");
                           break;
                case x-2: System.out.print("2 ");
            }
        }
    }
}
2 1 0 def 1 def 1

```

20. What will be the output of the program?

```

boolean bool = true;
if(bool = false) /* Line 2 */{
    System.out.println("a");
}
else if(bool) /* Line 6 */{
    System.out.println("b");
}
else if(!bool) /* Line 10 */{
    System.out.println("c"); /* Line 12 */
}
else {
    System.out.println("d");
}
Output:- c

```

21. What will be the output of the program?

```

int i = 0, j = 5;
tp: for (;;)
{
    i++;
    for (;;)
    {
        if(i > --j)
        {
            break tp;
        }
    }
    System.out.println("i =" + i + ", j = " + j);
}
Compilation fails. If you examine the code carefully you will notice a missing curly bracket at the end of the code, this would cause the code to fail.

```

22. What will be the output of the program?

```

try {
    int x = 0;
    int y = 5 / x;
}

```

```

catch (Exception e) {
    System.out.println("Exception");
}
catch (ArithmeticException ae) {
    System.out.println(" Arithmetic Exception");
}
System.out.println("finished");

```

Compilation fails because ArithmeticException has already been caught. ArithmeticException is a subclass of java.lang.Exception

23. What will be the output of the program?

```

public class X {
    public static void main(String [] args) {
        try {
            badMethod();
            System.out.print("A");
        } catch (Exception ex) {
            System.out.print("B");
        } finally {
            System.out.print("C");
        }
        System.out.print("D");
    }
    public static void badMethod() {
        throw new Error(); /* Line 22 */
    }
}

```

C is printed before exiting with an error message.

24. What will be the output of the program?

```

public class X {
    public static void main(String [] args) {
        try {
            badMethod();
            System.out.print("A");
        } catch (RuntimeException ex) /* Line 10 */ {
            System.out.print("B");
        } catch (Exception ex1) {
            System.out.print("C");
        } finally {
            System.out.print("D");
        }
        System.out.print("E");
    }
    public static void badMethod() {
        throw new RuntimeException();
    }
}

```

BDE

25. What will be the output of the program?

```

public class RTEExcept {
    public static void throwit () {
        System.out.print("throwit ");
        throw new RuntimeException();
    }
    public static void main(String [] args) {
        try {
            System.out.print("hello ");
            throwit();
        } catch (Exception re) {
            System.out.print("caught ");
        } finally {
            System.out.print("finally ");
        }
    }
}

```

```
System.out.println("after ");
}
}
hello throwit caught finally after
```

26. What will be the output of the program?

```
public class Test {
    public static void aMethod() throws Exception {
        try /* Line 5 */ {
            throw new Exception(); /* Line 7 */
        } finally /* Line 9 */ {
            System.out.print("finally "); /* Line 11 */
        }
    }

    public static void main(String args[]) {
        try {
            aMethod();
        } catch (Exception e) /* Line 20 */ {
            System.out.print("exception ");
        }
        System.out.print("finished"); /* Line 24 */
    }
}
finally exception finished
```

27. What will be the output of the program?

```
public class X {
    public static void main(String [] args) {
        try {
            badMethod();
            System.out.print("A");
        } catch (Exception ex) {
            System.out.print("B");
        } finally {
            System.out.print("C");
        }
        System.out.print("D");
    }

    public static void badMethod() {}
}
ACD
```

28. What will be the output of the program?

```
public class X {
    public static void main(String [] args) {
        try {
            badMethod(); /* Line 7 */
            System.out.print("A");
        } catch (Exception ex) /* Line 10 */ {
            System.out.print("B"); /* Line 12 */
        } finally /* Line 14 */ {
            System.out.print("C"); /* Line 16 */
        }
        System.out.print("D"); /* Line 18 */
    }

    public static void badMethod() {
        throw new RuntimeException();
    }
}
BCD
```

29. What will be the output of the program?

```
class Exc0 extends Exception {}
class Exc1 extends Exc0 {} /* Line 2 */
public class Test {
```



```

public static void main(String args[]) {
    try {
        throw new Exc1(); /* Line 9 */
    } catch (Exc0 e0) /* Line 11 */ {
        System.out.println("Ex0 caught");
    } catch (Exception e) {
        System.out.println("exception caught");
    }
}
}
}
Ex0 caught

```

30. And given that all methods of class `FileOutputStream`, including `close ()`, throw an `IOException`, which of these is true?

```

FileOutputStream out = null;
try {
    out = new FileOutputStream("test.txt");
    out.write(122);
} catch (IOException io) {
    System.out.println ("IO Error.");
} finally {
    out.close();
}

```

This program fails to compile due to an error at line 18

31. Which answer most closely indicates the behavior of the program?

```

public class MyProgram {
    public static void throwit() {
        throw new RuntimeException();
    }
    public static void main(String args[]) {
        try {
            System.out.println("Hello world ");
            throwit();
            System.out.println("Done with try block ");
        } finally {
            System.out.println("Finally executing ");
        }
    }
}

```

The program will print Hello world, then will print Finally executing, then will print that a `RuntimeException` has occurred.

32. And given that `EOFException` and `FileNotFoundException` are both subclasses of `IOException`, and further assuming this block of code is placed into a class, which statement is most true concerning this code?

```

System.out.print("Start ");
try {
    System.out.print("Hello world");
    throw new FileNotFoundException();
}
System.out.print(" Catch Here "); /* Line 7 */
catch (EOFException e){
    System.out.print("End of file exception");
} catch (FileNotFoundException e) {
    System.out.print("File not found");
}

```

The code will not compile.

33. What line of code should replace the missing statement to make this program compile?

```

/* Missing Statement? */
public class foo {
    public static void main(String[] args) throws Exception{
        java.io.PrintWriter out = new java.io.PrintWriter();
        new java.io.OutputStreamWriter(System.out,true);
        out.println("Hello");
    }
}

```

```
}  
}
```

No statement required.

34. What will be the output of the program?

```
package foo;  
import java.util.Vector; /* Line 2 */  
private class MyVector extends Vector {  
    int i = 1; /* Line 5 */  
    public MyVector() {  
        i = 2;  
    }  
}  
public class MyNewVector extends MyVector {  
    public MyNewVector () {  
        i = 4; /* Line 15 */  
    }  
    public static void main (String args []) {  
        MyVector v = new MyNewVector(); /* Line 19 */  
    }  
}
```

Compilation will fail at line 3.

35. Which statement is true?

```
class Test1 {  
    public int value;  
    public int hashCode() { return 42; }  
}  
class Test2 {  
    public int value;  
    public int hashCode() { return (int)(value^5); }  
}
```

The Test1 hashCode () method is less efficient than the Test2 hashCode () method.

36. And assuming that the equals () and hashCode () methods are properly implemented, if the output is "x = 1111", which of the following statements will always be true?

```
x = 0;  
if (x1.hashCode() != x2.hashCode()) x = x + 1;  
if (x3.equals(x4) ) x = x + 10;  
if (!x5.equals(x6) ) x = x + 100;  
if (x7.hashCode() == x8.hashCode() ) x = x + 1000;  
System.out.println("x = " + x);  
x3.hashCode() == x4.hashCode()
```

37. Which one create an anonymous inner class from within class Bar?

```
class Boo {  
    Boo(String s) {}  
    Boo() {}  
}  
class Bar extends Boo{  
    Bar() {}  
    Bar(String s) {super(s);}  
    void zoo() {  
        // insert code here  
    }  
}  
Boo f = new Bar() { };
```

38. Which statement, inserted at line 10, creates an instance of Bar?

```
class Foo {  
    class Bar { }  
}  
class Test {  
    public static void main (String [] args)  
    {  
        Foo f = new Foo();
```

```

/* Line 10: Missing statement ? */
}
}
Foo.Bar b = f.new Bar();

```

39. What will be the output of the program?

```

public class Foo {
    Foo() {
        System.out.print("foo");
    }
    class Bar{
        Bar() {
            System.out.print("bar");
        }
        public void go() {
            System.out.print("hi");
        }
    } /* class Bar ends */
    public static void main (String [] args) {
        Foo f = new Foo();
        f.makeBar();
    }
    void makeBar() {
        (new Bar() {}).go();
    }
} /* class Foo ends */
It prints "foobarhi"

```

40. What will be the output of the program?

```

public class HorseTest{
    public static void main (String [] args) {
        class Horse {
            public String name; /* Line 7 */
            public Horse(String s) {
                name = s;
            }
        } /* class Horse ends */
        Object obj = new Horse("Zippo"); /* Line 13 */
        Horse h = (Horse) obj; /* Line 14 */
        System.out.println(h.name);
    }
} /* class HorseTest ends */
It prints "Zippo".

```

41. What will be the output of the program?

```

public class TestObj {
    public static void main (String [] args) {
        Object o = new Object() /* Line 5 */ {
            public boolean equals(Object obj) {
                return true;
            }
        } /* Line 11 */
        System.out.println(o.equals("Fred"));
    }
}
Compilation fails

```

42. What will be the output of the program?

```

public abstract class AbstractTest {
    public int getNum() {
        return 45;
    }
    public abstract class Bar {
        public int getNum() {
            return 38;
        }
    }
}

```

```

}
}
public static void main (String [] args) {
AbstractTest t = new AbstractTest(){
public int getNum() {
return 22;
}
};
AbstractTest.Bar f = t.new Bar(){
public int getNum() {
return 57;
}
};
System.out.println(f.getNum() + " " + t.getNum()); // 57 22
}
}

```

43. What will be the output of the program?

```

class MyThread extends Thread {
MyThread() {
System.out.print(" MyThread");
}
public void run() {
System.out.print(" bar");
}
public void run(String s) {
System.out.println(" baz");
}
}
public class TestThreads {
public static void main (String [] args) {
Thread t = new MyThread() {
public void run() {
System.out.println(" foo");
}
};
t.start();
}
}
MyThread foo

```

44. What will be the output of the program?

```

class MyThread extends Thread{
public static void main(String [] args) {
MyThread t = new MyThread();
t.start();
System.out.print ("one. ");
t.start();
System.out.print ("two. ");
}
public void run() {
System.out.print("Thread ");
}
}
the method will throw an IllegalStateException

```

45. What will be the output of the program?

```

class MyThread extends Thread{
MyThread() {}
MyThread(Runnable r) {super(r); }
public void run() {
System.out.print("Inside Thread ");
}
}
class MyRunnable implements Runnable {

```

```

public void run() {
    System.out.print(" Inside Runnable");
}
}

class Test {
    public static void main(String[] args) {
        new MyThread().start();
        new MyThread(new MyRunnable()).start();
    }
}

Prints "Inside Thread Inside Thread"

```

46. What will be the output of the program?

```

class s1 implements Runnable {
    int x = 0, y = 0;
    int addX() {x++; return x;}
    int addY() {y++; return y;}
    public void run() {
        for(int i = 0; i < 10; i++)
            System.out.println(addX() + " " + addY());
    }
    public static void main(String args[]) {
        s1 run1 = new s1();
        s1 run2 = new s1();
        Thread t1 = new Thread(run1);
        Thread t2 = new Thread(run2);
        t1.start();
        t2.start();
    }
}

Will print but not exactly in an order (e.g: 1 1 2 2 1 1 3 3...)

```

47. What will be the output of the program?

```

public class Q126 implements Runnable {
    private int x;
    private int y;
    public static void main(String [] args) {
        Q126 that = new Q126();
        (new Thread(that)).start( ); /* Line 8 */
        (new Thread(that)).start( ); /* Line 9 */
    }
    public synchronized void run( ) /* Line 11 */ {
        for (;;) /* Line 13 */ {
            x++;
            y++;
            System.out.println("x = " + x + "y = " + y);
        }
    }
}

The program prints pairs of values for x and y that are always the same on the same line (for example, "x=1, y=1". In addition, each value appears once (for example, "x=1, y=1" followed by "x=2, y=2")

```

48. What will be the output of the program?

```

class s1 extends Thread{
    public void run() {
        for(int i = 0; i < 3; i++) {
            System.out.println("A");
            System.out.println("B");
        }
    }
}

class Test120 extends Thread {
    public void run() {
        for(int i = 0; i < 3; i++) {
            System.out.println("C");
        }
    }
}

```

```

System.out.println("D");
}
}

public static void main(String args[]) {
    s1 t1 = new s1();
    Test120 t2 = new Test120();
    t1.start();
    t2.start();
}
}

Will print but not be able to predict the Order

```

49. What will be the output of the program?

```

class s implements Runnable{
    int x, y;
    public void run() {
        for(int i = 0; i < 1000; i++)
            synchronized(this) {
                x = 12;
                y = 12;
            }
        System.out.print(x + " " + y + " ");
    }
    public static void main(String args[]) {
        s run = new s();
        Thread t1 = new Thread(run);
        Thread t2 = new Thread(run);
        t1.start();
        t2.start();
    }
}

It print 12 12 12 12

```

50. What will be the output of the program?

```

public class ThreadDemo {
    private int count = 1;
    public synchronized void doSomething() {
        for (int i = 0; i < 10; i++)
            System.out.println(count++);
    }
    public static void main(String[] args) {
        ThreadDemo demo = new ThreadDemo();
        Thread a1 = new A(demo);
        Thread a2 = new A(demo);
        a1.start();
        a2.start();
    }
}

class A extends Thread {
    ThreadDemo demo;
    public A(ThreadDemo td) {
        demo = td;
    }
    public void run() {
        demo.doSomething();
    }
}

It will print the numbers 1 to 20 sequentially

```

51. What will be the output of the program?

```

public class WaitTest {
    public static void main(String [] args) {
        System.out.print("1 ");
        synchronized(args) {
            System.out.print("2 ");
        }
    }
}

```

```

try {
    args.wait(); /* Line 11 */
} catch (InterruptedException e) {}
}
System.out.print("3 ");
}
}
1 2

```

52. What will be the output of the program? and assuming that data must be protected from corruption, what if anything can you add to the preceding code to ensure the integrity of data?

```

public class SyncTest {
    public static void main (String [] args) {
        Thread t = new Thread() {
            Foo f = new Foo();
            public void run() {
                f.increase(20);
            }
        };
        t.start();
    }
}

class Foo{
    private int data = 23;
    public void increase(int amt) {
        int x = data;
        data = x + amt;
    }
}

Synchronize the increase() method

```

53. What will be the output of the program?

```

class Happy extends Thread {
    final StringBuffer sb1 = new StringBuffer();
    final StringBuffer sb2 = new StringBuffer();
    public static void main(String args[]) {
        final Happy h = new Happy();
        new Thread() {
            public void run() {
                synchronized(this) {
                    h.sb1.append("A");
                    h.sb2.append("B");
                    System.out.println(h.sb1);
                    System.out.println(h.sb2);
                }
            }
        }.start();
        new Thread() {
            public void run() {
                synchronized(this){
                    h.sb1.append("D");
                    h.sb2.append("C");
                    System.out.println(h.sb2);
                    System.out.println(h.sb1);
                }
            }
        }.start();
    }
}

Output determined by the underlying platform.

```

54. The static method `Thread.currentThread ()` returns a reference to the currently executing `Thread` object. What is the result of this code?

```

class Test {
    public static void main(String [] args) {

```

```

printAll(args);
}
public static void printAll(String[] lines){
for(int i = 0; i < lines.length; i++) {
System.out.println(lines[i]);
Thread.currentThread().sleep(1000);
}
}
}
}

```

This code will not compile.

55. What will be the output of the program?

```

class MyThread extends Thread {
public static void main(String [] args) {
MyThread t = new MyThread(); /* Line 5 */
t.run(); /* Line 6 */
}
public void run() {
for(int i=1; i < 3; ++i) {
System.out.print (i + "..");
}
}
}
}

```

1..2..

56. What will be the output of the program?

```

class Test116 {
static final StringBuffer sb1 = new StringBuffer();
static final StringBuffer sb2 = new StringBuffer();
public static void main(String args[]){
new Thread() {
public void run() {
synchronized(sb1) {
sb1.append("A");
sb2.append("B");
}
}
}.start();
new Thread() {
public void run() {
synchronized(sb1) {
sb1.append("C");
sb2.append("D");
}
}
}.start(); /* Line 28 */
System.out.println (sb1 + " " + sb2);
}
}
}

```

Cannot be determined.

57. What will be the output of the program?

```

public class ThreadTest extends Thread {
public void run() {
System.out.println("In run");
yield();
System.out.println("Leaving run");
}
public static void main(String []argv) {
(new ThreadTest()).start();
}
}
}

```

The text "In run" followed by "Leaving run" will be displayed

58. What will be the output of the program?


```

public class Test107 implements Runnable {
    private int x;
    private int y;
    public static void main(String args[]) {
        Test107 that = new Test107();
        (new Thread(that)).start();
        (new Thread(that)).start();
    }
    public synchronized void run() {
        for(int i = 0; i < 10; i++) {
            x++;
            y++;
            System.out.println("x = " + x + ", y = " + y); /* Line 17 */
        }
    }
}

```

Will print in this order: x = 1 y = 1 x = 2 y = 2 x = 3 y = 3 x = 4 y = 4 x = 5 y = 5... but the output will be produced by first one thread then the other. This is guaranteed by the synchronized code.

59. What will be the output of the program?

```

public class Test {
    public static void main (String [] args) {
        final Foo f = new Foo();
        Thread t = new Thread(new Runnable() {
            public void run() {
                f.doStuff();
            }
        });
        Thread g = new Thread() {
            public void run() {
                f.doStuff();
            }
        };
        t.start();
        g.start();
    }

    class Foo {
        int x = 5;
        public void doStuff() {
            if (x < 10) {
                // nothing to do
                try {
                    wait();
                } catch (InterruptedException ex) {}
            }
            else {
                System.out.println("x is " + x++);
                if (x >= 10)
                {
                    notify();
                }
            }
        }
    }
}

```

An exception occurs at runtime.

60. What will be the output of the program?

```

class MyThread extends Thread {
    public static void main(String [] args) {
        MyThread t = new MyThread();
        Thread x = new Thread(t);
        x.start(); /* Line 7 */
    }
}

```

```

public void run() {
    for(int i = 0; i < 3; ++i) {
        System.out.print (i + "..");
    }
}
}
}
0..1..2..

```

61. Where will be the most chance of the garbage collector being invoked?

```

class HappyGarbage01 {
    public static void main(String args[]) {
        HappyGarbage01 h = new HappyGarbage01();
        h.methodA(); /* Line 6 */
    }
    Object methodA() {
        Object obj1 = new Object();
        Object [] obj2 = new Object[1];
        obj2[0] = obj1;
        obj1 = null;
        return obj2[0];
    }
}

```

Garbage collector never invoked in methodA()

62. At what point is the Bar object, created on line 6, eligible for garbage collection?

```

class Bar { }
class Test {
    Bar doBar() {
        Bar b = new Bar(); /* Line 6 */
        return b; /* Line 7 */
    }
    public static void main (String args[]) {
        Test t = new Test(); /* Line 11 */
        Bar newBar = t.doBar(); /* Line 12 */
        System.out.println("newBar");
        newBar = new Bar(); /* Line 14 */
        System.out.println("finishing"); /* Line 15 */
    }
}

```

after line 14

63. When is the Demo object eligible for garbage collection?

```

class Test {
    private Demo d;
    void start() {
        d = new Demo();
        this.takeDemo(d); /* Line 7 */
    } /* Line 8 */
    void takeDemo(Demo demo){
        demo = null;
        demo = new Demo();
    }
}

```

When the instance running this code is made eligible for garbage collection.

64. After line 8 runs. how many objects are eligible for garbage collection?

```

public class X {
    public static void main(String [] args) {
        X x = new X();
        X x2 = m1(x); /* Line 6 */
        X x4 = new X();
        x2 = x4; /* Line 8 */
        doComplexStuff();
    }
    static X m1(X mx) {

```

```

mx = new X();
return mx;
}
}
1

```

65. When is the Float object, created in line 3, eligible for garbage collection?

```

public Object m() {
    Object o = new Float(3.14F);
    Object [] oa = new Object[1];
    oa[0] = o; /* Line 5 */
    o = null; /* Line 6 */
    oa[0] = null; /* Line 7 */
    return o; /* Line 8 */
}
just after line 7

```

66. After line 11 runs, how many objects are eligible for garbage collection?

```

class X2 {
    public X2 x;
    public static void main(String [] args) {
        X2 x2 = new X2(); /* Line 6 */
        X2 x3 = new X2(); /* Line 7 */
        x2.x = x3;
        x3.x = x2;
        x2 = new X2();
        x3 = x2; /* Line 11 */
        doComplexStuff();
    }
}
2

```

67. What causes compilation to fail?

```

public class Test {
    public void foo() {
        assert false; /* Line 5 */
        assert false; /* Line 6 */
    }
    public void bar(){
        while(true){
            assert false; /* Line 12 */
        }
        assert false; /* Line 14 */
    }
}
Line 14

```

68. What will be the output of the program?

```

public class Test {
    public static int y;
    public static void foo(int x) {
        System.out.print("foo ");
        y = x;
    }
    public static int bar(int z) {
        System.out.print("bar ");
        return y = z;
    }
    public static void main(String [] args )
    {
        int t = 0;
        assert t > 0 : bar(7);
        assert t > 1 : foo(8); /* Line 18 */
        System.out.println("done ");
    }
}

```

Compilation fails

69. Which line is an example of an inappropriate use of assertions?

```
public class Test2 {
    public static int x;
    public static int foo(int y) {
        return y * 2;
    }
    public static void main(String [] args) {
        int z = 5;
        assert z > 0; /* Line 11 */
        assert z > 2: foo(z); /* Line 12 */
        if ( z < 7 )
            assert z > 4; /* Line 14 */
        switch (z) {
            case 4: System.out.println("4 ");
            case 5: System.out.println("5 ");
            default: assert z < 10;
        }
        if ( z < 10 )
            assert z > 4: z++; /* Line 22 */
        System.out.println(z);
    }
}
```

Line 22

70. Which line is an example of an inappropriate use of assertions?

```
public class Test2 {
    public static int x;
    public static int foo(int y) {
        return y * 2;
    }
    public static void main(String [] args) {
        int z = 5;
        assert z > 0; /* Line 11 */
        assert z > 2: foo(z); /* Line 12 */
        if ( z < 7 )
            assert z > 4; /* Line 14 */
        switch (z) {
            case 4: System.out.println("4 ");
            case 5: System.out.println("5 ");
            default: assert z < 10;
        }
        if ( z < 10 )
            assert z > 4: z++; /* Line 22 */
        System.out.println(z);
    }
}
```

Line 22

71. What causes compilation to fail?

```
public class Test{
    public void foo() {
        assert false; /* Line 5 */
        assert false; /* Line 6 */
    }
    public void bar(){
        while(true) {
            assert false; /* Line 12 */
        }
        assert false; /* Line 14 */
    }
}
```

Line 14

72. What will be the output of the program?

```

public class WrapTest {
    public static void main(String [] args) {
        int result = 0;
        short s = 42;
        Long x = new Long("42");
        Long y = new Long(42);
        Short z = new Short("42");
        Short x2 = new Short(s);
        Integer y2 = new Integer("42");
        Integer z2 = new Integer(42);
        if (x == y) /* Line 13 */
            result = 1;
        if (x.equals(y) ) /* Line 15 */
            result = result + 10;
        if (x.equals(z) ) /* Line 17 */
            result = result + 100;
        if (x.equals(x2) ) /* Line 19 */
            result = result + 1000;
        if (x.equals(z2) ) /* Line 21 */
            result = result + 10000;
        System.out.println("result = " + result); // result = 10
    }
}

```

73. What will be the output of the program?

```

public class BoolTest {
    public static void main(String [] args) {
        int result = 0;
        Boolean b1 = new Boolean("TRUE");
        Boolean b2 = new Boolean("true");
        Boolean b3 = new Boolean("tRuE");
        Boolean b4 = new Boolean("false");
        if (b1 == b2) /* Line 10 */
            result = 1;
        if (b1.equals(b2) ) /* Line 12 */
            result = result + 10;
        if (b2 == b4) /* Line 14 */
            result = result + 100;
        if (b2.equals(b4) ) /* Line 16 */
            result = result + 1000;
        if (b2.equals(b3) ) /* Line 18 */
            result = result + 10000;
        System.out.println("result = " + result); // 10010
    }
}

```

74. What will be the output of the program?

```

public class ObjComp {
    public static void main(String [] args ) {
        int result = 0;
        ObjComp oc = new ObjComp();
        Object o = oc;
        if (o == oc)
            result = 1;
        if (o != oc)
            result = result + 10;
        if (o.equals(oc) )
            result = result + 100;
        if (oc.equals(o) )
            result = result + 1000;
        System.out.println("result = " + result); // 1101
    }
}

```

75. What will be the output of the program?

```

public class Example {
    public static void main(String [] args) {
        double values[] = {-2.3, -1.0, 0.25, 4};
        int cnt = 0;
        for (int x=0; x < values.length; x++) {
            if (Math.round(values[x] + .5) == Math.ceil(values[x])) {
                ++cnt;
            }
        }
        System.out.println("same results " + cnt + " time(s)");
    }
}

```

same results 2 time(s)

76. What will be the output of the program?

```

public class Test178 {
    public static void main(String[] args) {
        String s = "foo";
        Object o = (Object)s;
        if (s.equals(o)) {
            System.out.print("AAA");
        }
        else {
            System.out.print("BBB");
        }
        if (o.equals(s)) {
            System.out.print("CCC");
        }
        else {
            System.out.print("DDD");
        }
    }
}

```

AAACCC

77. What will be the output of the program?

```

class A {
    public A(int x){}
}
class B extends A { }
public class test {
    public static void main (String args []){
        A a = new B();
        System.out.println("complete");
    }
}

```

Compile Error

78. What will be the output of the program?

```

int i = 1, j = 10;
do {
    if(i++ > --j) /* Line 4 */ {
        continue;
    }
} while (i < 5);
System.out.println("i = " + i + "and j = " + j); /* Line 9 */

```

i = 5 and j = 6

79. What will be the output of the program?

```

public class ExamQuestion7 {
    static int j;
    static void methodA(int i) {
        boolean b;
        do {
            b = i<10 | methodB(4); /* Line 9 */

```

```

b = i < 10 || methodB(8); /* Line 10 */
}while (!b);
}
static boolean methodB(int i) {
j += i;
return true;
}
public static void main(String[] args) {
methodA(0);
System.out.println("j = " + j);
}
}
j = 4

```

80. What will be the output of the program?

```

try {
Float f1 = new Float("3.0");
int x = f1.intValue();
byte b = f1.byteValue();
double d = f1.doubleValue();
System.out.println(x + b + d);
}catch (NumberFormatException e) /* Line 9 */{
System.out.println("bad number"); /* Line 11 */
}
9.0

```

81. What will be the output of the program?

```

public class NFE {
public static void main(String [] args) {
String s = "42";
try {
s = s.concat(".5"); /* Line 8 */
double d = Double.parseDouble(s);
s = Double.toString(d);
int x = (int) Math.ceil(Double.valueOf(s).doubleValue());
System.out.println(x);
}catch (NumberFormatException e) {
System.out.println("bad number");
}
}
}
43

```

82. What will be the output of the program?

```

interface Foo141 {
int k = 0; /* Line 3 */
}
public class Test141 implements Foo141{
public static void main(String args[]) {
int i;
Test141 test141 = new Test141();
i = test141.k; /* Line 11 */
i = Test141.k;
i = Foo141.k;
}
}
Compiles and runs ok.

```

83. What will be the output of the program?

```

public class Test138 {
public static void stringReplace (String text) {
text = text.replace ('j', 'c'); /* Line 5 */
}
public static void bufferReplace (StringBuffer text) {
text = text.append ("c"); /* Line 9 */
}
}

```

```

}
public static void main (String args[]) {
String textString = new String ("java");
StringBuffer textBuffer = new StringBuffer ("java"); /* Line 14 */
stringReplace(textString);
bufferReplace(textBuffer);
System.out.println (textString + textBuffer);
}
}
javajavac

```

84. What will be the output of the program?

```

class Tree {}
class Pine extends Tree {}
class Oak extends Tree {}
public class Forest1{
public static void main (String [] args) {
Tree tree = new Pine();
if( tree instanceof Pine )
System.out.println ("Pine");
else if( tree instanceof Tree )
System.out.println ("Tree");
else if( tree instanceof Oak )
System.out.println ( "Oak" );
else
System.out.println ("Oops ");
}
}
Pine

```

85. What will be the output of the program?

```

public class ExamQuestion6 {
static int x;
boolean catch() {
x++;
return true;
}
public static void main(String[] args) {
x=0;
if ((catch() | catch()) || catch())
x++;
System.out.println(x);
}
}
Compilation Fails

```

86. What will be the output of the program?

```

public class Test {
public static void main(String[] args) {
final StringBuffer a = new StringBuffer();
final StringBuffer b = new StringBuffer();
new Thread() {
public void run() {
System.out.print(a.append("A"));
synchronized(b) {
System.out.print(b.append("B"));
}
}
}.start();
new Thread() {
public void run() {
System.out.print(b.append("C"));
synchronized(a) {
System.out.print(a.append("D"));
}
}
}
}

```



```

}
}.start();
}
}

```

Indeterminate output ABBCAD ACADCB ACBCBAD ABBCAD ACBCBAD ACBCBAD

87. What will be the output of the program?

```

String s = "hello";
Object o = s;
if( o.equals(s) ){
    System.out.println("A");
}
else{
    System.out.println("B");
}
if( s.equals(o) ){
    System.out.println("C");
}
else{
    System.out.println("D");
}

```

AC

88. What will be the output of the program?

```

public class BoolTest {
    public static void main(String [] args) {
        Boolean b1 = new Boolean("false");
        boolean b2;
        b2 = b1.booleanValue();
        if (!b2) {
            b2 = true;
            System.out.print("x ");
        }
        if (b1 & b2) /* Line 13 */ {
            System.out.print("y ");
        }
        System.out.println("z");
    }
}

```

x z

89. What will be the output of the program?

```

enum Enums {
    A, B, C;
    private Enums() {
        System.out.println(10);
    }
}

public class MainClass {
    public static void main(String[] args) {
        Enum en = Enums.B;
    }
}

```

The constructor of Enums is called which prints 10. 10 10 10

90. What will be the output of the program?

```

double a = 0.02;
double b = 0.03;
double c = b - a;
System.out.println(c); // 0.00999999999999998
BigDecimal _a = new BigDecimal("0.02");
BigDecimal _b = new BigDecimal("0.03");
BigDecimal _c = b.subtract(_a);
System.out.println(_c); // 0.01

```

91. What will be the output of the program?

```

BigDecimal b = new BigDecimal("23.43");
BigDecimal br = new BigDecimal("24");
BigDecimal bres = b.add(new BigDecimal("450.23"));
System.out.println("Add: "+bres);           // Add: 684.66
MathContext mc = new MathContext(2, RoundingMode.DOWN);
BigDecimal bdecMath = b.add(new BigDecimal("450.23"), mc);
System.out.println("Add using MathContext: "+bdecMath); // 6.8E+2

```

92. What will be the output of the program?

```

class A {
    final public int calculate(int a, int b) { return 1; }
}
class B extends A {
    public int calculate(int a, int b) { return 2; }
}
public class output {
    public static void main(String args[]) {
        B object = new B();
        System.out.print("b is " + b.calculate(0, 1));
    }
}

```

Compilation Error.

93. What will be the output of the program?

```

int arr[][] = new int[3][];
arr[0] = new int[1];
arr[1] = new int[2];
arr[2] = new int[3];

int sum = 0;
for (int i = 0; i < 3; ++i)
    for (int j = 0; j < i + 1; ++j)
        arr[i][j] = j + 1;
for (int i = 0; i < 3; ++i)
    for (int j = 0; j < i + 1; ++j)
        sum += arr[i][j];
System.out.print(sum);           // 10

```

94. What will be the output of the program?

```

int a = 1;
int b = 2;
int c;
int d;
c = ++b;
d = a++;
c++;
b++;
++a;
System.out.println(a + " " + b + " " + c); // 3 4 4

```

95. What will be the output of the program?

```

class box {
    int width;
    int height;
    int length;
}
class mainclass {
    public static void main(String args[]) {
        box obj = new box();
        obj.width = 10;
        obj.height = 2;
        obj.length = 10;
        int y = obj.width * obj.height * obj.length;
        System.out.print(y);      200
    }
}

```

96. What will be the output of the program?

```
class box {
int width;
int height;
int length;
}
class mainclass {
public static void main(String args[]) {
box obj1 = new box();
box obj2 = new box();
obj1.height = 1;
obj1.length = 2;
obj1.width = 1;
obj2 = obj1;
System.out.println(obj2.height); 1
}
}
```

97. What will be the output of the program?

```
class box {
int width;
int height;
int length;
}
class mainclass {
public static void main(String args[]) {
box obj = new box();
System.out.println(obj); classname@hashcode in hexadecimal form
}
}
```

98. What will be the output of the program?

```
class box {
int width;
int height;
int length;
int volume;
void volume(int height, int length, int width) {
volume = width*height*length;
}
}
class Prameterized_method {
public static void main(String args[]) {
box obj = new box();
obj.height = 1;
obj.length = 5;
obj.width = 5;
obj.volume(3,2,1);
System.out.println(obj.volume); 6
}
}
```

99. What will be the output of the program?

```
class equality {
int x;
int y;
boolean isequal() {
return(x == y);
}
}
class Output {
public static void main(String args[]) {
equality obj = new equality();
obj.x = 5;
obj.y = 5;
```

```
System.out.println(obj.isequal());    true
}
}
```

100. What will be the output of the program?

```
class box {
int width;
int height;
int length;
int volume;
void volume() {
volume = width*height*length;
}
}
class Output {
public static void main(String args[]) {
box obj = new box();
obj.height = 1;
obj.length = 5;
obj.width = 5;
obj.volume();
System.out.println(obj.volume);    25
}
}
```

101. What will be the output of the program?

```
class Output {
public static int sum(int ...x) {
return;
}
static void main(String args[]) {
sum(10);    only sum(10)
sum(10,20);    only sum(10,20)
sum(10,20,30);    only sum(10) & sum(10,20)
sum(10,20,30,40);
}
}
```

102. What will be the output of the program?

```
class area {
int width;
int length;
int volume;
area() {
width=5;
length=6;
}
void volume() {
volume = width*length*height;
}
}
class cons_method {
public static void main(String args[]) {
area obj = new area();
obj.volume();
System.out.println(obj.volume);
}
}    error
```

103. What will be the output of the program?

```
class box {
int width;
int height;
int length;
int volume;
```

```

box() {
width = 5;
height = 5;
length = 6;
}
void volume() {
volume = width*height*length;
}
}
class constructor_output {
public static void main(String args[]) {
box obj = new box();
obj.volume();
System.out.println(obj.volume);    150
}
}

```

104. What will be the output of the program?

```

class San{
San()throws IOException {
}
}
class Foundry extends San {
Foundry() {
}
public static void main(String[]args) {
}
}
} compile time error

```

105. What will be the output of the program?

```

class box {
int width;
int height;
int length;
int volume;
void finalize() {
volume = width*height*length;
System.out.println(volume);
}
protected void volume() {
volume = width*height*length;
System.out.println(volume);
}
}
class Output {
public static void main(String args[]) {
box obj = new box();
obj.width=5;
obj.height=5;
obj.length=6;
obj.volume();
}
}    150

```

106. What will be the output of the program?

```

class area {
int width;
int length;
int area;
void area(int width, int length) {
this.width = width;
this.length = length;
}
}
class Output {

```

```

public static void main(String args[]) {
    area obj = new area();
    obj.area(5, 6);
    System.out.println(obj.length + " " + obj.width);    6 5
}
}

```

107. What will be the output of the program?

```

class San{
    public void m1 (int i,float f) {
        System.out.println(" int float method");
    }
    public void m1(float f,int i); {
        System.out.println("float int method");
    }
    public static void main(String[]args) {
        San s=new San();
        s.m1(20,20);
    }
} compile time error

```

108. What will be the output of the program?

```

class overload {
    int x; int y;
    void add(int a) {
        x = a + 1;
    }
    void add(int a, int b) {
        x = a + 2;
    }
}
class Overload_methods {
    public static void main(String args[]) {
        overload obj = new overload();
        int a = 0;
        obj.add(6);
        System.out.println(obj.x);    7
    }
}

```

109. What will be the output of the program?

```

class overload {
    int x;
        int y;
    void add(int a) {
        x = a + 1;
    }
    void add(int a , int b) {
        x = a + 2;
    }
}
class Overload_methods {
    public static void main(String args[]) {
        overload obj = new overload();
        int a = 0;
        obj.add(6, 7);
        System.out.println(obj.x);    8
    }
}

```

110. What will be the output of the program?

```

class overload {
    int x;
        double y;
    void add(int a , int b) {

```

```

x = a + b;
}
void add(double c , double d)    {
y = c + d;
}
overload()    {
this.x = 0;
this.y = 0;
}
}
class Overload_methods {
public static void main(String args[])    {
overload obj = new overload();
int a = 2;
double b = 3.2;
obj.add(a, a);
obj.add(b, b);
System.out.println(obj.x + " " + obj.y);    4 6.4
}
}

```

111. What will be the output of the program?

```

class test {
int a;
int b;
void meth(int i , int j)    {
i *= 2;
j /= 2;
}
}
class Output {
public static void main(String args[])    {
test obj = new test();
int a = 10;
int b = 20;
obj.meth(a , b);
System.out.println(a + " " + b);    10 20
}
}

```

112. What will be the output of the program?

```

class test {
int a;
int b;
test(int i, int j)    {
a = i;
b = j;
}
void meth(test o)    {
o.a *= 2;
O.b /= 2;
}
}
class Output {
public static void main(String args[])    {
test obj = new test(10 , 20);
obj.meth(obj);
System.out.println(obj.a + " " + obj.b);    20 10
}
}

```

113. What will be the output of the program?

```

class access {
public int x;
private int y;
}

```

```

void cal(int a, int b) {
    x = a + 1;
    y = b;
}
}
class access_specifier {
    public static void main(String args[]) {
        access obj = new access();
        obj.cal(2, 3);
        System.out.println(obj.x + " " + obj.y);
    }
}
} Runtime Error

```

114. What will be the output of the program?

```

class access {
    public int x;
    private int y;
    void cal(int a, int b) {
        x = a + 1;
        y = b;
    }
    void print() {
        system.out.println(" " + y);
    }
}
class access_specifier {
    public static void main(String args[]) {
        access obj = new access();
        obj.cal(2, 3);
        System.out.println(obj.x);
        obj.print();
    }
}
} 3 3

```

115. What will be the output of the program?

```

class static_out {
    static int x;
    static int y;
    void add(int a, int b) {
        x = a + b;
        y = x + b;
    }
}
class static_use {
    public static void main(String args[]) {
        static_out obj1 = new static_out();
        static_out obj2 = new static_out();
        int a = 2;
        obj1.add(a, a + 1);
        obj2.add(5, a);
        System.out.println(obj1.x + " " + obj2.y);
    }
}
} 7 9

```

116. What will be the output of the program?

```

class test {
    int a;
    int b;
    test(int i, int j) {
        a = i;
        b = j;
    }
    void meth(test o) {
        o.a *= 2;
        O.b /= 2;
    }
}

```



```

}
}
class Output {
public static void main(String args[]) {
test obj = new test(10, 20);
obj.meth(obj);
System.out.println(obj.a + " " + obj.b);    20 10
}
}

```

117. What will be the output of the program?

```

class access {
public int x;
    static int y;
void cal(int a, int b) {
x += a;
y += b;
}
}
class static_specifier {
public static void main(String args[]) {
access obj1 = new access();
access obj2 = new access();
obj1.x = 0;
obj1.y = 0;
obj1.cal(1, 2);
obj2.x = 0;
obj2.cal(2, 3);
System.out.println(obj1.x + " " + obj2.y);    1 5
}
}

```

118. What will be the output of the program?

```

class access {
static int x;
void increment() {
x++;
}
}
class static_use {
public static void main(String args[]) {
access obj1 = new access();
access obj2 = new access();
obj1.x = 0;
obj1.increment();
obj2.increment();
System.out.println(obj1.x + " " + obj2.x);    2 2
}
}

```

119. What will be the output of the program?

```

class static_out {
static int x;
    static int y;
void add(int a, int b) {
x = a + b;
y = x + b;
}
}
class static_use {
public static void main(String args[]) {
static_out obj1 = new static_out();
static_out obj2 = new static_out();
int a = 2;
obj1.add(a, a + 1);
}
}

```

```
obj2.add(5, a);
System.out.println(obj1.x + " " + obj2.y); 7 9
}
}
```

120. What will be the output of the program?

```
class box {
int width;
int height;
int length;
int volume;
void volume(int height, int length, int width) {
volume = width * height * length;
}
}
class Prameterized_method{
public static void main(String args[]) {
box obj = new box();
obj.height = 1;
obj.length = 5;
obj.width = 5;
obj.volume(3, 2, 1);
System.out.println(obj.volume); 6
}
}
```

121. What will be the output of the program?

```
class equality {
int x;
int y;
boolean isequal() {
return(x == y);
}
}
class Output {
public static void main(String args[]) {
equality obj = new equality();
obj.x = 5;
obj.y = 5;
System.out.println(obj.isequal); true
}
}
```

122. What will be the output of the program?

```
class box {
int width;
int height;
int length;
int volume;
void volume() {
volume = width * height * length;
}
void volume(int x) {
volume = x;
}
}
class Output {
public static void main(String args[]) {
box obj = new box();
obj.height = 1;
obj.length = 5;
obj.width = 5;
obj.volume(5);
System.out.println(obj.volume); 5
}
}
```

```
}
```

123. What will be the output of the program?

```
class area {
    int width;
    int length;
    int height;
    area() {
        width = 5;
        length = 6;
        height = 1;
    }
    void volume() {
        volume = width * height * length;
    }
}
class cons_method {
    public static void main(String args[]) {
        area obj = new area();
        obj.volume();
        System.out.println(obj.volume); 30
    }
}
```

124. What would be the output of the following snippet, if compiled and executed with command line "hello there"?

```
public class abc{
    String[] xyz;
    public static void main(String argv[]){
        xyz=argv;
    }
    public void runMethod(){
        System.out.println(argv[1]);
    }
}
Compile time error
```

125. What is the output of below snippet run as \$ java Demo --length 512 --breadth 2 -h 3 ?

```
class Demo {
    @Parameter(names={"--length"})
    int length;
    @Parameter(names={"--breadth"})
    int breadth;
    @Parameter(names={"--height", "-h"})
    int height;
    public static void main(String args[]) {
        Demo demo = new Demo();
        new JCommander(demo, args);
        demo.run();
    }
    public void run() {
        System.out.println(length+" "+ breadth+" "+height); 512 2 3
    }
}
```

126. What is the output of this program?

```
class recursion {
    int func (int n) {
        int result;
        result = func (n - 1);
        return result;
    }
}
class Output {
    public static void main(String args[]) {
        recursion obj = new recursion();
        System.out.print(obj.func(12));
    }
}
```

```
}  
} Exception in thread "main" java.lang.StackOverflowError
```

127. What is the output of this program?

```
class recursion {  
    int func(int n) {  
        int result;  
        if (n == 1)  
            return 1;  
        result = func(n - 1);  
        return result;  
    }  
}  
  
class Output {  
    public static void main(String args[]) {  
        recursion obj = new recursion();  
        System.out.print(obj.func(5)); 1  
    }  
}
```

128. What is the output of this program?

```
class recursion {  
    int fact(int n) {  
        int result;  
        if (n == 1)  
            return 1;  
        result = fact(n - 1) * n;  
        return result;  
    }  
}  
  
class Output {  
    public static void main(String args[]) {  
        recursion obj = new recursion();  
        System.out.print(obj.fact(5)); 120  
    }  
}
```

129. What is the output of this program?

```
class recursion {  
    int fact(int n) {  
        int result;  
        if (n == 1)  
            return 1;  
        result = fact(n - 1) * n;  
        return result;  
    }  
}  
  
class Output {  
    public static void main(String args[]) {  
        recursion obj = new recursion();  
        System.out.print(obj.fact(1)); 1  
    }  
}
```

130. What is the output of this program?

```
class recursion {  
    int fact(int n) {  
        int result;  
        if (n == 1)  
            return 1;  
        result = fact(n - 1) * n;  
        return result;  
    }  
}  
  
class Output {
```

```

public static void main(String args[])    {
recursion obj = new recursion();
System.out.print(obj.fact(6)); 720
}
}

```

131. What is the output of this program?

```

final class A {
int i;
}
class B extends A {
int j;
System.out.println(j + " " + i);
}
class inheritance {
public static void main(String args[])    {
B obj = new B();
obj.display();
}
}
} Compilation Error

```

132. What is the output of this program?

```

class A {
int i;
public void display() {
System.out.println(i);
}
}
class B extends A {
int j;
public void display() {
System.out.println(j);
}
}
class Dynamic_dispatch {
public static void main(String args[])    {
B obj2 = new B();
obj2.i = 1;
obj2.j = 2;
A r;
r = obj2;
r.display();
}
}
} 2

```

133. What is the output of this program?

```

abstract class A {
int i;
abstract void display();
}
class B extends A {
int j;
void display() {
System.out.println(j); 2
}
}
class Abstract_demo {
public static void main(String args[])    {
B obj = new B();
obj.j=2;
obj.display();
}
}
}

```

134. What is the output of this program?

```

class A {
    int i;
    int j;
    A() {
        i = 1;
        j = 2;
    }
}
class Output {
    public static void main(String args[]) {
        A obj1 = new A();
        A obj2 = new A();
        System.out.print(obj1.equals(obj2)); false
    }
}

```

135. What is the output of this program?

```

class A {
    int i;
    int j;
    A() {
        i = 1;
        j = 2;
    }
}
class Output {
    public static void main(String args[]) {
        A obj1 = new A();
        System.out.print(obj1.toString()); String associated with obj1
    }
}

```

136. What is the output of this program?

```

class A {
    public int i;
    private int j;
}
class B extends A {
    void display() {
        super.j = super.i + 1;
        System.out.println(super.i + " " + super.j);
    }
}
class inheritance {
    public static void main(String args[]) {
        B obj = new B();
        obj.i=1;
        obj.j=2;
        obj.display();
    }
}

```

Compilation Error

137. What is the output of this program?

```

class A {
    public int i;
    public int j;
    A() {
        i = 1;
        j = 2;
    }
}
class B extends A {
    int a;
    B() {

```

```

super();
}
}
class super_use {
public static void main(String args[]) {
B obj = new B();
System.out.println(obj.i + " " + obj.j) 1 2
}
}

```

138. What is the output of this program?

```

abstract class A {
int i;
abstract void display();
}
class B extends A {
int j;
void display() {
System.out.println(j); 2
}
}
class Abstract_demo {
public static void main(String args[]) {
B obj = new B();
obj.j=2;
obj.display();
}
}

```

139. What is the output of this program?

```

class A {
int i;
void display() {
System.out.println(i);
}
}
class B extends A {
int j;
void display() {
System.out.println(j);
}
}
class method_overriding {
public static void main(String args[]) {
B obj = new B();
obj.i=1;
obj.j=2;
obj.display();
}
} 2

```

140. What is the output of this program?

```

class A {
public int i;
protected int j;
}
class B extends A {
int j;
void display() {
super.j = 3;
System.out.println(i + " " + j);
}
}
class Output {
public static void main(String args[]) {

```

```

B obj = new B();
obj.i=1;
obj.j=2;
obj.display();
}
} 1 2

```

141. What is the output of this program?

```

class A {
int i;
}
class B extends A {
int j;
void display() {
super.i = j + 1;
System.out.println(j + " " + i);
}
}
class inheritance {
public static void main(String args[]) {
B obj = new B();
obj.i=1;
obj.j=2;
obj.display();
}
} 2 3

```

142. What is the output of this program?

```

class A {
public int i;
private int j;
}
class B extends A {
void display() {
super.j = super.i + 1;
System.out.println(super.i + " " + super.j);
}
}
class inheritance {
public static void main(String args[]) {
B obj = new B();
obj.i=1;
obj.j=2;
obj.display();
}
} Compilation Error

```

143. What is the output of this program?

```

class A {
int i;
    int j;
A() {
i = 1;
j = 2;
}
}
class Output {
public static void main(String args[]) {
A obj1 = new A();
    System.out.print(obj1.toString()); String associated with obj1
}
}

```

144. In below code, what can directly access and change the value of the variable name?

```

package test;

```



```
class Target {
    public String name = "hello";
}
any class in the test package
```

145. What is the output of this program?

```
public class Boxer1 {
    Integer i;
    int x;
    public Boxer1(int y) {
        x = i+y;
        System.out.println(x);
    }
    public static void main(String[] args) {
        new Boxer1 (new Integer(4));
    }
}
An IllegalStateException occurs at runtime
```

146. What is the output of this program?

```
char c[]={ 'A', '1', 'b', ' ', 'a', '0' };
for (int i = 0; i < 5; ++i) {
    i++;
    if(Character.isDigit(c[i]))
        System.out.println(c[i]+" is a digit");
    if(Character.isWhitespace(c[i]))
        System.out.println(c[i]+" is a Whitespace character");
    if(Character.isUpperCase(c[i]))
        System.out.println(c[i]+" is an Upper case Letter");
    if(Character.isLowerCase(c[i]))
        System.out.println(c[i]+" is a lower case Letter");
    i++;
}
1 is a digit    a is a lower case Letter
```

147. What is the output of this program?

```
class serialization {
    public static void main(String[] args) {
        try {
            Myclass object1 = new Myclass("Hello", -7, 2.1e10);
            FileOutputStream fos = new FileOutputStream("serial");
            ObjectOutputStream oos = new ObjectOutputStream(fos);
            oos.writeObject(object1);
            oos.flush();
            oos.close();
        } catch (Exception e) {
            System.out.println("Serialization" + e);
        }
        System.exit(0);
    }

    try {
        Myclass object2;
        FileInputStream fis = new FileInputStream("serial");
        ObjectInputStream ois = new ObjectInputStream(fis);
        object2 = (Myclass)ois.readObject();
        ois.close();
        System.out.println(object2);
    } catch (Exception e) {
        System.out.print("deserialization" + e);
        System.exit(0);
    }
}

class Myclass implements Serializable {
    String s;
    int i;
    double d;
```

```

Myclass (String s, int i, double d)    {
    this.d = d;
    this.i = i;
    this.s = s;
}

s=Hello; i=-7; d=2.1E10

```

148. What is the output of this program?

```

class serialization {
public static void main(String[] args)    {
try    {
Myclass object1 = new Myclass("Hello", -7, 2.1e10);
FileOutputStream fos = new FileOutputStream("serial");
ObjectOutputStream oos = new ObjectOutputStream(fos);
oos.writeObject(object1);
oos.flush();
oos.close();
}    catch (Exception e)    {
System.out.println("Serialization" + e);
}
System.exit(0);
}

try    {
int x;
FileInputStream fis = new FileInputStream("serial");
ObjectInputStream ois = new ObjectInputStream(fis);
x = ois.readInt();
ois.close();
System.out.println(x);
}    catch (Exception e)    {
}
System.out.print("deserialization");
System.exit(0);
}
}

class Myclass implements Serializable {
String s;
int i;
double d;
Myclass(String s, int i, double d)    {
this.d = d;
this.i = i;
this.s = s;
}
}

deserialization

```

149. What is the output of this program?

```

class Chararrayinput {
public static void main(String[] args)    {
String obj = "abcdefgh";
int length = obj.length();
char c[] = new char[length];
obj.getChars(0, length, c, 0);
CharArrayReader input1 = new CharArrayReader(c);
CharArrayReader input2 = new CharArrayReader(c, 1, 4);
int i;
int j;
try    {
while ((i = input1.read()) == (j = input2.read()))
{
System.out.print((char)i);
}
}    catch (IOException e)    {
}
}
}

```

```
e.printStackTrace();
    }
}
}
No output is printed.
```

150. What is the output of this program?

```
class streams {
public static void main(String[] args) {
try {
    FileOutputStream fos = new FileOutputStream("serial");
    ObjectOutputStream oos = new ObjectOutputStream(fos);
    oos.writeFloat(3.5);
    oos.flush();
    oos.close();
} catch (Exception e) {
    System.out.println("Serialization" + e);
}
System.exit(0);
}

    try {
        float x;
        FileInputStream fis = new FileInputStream("serial");
        ObjectInputStream ois = new ObjectInputStream(fis);
        x = ois.readFloat();
        ois.close();
        System.out.println(x);
    } catch (Exception e) {
    }
    System.out.print("deserialization");
    System.exit(0);
}
}
3.5
```

151. What is the output of this program?

```
class streams {
public static void main(String[] args) {
try {
    FileOutputStream fos = new FileOutputStream("serial");
    ObjectOutputStream oos = new ObjectOutputStream(fos);
    oos.writeInt(5);
    oos.flush();
    oos.close();
} catch (Exception e) {
    System.out.println("Serialization" + e);
}
System.exit(0);
}

    try {
        int z;
        FileInputStream fis = new FileInputStream("serial");
        ObjectInputStream ois = new ObjectInputStream(fis);
        z = ois.readInt();
        ois.close();
        System.out.println(x);
    } catch (Exception e) {
    }
    System.out.print("deserialization");
    System.exit(0);
}
}
5
```

152. What is the output of this program?

```
class streams {
public static void main(String[] args) {
```

```

try
{
    FileOutputStream fos = new FileOutputStream("serial");
    ObjectOutputStream oos = new ObjectOutputStream(fos);
    oos.writeFloat(3.5);
    oos.flush();
    oos.close();
}
catch(Exception e)
{
    System.out.println("Serialization" + e);
}
System.exit(0);
}

try
{
    FileInputStream fis = new FileInputStream("serial");
    ObjectInputStream ois = new ObjectInputStream(fis);
    ois.close();
    System.out.println(ois.available());
}
catch (Exception e)
{
}
System.out.print("deserialization");
System.exit(0);
}
}
0

```

153. What is the output of this program?

```

class streams
{
    public static void main(String[] args)
    {
        try
        {
            FileOutputStream fos = new FileOutputStream("serial");
            ObjectOutputStream oos = new ObjectOutputStream(fos);
            oos.writeFloat(3.5);
            oos.flush();
            oos.close();
        }
        catch(Exception e)
        {
            System.out.println("Serialization" + e);
        }
        System.exit(0);
    }

    try
    {
        FileInputStream fis = new FileInputStream("serial");
        ObjectInputStream ois = new ObjectInputStream(fis);
        System.out.println(ois.available());
    }
    catch (Exception e)
    {
    }
    System.out.print("deserialization");
    System.exit(0);
}
}
4

```

154. What is the output of this program?

```

try
{
    FileOutputStream fout=new FileOutputStream("D:\\sanfoundry.txt");
    String s="Welcome to Sanfoundry.";
    byte b[]=s.getBytes();//converting string into byte array
    fout.write(b);
    fout.close();
    System.out.println("Success");
}
catch(Exception e){System.out.println(e);}

```

"Success" to the output and "Welcome to Sanfoundry" to the file

155. When an array is passed to a method, will the content of the array undergo changes with the actions carried within the function? True

```

public void setMyArray(String[] myArray){
    if(myArray == null)
    {
        this.myArray = new String[0];
    }
    else
    {
    }
}

```

```

        this.myArray = Arrays.copyOf(newArray, newArray.length);
    }
}

```

156. What is the output of this program?

```

BitSet obj1 = new BitSet(5);
BitSet obj2 = new BitSet(10);
for (int i = 0; i < 5; ++i)
    obj1.set(i);
for (int i = 3; i < 13; ++i)
    obj2.set(i);
obj1.and(obj2);
System.out.print(obj1);    {3, 4}

```

157. What is the output of this program?

```

try {
    Class c = Class.forName("java.awt.Dimension");
    Constructor constructors[] = c.getConstructors();
    for (int i = 0; i < constructors.length; i++)
        System.out.println(constructors[i]);
} catch (Exception e) {
    System.out.print("Exception");
}

```

Program prints all the constructors of 'java.awt.Dimension' package

158. What is the output of this program?

```

try {
    Class c = Class.forName("java.awt.Dimension");
    Field fields[] = c.getFields();
    for (int i = 0; i < fields.length; i++)
        System.out.println(fields[i]);
} catch (Exception e) {
    System.out.print("Exception");
}

```

Program prints all the data members of 'java.awt.Dimension' package

159. What is the output of this program?

```

try {
    Class c = Class.forName("java.awt.Dimension");
    Method methods[] = c.getMethods();
    for (int i = 0; i < methods.length; i++)
        System.out.println(methods[i]);
} catch (Exception e) {
    System.out.print("Exception");
}

```

Program prints all the methods of 'java.awt.Dimension' package

160. What is the output of this program?

```

try {
    int a, b;
    b = 0;
    a = 5 / b;
    System.out.print("A");
} catch (ArithmeticException e) {
    System.out.print("B");
} finally {
    System.out.print("C");
}

```

BC

161. What is the output of this program?

```

try {
    int i, sum;
    sum = 10;
    for (i = -1; i < 3; ++i)
        sum = (sum / i);
} catch (ArithmeticException e) {
    System.out.print("0");
}

```

```

}
System.out.print(sum);
Compilation Error

```

162. What is the output of this program?

```

try
{
int i, sum;
sum = 10;
for (i = -1; i < 3; ++i)
{
sum = (sum / i);
System.out.print(i);
}
}
catch (ArithmeticException e)
{
System.out.print("0");
}
-10

```

163. What is the output of this program?

```

try
{
System.out.print("Hello" + " " + 1 / 0);
}
finally
{
System.out.print("World");
}
Exception in thread "main" java.lang.ArithmeticException: / by zero
World

```

164. What is the output of this program?

```

try
{
int a[] = {1, 2, 3, 4, 5};
for (int i = 0; i < 7; ++i)
System.out.print(a[i]);
}
catch (ArrayIndexOutOfBoundsException e)
{
System.out.print("0");
}
123450

```

165. What is the output of this program?

```

try
{
int a[] = {1, 2, 3, 4, 5};
for (int i = 0; i < 5; ++i)
System.out.print(a[i]);
int x = 1/0;
}
catch (ArrayIndexOutOfBoundsException e)
{
System.out.print("A");
}
catch (ArithmeticException e)
{
System.out.print("B");
}
12345B

```

166. What is the output of this program?

```

try
{
int a = args.length;
int b = 10 / a;
System.out.print(a);
try
{
if (a == 1)
a = a / a - a;
if (a == 2)
{
int []c = {1};
c[8] = 9;
}
}
catch (ArrayIndexOutOfBoundsException e)
{
System.out.println("TypeA");
}
catch (ArithmeticException e)
{
System.out.println("TypeB");
}
}
Compiler Time Error

```

167. What is the output of this program?

```

try
{

```

```

System.out.print("A");
throw new NullPointerException ("Hello");
} catch(ArithmeticException e) {
System.out.print("B");
}

```

Exception in thread "main" java.lang.NullPointerException: Hello at exception_handling.main

168. What is the output of this program?

```

class exception_handling {
static void throwexception() throws ArithmeticException {
System.out.print("0");
throw new ArithmeticException ("Exception");
}
public static void main(String args[]) {
try {
throwexception();
} catch (ArithmeticException e) {
System.out.println("A");
}
}
}

```

OA

169. What is the output of this program?

```

try {
int a = 1;
int b = 10 / a;
try {
if (a == 1) {
a = a / a - a;
}
if (a == 2) {
int c[] = {1};
c[8] = 9;
}
} finally {
System.out.print("A");
}
} catch (Exception e) {
System.out.println("B");
}

```

A

170. What is the output of this program?

```

class Myexception extends Exception {
int detail;
Myexception(int a) {
detail = a;
}
public String toString() {
return "detail";
}
}
class Output {
static void compute (int a) throws Myexception {
throw new Myexception(a);
}
public static void main(String args[]) {
try {
compute(3);
} catch(Myexception e) {
System.out.print("Exception");
}
}
}

```

Exception

171. What is the output of this program?

```

class Myexception extends Exception {
int detail;

```

```

Myexception(int a) {
    detail = a;
}

public String toString() {
    return "detail";
}
}

class Output {
    static void compute(int a) throws Myexception {
        throw new Myexception(a);
    }

    public static void main(String args[]) {
        try {
            compute(3);
        } catch (DevideByZeroException e) {
            System.out.print("Exception");
        }
    }
}
} Runtime Error

```

172. What is the output of this program?

```

class newthread extends Thread {
    newthread() {
        super("My Thread");
        start();
    }

    public void run() {
        System.out.println(this);
    }
}

class multithreaded_programing {
    public static void main(String args[]) {
        new newthread();
    }
}
} Thread[My Thread,5,main].

```

173. What is the output of this program?

```

class newthread extends Thread {
    Thread t;
    newthread() {
        t = new Thread(this, "My Thread");
        t.start();
    }

    public void run() {
        try {
            t.join();
            System.out.println(t.getName());
        } catch (Exception e) {
            System.out.print("Exception");
        }
    }
}

class multithreaded_programing {
    public static void main(String args[]) {
        new newthread();
    }
}
} Runtime Error

```

174. What is the output of this program?

```

class newthread extends Thread {
    Thread t;
    newthread() {
        t = new Thread(this, "New Thread");
        t.start();
    }
}

```



```

        public void run() {
            System.out.println(t.isAlive());
        }
    }
    class multithreaded_programing {
        public static void main(String args[]) {
            new newthread();
        }
    }
    true

```

175. What is the output of this program?

```

class newthread extends Thread {
    Thread t1,t2;
    newthread() {
        t1 = new Thread(this,"Thread_1");
        t2 = new Thread(this,"Thread_2");
        t1.start();
        t2.start();
    }
    public void run() {
        t2.setPriority(Thread.MAX_PRIORITY);
        System.out.print(t1.equals(t2));
    }
}
class multithreaded_programing {
    public static void main(String args[]) {
        new newthread();
    }
}
falsefalse

```

176. What is the output of this program?

```

class newthread implements Runnable {
    Thread t;
    newthread() {
        t = new Thread(this,"My Thread");
        t.start();
    }
    public void run() {
        System.out.println(t.getName());
    }
}
class multithreaded_programing {
    public static void main(String args[]) {
        new newthread();
    }
}
My Thread

```

177. What is the output of this program?

```

class newthread implements Runnable {
    Thread t;
    newthread() {
        t = new Thread(this,"My Thread");
        t.start();
    }
    public void run() {
        System.out.println(t);
    }
}
class multithreaded_programing {
    public static void main(String args[]) {
        new newthread();
    }
}
Thread[My Thread,5,main]

```

178. What is the output of this program?

```

class newthread implements Runnable {
    Thread t;
    newthread() {
        t = new Thread(this, "My Thread");
        t.start();
    }
}
class multithreaded_programing {
    public static void main(String args[]) {
        new newthread();
    }
}

```

Compilation Error

179. What is the output of this program?

```

class newthread implements Runnable {
    Thread t;
    newthread() {
        t = new Thread(this, "New Thread");
        t.start();
    }
    public void run() {
        t.setPriority(Thread.MAX_PRIORITY);
        System.out.println(t);
    }
}
class multithreaded_programing {
    public static void main(String args[]) {
        new newthread();
    }
}

```

Thread[New Thread,10,main]

180. What is the output of this program?

```

class newthread extends Thread {
    Thread t;
    String name;
    newthread(String threadname) {
        name = threadname;
        t = new Thread(this, name);
        t.start();
    }
    public void run() {
    }
}
class multithreaded_programing {
    public static void main(String args[]) {
        newthread obj1 = new newthread("one");
        newthread obj2 = new newthread("two");
        try {
            obj1.t.wait();
            System.out.print(obj1.t.isAlive());
        }
        catch(Exception e) {
            System.out.print("Main thread interrupted");
        }
    }
}

```

Main thread interrupted

181. What is the output of this program?

```

class newthread extends Thread {
    Thread t;
    String name;
    newthread(String threadname) {
        name = threadname;
        t = new Thread(this, name);
        t.start();
    }
}

```

```

    }
    public void run() {
    }
}
class multithreaded_programing {
public static void main(String args[]) {
    newthread obj1 = new newthread("one");
    newthread obj2 = new newthread("two");
    try {
        Thread.sleep(1000);
        System.out.print(obj1.t.isAlive());
    }
    catch(InterruptedException e) {
        System.out.print("Main thread interrupted");
    }
}
}
} false

```

182. What is the output of this program?

```

class newthread extends Thread {
    Thread t;
    String name;
    newthread(String threadname) {
        name = threadname;
        t = new Thread(this,name);
        t.start();
    }
    public void run() {
    }
}
class multithreaded_programing {
public static void main(String args[]) {
    newthread obj1 = new newthread("one");
    newthread obj2 = new newthread("two");
    try {
        System.out.print(obj1.t.equals(obj2.t));
    }
    catch(Exception e) {
        System.out.print("Main thread interrupted");
    }
}
}
} false

```

183. What is the output of this program?

```

class display {
    int x;
    void show() {
        if (x > 1)
            System.out.print(x + " ");
    }
}
class packages {
    public static void main(String args[]) {
        display[] arr=new display[3];
        for(int i=0;i<3;i++)
            arr[i]=new display();
        arr[0].x = 0;
        arr[1].x = 1;
        arr[2].x = 2;
        for (int i = 0; i < 3; ++i)
            arr[i].show();
    }
}
} 2

```

184. What is the output of this program?

```

interface calculate {
    void cal(int item);
}
class display implements calculate {
    int x;
    public void cal(int item) {
        x = item * item;
    }
}
class interfaces {
    public static void main(String args[]) {
        display arr = new display();
        arr.x = 0;
        arr.cal(2);
        System.out.print(arr.x);
    }
} 4

```

185. What is the output of this program?

```

interface calculate {
    void cal(int item);
}
class displayA implements calculate {
    int x;
    public void cal(int item) {
        x = item * item;
    }
}
class displayB implements calculate {
    int x;
    public void cal(int item) {
        x = item / item;
    }
}
class interfaces {
    public static void main(String args[]) {
        displayA arr1 = new displayA();
        displayB arr2 = new displayB();
        arr1.x = 0;
        arr2.x = 0;
        arr1.cal(2);
        arr2.cal(2);
        System.out.print(arr1.x + " " + arr2.x);
    }
} 4 1

```

186. What is the output of this program?

```

interface calculate {
    int VAR = 0;
    void cal(int item);
}
class display implements calculate {
    int x;
    public void cal(int item) {
        if (item < 2)
            x = VAR;
        else
            x = item * item;
    }
}
class interfaces {
    public static void main(String args[]) {
        display[] arr = new display[3];
        for (int i = 0; i < 3; i++)

```

```

arr[i]=new display();
arr[0].cal(0);
arr[1].cal(1);
arr[2].cal(2);
System.out.print(arr[0].x+" " + arr[1].x + " " + arr[2].x);    0 0 4
}
}

```

187. What is the output of this program?

```

public class BoxDemo {
    public static <U> void addBox(U u, java.util.List<Box<U>> boxes) {
        Box<U> box = new Box<>();
        box.set(u);
        boxes.add(box);
    }
    public static <U> void outputBoxes(java.util.List<Box<U>> boxes) {
        int counter = 0;
        for (Box<U> box: boxes) {
            U boxContents = box.get();
            System.out.println("Box #" + counter + " contains [" + boxContents.toString() + "]");
            counter++;
        }
    }
    public static void main(String[] args) {
        java.util.ArrayList<Box<Integer>> listOfIntegerBoxes = new java.util.ArrayList<>();
        BoxDemo.<Integer>addBox(Integer.valueOf(10), listOfIntegerBoxes);
        BoxDemo.outputBoxes(listOfIntegerBoxes);
    }
}
Box #0 contains [10].

```

188. What is the output of this program?

```

public class BoxDemo {
    public static <U> void addBox(U u, java.util.List<Box<U>> boxes) {
        Box<U> box = new Box<>();
        box.set(u);
        boxes.add(box);
    }
    public static <U> void outputBoxes(java.util.List<Box<U>> boxes) {
        int counter = 0;
        for (Box<U> box: boxes) {
            U boxContents = box.get();
            System.out.println "[" + boxContents.toString() + "]";
            counter++;
        }
    }
    public static void main(String[] args) {
        java.util.ArrayList<Box<Integer>> listOfIntegerBoxes = new java.util.ArrayList<>();
        BoxDemo.<Integer>addBox(Integer.valueOf(0), listOfIntegerBoxes);
        BoxDemo.outputBoxes(listOfIntegerBoxes);
    }
}
[0]

```

189. What is the output of this program?

```

public class genericstack <E> {
    Stack <E> stk = new Stack <E>();
    public void push(E obj) {
        stk.push(obj);
    }
    public E pop() {
        E obj = stk.pop();
        return obj;
    }
}
class Output {
    public static void main(String args[]) {

```

```
genericstack <String> gs = new genericstack<String>();
gs.push("Hello");
System.out.print(gs.pop() + " ");
genericstack <Integer> gs = new genericstack<Integer>();
gs.push(36);
System.out.println(gs.pop());
}
} Hello 36
```

190. What is the output of this program?

```
public class genericstack <E> {
Stack <E> stk = new Stack <E>();
    public void push(E obj)    {
stk.push(obj);
    }
    public E pop()    {
E obj = stk.pop();
    return obj;
    }
}
class Output {
public static void main(String args[]) {
genericstack <String> gs = new genericstack<String>();
gs.push("Hello");
System.out.println(gs.pop());
}
} Hello
```

191. What is the output of this program?

```
public class genericstack <E> {
Stack <E> stk = new Stack <E>();
    public void push(E obj)    {
stk.push(obj);
    }
    public E pop()    {
E obj = stk.pop();
    return obj;
    }
}
class Output {
public static void main(String args[]) {
genericstack <Integer> gs = new genericstack<Integer>();
gs.push(36);
System.out.println(gs.pop());
}
} 36
```

192. What is the output of this program?

```
public class genericstack <E> {
Stack <E> stk = new Stack <E>();
    public void push(E obj)    {
stk.push(obj);
    }
    public E pop()    {
E obj = stk.pop();
    return obj;
    }
}
class Output {
public static void main(String args[]) {
genericstack <Integer> gs = new genericstack<Integer>();
gs.push(36);
System.out.println(gs.pop());
}
} Compilation Error
```

193. What is the output of this program?

```
public class genericstack <E> {  
    Stack <E> stk = new Stack <E>();  
    public void push(E obj) {  
        stk.push(obj);  
    }  
    public E pop() {  
        E obj = stk.pop();  
        return obj;  
    }  
}  
  
class Output {  
    public static void main(String args[]) {  
        genericstack <Integer> gs = new genericstack<Integer>();  
        gs.push(36);  
        System.out.println(gs.pop());  
    }  
} Hello
```