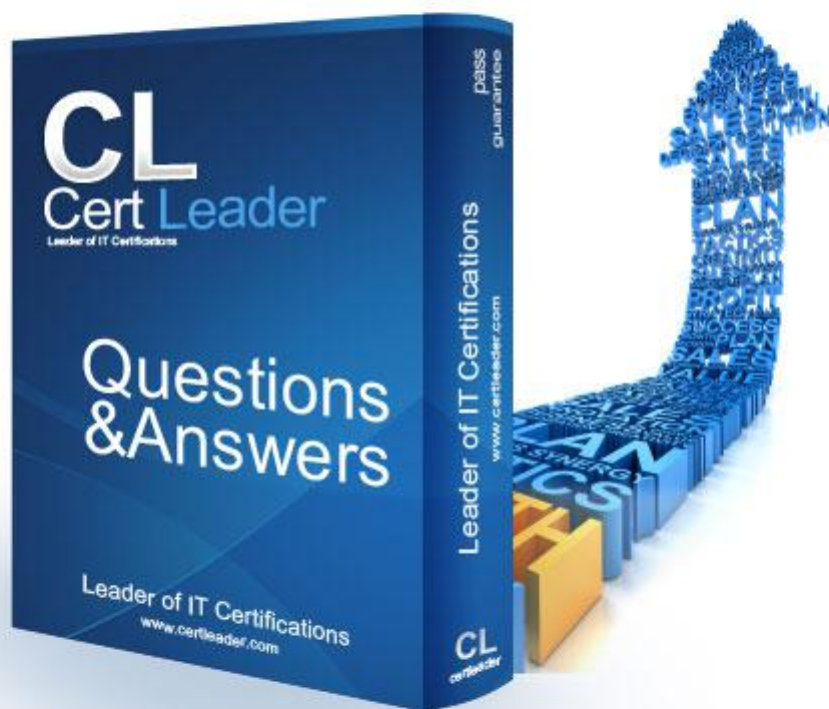


1Z0-803:

Java SE 7 Programmer I

Version:

V11.5



1. Which code fragment cause a compilation error?

- A. float flt = 100F;
- B. float flt = (float) 1_11.00;
- C. float flt = 100;
- D. double y1 = 203.22; floatflt = y1**
- E. int y2 = 100; floatflt = (float) y2;

Answer: B

2. Given the code format:

```
class DBConfiguration {
    String user;
    String password;
}

And:

4. public class DBHandler {
5.     DBConfiguration configureDB(String uname, String password) {
6.         // insert code here
7.     }
8.     public static void main(String[] args) {
9.         DBHandler r = new DBHandler();
10.        DBConfiguration dbConf = r.configureDB("manager", "manager");
11.    }
12. }
```

Which code fragment must be inserted at line 6 to enable the code to compile?

- A. DBConfiguration f; return f;
- B. Return DBConfiguration;
- C. Return new DBConfiguration;
- D. Retutn 0;

Answer: B

3. Given the code fragment:

- /1. ArrayList<Integer> list = new ArrayList<>(1);
- /2. list.add(1001);
- /3. list.add(1002);
- /4. System.out.println(list.get(list.size())); What is the result?

- A. Compilation fails due to an error on line 1.
- B. An exception is thrown at run time due to error on line 3

C. An exception is thrown at run time due to error on line 4

D. 1002

Answer: C

Explanation:

The code compiles fine.

At runtime an `IndexOutOfBoundsException` is thrown when the second list item is added.

4. Given:

```
public class ScopeTest1 {  
    public static void main(String[] args) {  
        doStuff(); // line x1  
        int x1 = x2; // line x2  
        int x2 = j; // line x3  
    }  
    static void doStuff() {  
        System.out.println(j); // line x4  
    }  
    static int j;  
}
```

Which line causes a compilation error?

A. line x1

B. line x2

C. line x3

D. line x4

Answer: B

Explanation:

The variable `x2` is used before it has been declared.

5. Given:

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

```
        AnotherSampleClass asc = new AnotherSampleClass();  
        SampleClass sc = new SampleClass();
```

```
        sc = asc;  
    }  
}
```

```
System.out.println("sc: " + sc.getClass()); System.out.println("asc: " + asc.getClass());
```

```
}}
```

```
class AnotherSampleClass extends SampleClass {
```

```
}
```

What is the result?

A. sc: class Object

asc: class AnotherSampleClass

B. sc: class SampleClass

asc: class AnotherSampleClass

C. sc: class AnotherSampleClass asc: class SampleClass

D. sc: class AnotherSampleClass

asc: class AnotherSampleClass

Answer: D

6. Given the code fragment:

```
System.out.println(2 + 4 * 9 - 3); //Line 21
```

```
System.out.println((2 + 4) * 9 - 3); // Line 22
```

```
System.out.println(2 + (4 * 9) - 3); // Line 23
```

```
System.out.println(2 + 4 * (9 - 3)); // Line 24
```

```
System.out.println((2 + 4 * 9) - 3); // Line 25 Which line of codes prints the highest number?
```

A. Line 21

B. Line 22

C. Line 23

D. Line 24

E. Line 25

Answer: B

Explanation: The following is printed: 35

51

35

26

35

7. Which two are valid array declaration?

- ☒ A. Object array[];
- ☐ B. Boolean array[3];
- ☒ C. int[] array;
- ☐ D. Float[2] array;

Answer: A,C

8. Given the code fragment:

```
public static void main(String[] args) {  
    int iArray[] = {65, 68, 69};  
    iArray[2] = iArray[0];  
    iArray[0] = iArray[1];  
    iArray[1] = iArray[2];  
    for (int element : iArray) {  
        System.out.print(element + " ");  
    }  
}
```

- ☐ A. 68, 65, 69
- ☒ B. 68, 65, 65
- ☐ C. 65,68, 65
- ☐ D. 65, 68, 69
- ☐ E. Compilation fails

Answer: B

9. Given the following code fragment:

```
if (value >= 0) {  
    if (value != 0)  
        System.out.print("the ");  
    else  
        System.out.print("quick ");  
    if (value < 10)  
        System.out.print("brown ");  
    if (value > 30)  
        System.out.print("fox ");  
    else if (value < 50)  
        System.out.print("jumps ");  
    else if (value < 10)  
        System.out.print("over ");  
    else  
        System.out.print("the ");  
    if (value > 10)  
        System.out.print("lazy ");  
} else {  
    System.out.print("dog ");  
}  
System.out.println( "..." );
```

What is the result if the integer value is 33?

- A. The fox jump lazy ...
- B. The fox lazy ...**
- C. Quick fox over lazy ...
- D. Quick fox the

Answer: B

Explanation:

33 is greater than 0.

33 is not equal to 0. the is printed.

33 is greater than 30 fox is printed

33 is greater then 10 (the two else if are skipped) lazy is printed

finally ... is printed.

10. Given:

```
public abstract class Shape {
    private int x;
    private int y;
    public abstract void draw();
    public void setAnchor(int x, int y) {
        this.x = x;
        this.y = y;
    }
}
```

Which two classes use the shape class correctly?

```
☐ A) public class Circle implements Shape {
    private int radius;
}

☐ B) public abstract class Circle extends Shape {
    private int radius;
}

☐ C) public class Circle extends Shape {
    private int radius;
    public void draw();
}

☐ D) public abstract class Circle implements Shape {
    private int radius;
    public void draw();
}

☐ E) public class Circle extends Shape {
    private int radius;
    public void draw() { /* code here */ }
}

☐ F) public abstract class Circle implements Shape {
    private int radius;
    public void draw() { /* code here */ }
}
```

A. Option A

B. Option B

C. Option C

D. Option D

E. Option E

F. Option F

Answer: B,E

Explanation: When an abstract class is subclassed, the subclass usually provides implementations for all of the abstract methods in its parent class (E). However, if it does not, then the subclass must also be

declared abstract (B).

Note: An abstract class is a class that is declared abstract—it may or may not include abstract methods.

Abstract classes cannot be instantiated, but they can be subclassed.

11. Given the code fragment:

```
public static void main(String[] args) {  
    ArrayList<String> list = new ArrayList<>();  
  
    list.add("SE");  
    list.add("EE");  
    list.add("ME");  
    list.add("SE");  
    list.add("EE");  
  
    list.remove("SE");  
  
    System.out.print("Values are : " + list);  
}
```

What is the result?

- A. Values are : [EE, ME]
- B. Values are : [EE, EE, ME]
- C. Values are : [EE, ME, EE]
- D. Values are : [SE, EE, ME, EE]
- E. Values are : [EE, ME, SE, EE]**

Answer: E

12. Given the code fragment:

```
if (aVar++ < 10) {  
    System.out.println(aVar + " Hello World!");  
} else {  
    System.out.println(aVar + " Hello Universe!");  
}
```

What is the result if the integer aVar is 9?

- A. 10 Hello world!**
- B. 10 Hello universe!
- C. 9 Hello world!

D. Compilation fails.

Answer: A

13. Given:

```
class Alpha {
    int ns;
    static int s;
    Alpha(int ns) {
        if (s < ns) {
            s = ns;
            this.ns = ns;
        }
    }
    void doPrint() {
        System.out.println("ns = " + ns + " s = " + s);
    }
}

And,

public class TestA {
    public static void main(String[] args) {
        Alpha ref1 = new Alpha(50);
        Alpha ref2 = new Alpha(125);
        Alpha ref3 = new Alpha(100);
        ref1.doPrint();
        ref2.doPrint();
        ref3.doPrint();
    }
}
```

A. ns = 50 S = 125

ns = 125 S = 125

ns = 100 S = 125

B. ns = 50 S = 125 ns = 125 S = 125

ns = 0 S = 125

C. ns = 50 S = 50 ns = 125 S = 125

ns = 100 S = 100

D. ns = 50 S = 50 ns = 125 S = 125

ns = 0 S = 125

Answer: B

14. Given the code fragment

```
class Test2 {  
    int fvar;  
    static int cvar;  
    public static void main(String[] args) {  
        Test2 t = new Test2();  
        // insert code here to write field variables  
    }  
}
```

Which code fragments, inserted independently, enable the code compile?

A. t.fvar = 200;

B. cvar = 400;

C. fvar = 200; cvar = 400;

D. this.fvar = 200; this.cvar = 400;

E. t.fvar = 200; Test2.cvar = 400;

F. this.fvar = 200; Test2.cvar = 400;

Answer: B

15. Given the code fragment:

```
System.out.println( 28 + 5 <= 4 + 29 );  
System.out.println( ( 28 + 5 ) <= ( 4 + 29 ) );
```

What is the result?

A. 28false29 true

B. 285 < 429 true

C. true true

D. compilation fails

Answer: C

16. View the exhibit:

```
public class Student {
    public String name = "";
    public int age = 0;
    public String major = "Undeclared";
    public boolean fulltime = true;

    public void display() {
        System.out.println("Name: " + name + " Major: " + major);
    }

    public boolean isFulltime() {
        return fulltime;
    }
}
```

Given:

```
public class TestStudent {

    public static void main(String[] args) {
        Student bob = new Student();
        Student jian = new Student();

        bob.name = "Bob";
        bob.age = 19;
        jian = bob;
        jian.name = "Jian";
        System.out.println("Bob's Name: " + bob.name);
    }
}
```

What is the result when this program is executed?

- A. Bob's Name: Bob
- B. Bob's Name: Jian**
- C. Nothing prints
- D. Bob's name

Answer: B

Explanation:

After the statement `jian = bob;` the `jian` will reference the same object as `bob`.

17. What is the proper way to defined a method that take two int values and returns their sum as an int value?

- A. `int sum(int first, int second) { first + second; }`
- B. `int sum(int first, second) {return first + second; }`
- C. `sum(int first, int second) { return first + second; }`
- D. `int sum(int first, int second) { return first + second; }`**
- E. `void sum (int first, int second) { return first + second; }`

Answer: D

18. Given:

```
public class Series {  
    public static void main(String[] args) {  
        int arr[] = {1, 2, 3};  
  
        for (int var : arr) {  
            int i = 1;  
            while (i <= var);  
            System.out.println(i++);  
        }  
    }  
}
```

What is the result?

A. 1

1

1

B. 1

2

3

C. 2

3

4

D. Compilation fails

E. The loop executes infinite times

Answer: E

19. Given:

```
class X {  
    static void m(int i) {  
        i += 7;  
    }  
    public static void main(String[] args) {  
        int j = 12;  
        m(j);  
        System.out.println(j);  
    }  
}
```

What is the result?

- A. 7
- B. 12**
- C. 19
- D. Compilation fails
- E. An exception is thrown at run time

Answer: B

20. Given:

```
public class Test1 {  
    static void doubling (Integer ref, int pv) { ref =20;  
    pv = 20;  
    }  
    public static void main(String[] args) { Integer iObj= new Integer(10);  
    int iVar = 10; doubling(iObj++, iVar++);  
    System.out.println(iObj+ " , "+iVar); What is the result?
```

A. 11, 11

- B. 10, 10
- C. 21, 11
- D. 20, 20
- E. 11, 12

Answer: A

Explanation: The code doubling(iObj++, iVar++); increases both variables from 10 to 11.

21. Given:

```
import java.util.*; public class Ref {  
  
    public static void main(String[] args) {  
  
        StringBuilder s1 = new StringBuilder("Hello Java!"); String s2 = s1.toString();  
  
        List<String> lst = new ArrayList<String>(); lst.add(s2); System.out.println(s1.getClass());  
  
        System.out.println(s2.getClass()); System.out.println(lst.getClass());  
  
    }  
  
}
```

What is the result?

- A. class java.lang.String class java.lang.String class java.util.ArrayList
- B. class java.lang.Object class java.lang. Object class java.util.Collection

C. class java.lang.StringBuilder class java.lang.String

class java.util.ArrayList

D. class java.lang.StringBuilder class java.lang.String

class java.util.List

Answer: C

Explanation: class java.lang.StringBuilder class java.lang.String

class java.util.ArrayList

22. Given:

```
public class Test {  
  
    public static void main(String[] args) { int ax = 10, az = 30;  
  
        int aw = 1, ay = 1; try {  
  
            aw = ax % 2; ay = az / aw;  
  
        } catch (ArithmeticException e1) { System.out.println("Invalid Divisor");  
  
        } catch (Exception e2) { aw = 1;  
  
        System.out.println("Divisor Changed");  
  
    }  
  
}
```

```
ay = az /aw; // Line 14 System.out.println("Succesful Division " + ay);  
}  
}
```

What is the result?

- A. Invalid Divisor Divisor Changed Successful Division 30
- B. Invalid Divisor Successful Division 30
- C. Invalid Divisor**
- D. Invalid Divisor

Exception in thread "main" java.lang.ArithmeticException: / by zero at test.Teagle.main(Teagle.java:14)

D. Invalid Divisor

Exception in thread "main" java.lang.ArithmeticException: / by zero at test.Teagle.main(Teagle.java:14)

Successful Division 1

Answer: C

23. Given:

```
public class MyFor3 {  
    public static void main(String[] args) {  
        int[] xx = null;  
        for (int ii : xx) {  
            System.out.println(ii);  
        }  
    }  
}
```

What is the result?

- A. Null
- B. Compilation fails
- C. An exception is thrown at runtime**
- D. 0

Answer: C

24. Given:


```
package handy.dandy;
public class Keystroke {
    public void typeExclamation() {
        System.out.println("!");
    }
}

and

1. package handy;
2. public class Greet {
3.     public static void main(String[] args) {
4.         String greeting = "Hello";
5.         System.out.print(greeting);
6.         Keystroke stroke = new Keystroke();
7.         stroke.typeExclamation();
8.     }
9. }
```

What three modifications, made independently, made to class greet, enable the code to compile and run?

- A. line 6 replaced with handy.dandy.keystroke stroke = new KeyStroke ();
- B. line 6 replaced with handy.*.KeyStroke = new KeyStroke ();
- C. line 6 replaced with handy.dandy.KeyStroke stroke = new handy.dandy.KeyStroke();
- D. import handy.*; added before line 1
- E. import handy.dandy.*; added after line 1
- F. import handy.dandy,KeyStroke; added after line 1
- G. import handy.dandy.KeyStroke.typeException(); added before line 1

Answer: C,E,F

Explanation:

Three separate solutions:

C: the full class path to the method must be stated (when we have not imported the package)

D: We can import the hold dandy class F: we can import the specific method

25. Given:

```
Given:
class X {
    public void mX() {
        System.out.println("Xm1");
    }
}
class Y extends X {
    public void mX() {
        System.out.println("Xm2");
    }
    public void mY() {
        System.out.println("Ym");
    }
}

public class Test {
    public static void main(String[] args) {
        X xRef = new Y();
        Y yRef = (Y) xRef;
        yRef.mY();
        xRef.mX();
    }
}
```

A. Ym

Xm2

B. Ym

Xm1

C. Compilation fails

D. A ClassCastException is thrown at runtime

Answer: B

26. Given:

```
public class Series {
    private boolean flag;

    public void displaySeries() {
        int num = 2;
        while (flag) {
            if (num % 7 == 0)
                flag = false;
            System.out.print(num);
            num += 2;
        }
    }

    public static void main(String[] args) {
        new Series().displaySeries();
    }
}
```

What is the result?

- A. 2 4 6 8 10 12
- B. 2 4 6 8 10 12 14
- C. Compilation fails
- D. The program prints multiple of 2 infinite times
- E. The program prints nothing**

Answer: B

27. Which three are bad practices?

- A. Checking for `ArrayIndexOutOfBoundsException` when iterating through an array to determine when all elements have been visited
- B. Checking for `Error` and, if necessary, restarting the program to ensure that users are unaware of problems
- C. Checking for `FileNotFoundException` to inform a user that a filename entered is not valid
- D. Checking for `ArrayIndexOutOfBoundsException` and ensuring that the program can recover if one occurs
- E. Checking for `IOException` and ensuring that the program can recover if one occurs

Answer: A,B,D

28. Given the code fragment:

```
class Student {
    String name;
    int age;
}

And,

1. public class Test {
2.     public static void main(String[] args) {
3.         Student s1 = new Student();
4.         Student s2 = new Student();
5.         Student s3 = new Student();
6.         s1 = s3;
7.         s3 = s2;
8.         s2 = null;
9.     }
10. }
```

Which statement is true?

- A. After line 8, three objects are eligible for garbage collection
- B. After line 8, two objects are eligible for garbage collection
- C. After line 8, one object is eligible for garbage collection**
- D. After line 8, none of the objects are eligible for garbage collection

Answer: C

29. Given:

```
public class Vowel {
    private char var;
    public static void main(String[] args) {
        char var1 = 'a';
        char var2 = var1;
        var2 = 'e';

        Vowel obj1 = new Vowel();
        Vowel obj2 = obj1;
        obj1.var = 'i';
        obj2.var = 'o';

        System.out.println(var1 + ", " + var2);
        System.out.print(obj1.var + ", " + obj2.var);
    }
}
```

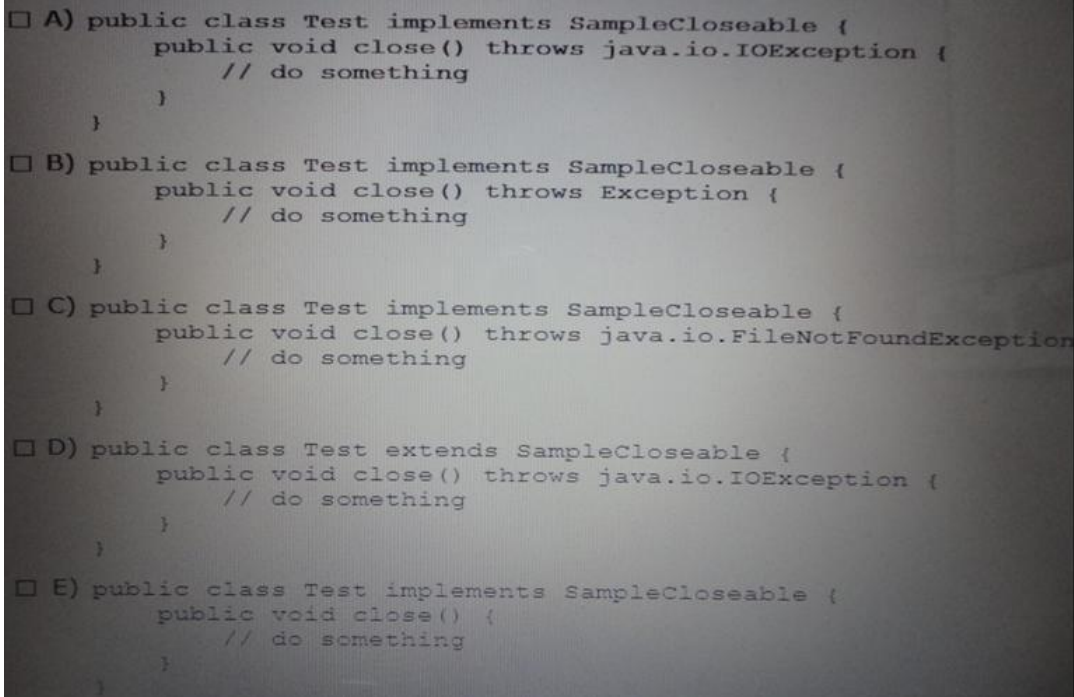
- A. a, e i, o
- B. a, e o, o**
- C. e, e i, o
- D. e, e o, o

Answer: B

30. **Given the code** fragment:

```
interface SampleClosable {  
    public void close () throws java.io.IOException;  
}
```

Which three implementations are valid?



```
☐ A) public class Test implements SampleClosable {  
    public void close() throws java.io.IOException {  
        // do something  
    }  
}  
☐ B) public class Test implements SampleClosable {  
    public void close() throws Exception {  
        // do something  
    }  
}  
☐ C) public class Test implements SampleClosable {  
    public void close() throws java.io.FileNotFoundException {  
        // do something  
    }  
}  
☐ D) public class Test extends SampleClosable {  
    public void close() throws java.io.IOException {  
        // do something  
    }  
}  
☐ E) public class Test implements SampleClosable {  
    public void close() {  
        // do something  
    }  
}
```

A. Option A

B. Option B

C. Option C

D. Option D

E. Option E

Answer: A,C,E

Explanation:

A: Throwing the same exception is fine.

C: Using a subclass of java.io.IOException (here java.io.FileNotFoundException) is fine E: Not using a throw clause is fine.

31. Given:

```
1. public class Speak {
2.     public static void main(String[] args){
3.         Speak speakIt = new Tell();
4.         Tell tellIt = new Tell();
5.         speakIt.tellItLikeItIs();
6.         (Truth)speakIt.tellItLikeItIs();
7.         ((Truth)speakIt).tellItLikeItIs();
8.         tellIt.tellItLikeItIs();
9.         (Truth)tellIt.tellItLikeItIs();
10.        ((Truth)tellIt).tellItLikeItIs();
11.    }
12. }
13. class Tell extends Speak implements Truth {
14.     public void tellItLikeItIs() {
15.         System.out.println("Right on!");
16.     }
17. }
18. interface Truth { public void tellItLikeItIs(); }
```

Which three lines will compile and output "right on!"?

A. Line 5

B. Line 6

C. Line 7

D. Line 8

E. Line 9

F. Line 10

Answer: C,D,F

32. Given:

```
public class MyFor3 {
    public static void main(String[] args) {
        int[] xx = null;
        for (int ii: xx) {
            System.out.println(ii);
        }
    }
}
```

What is the result?

A. null

B. compilation fails

C. Java.lang.NullPointerException

D. 0

Answer: C

Explanation:

An array variable (here xx) can very well have the null value.

Note:

Null is the reserved constant used in Java to represent a void reference i.e a pointer to nothing. Internally it is just a binary 0, but in the high level Java language, it is a magic constant, quite distinct from zero, that internally could have any representation.

33. Given:

```
5. // insert code here
6.     public abstract void bark();
7. }
8.
9. // insert code here
10.    public void bark() {
11.        System.out.println("woof");
12.    }
13. }
```

What code should be inserted?

```
Ⓐ 5. class Dog {
    9. public class Poodle extends Dog {
Ⓑ 5. abstract Dog {
    9. public class Poodle extends Dog {
Ⓒ 5. abstract class Dog {
    9. public class Poodle extends Dog {
Ⓓ 5. class Dog {
    9. public class Poodle implements Dog {
Ⓔ 5. abstract Dog {
    9. public class Poodle implements Dog {
Ⓕ 5. abstract class Dog {
    9. public class Poodle implements Dog {
```

A. Option A

B. Option B

C. Option C

D. Option D

E. Option E

F. Option F

Answer: C

Explanation:

Dog should be an abstract class. The correct syntax for this is: abstract class Dog { Poodle should extend Dog (not implement).

34. Given:

```
class Cake { int model; String flavor; Cake() { model = 0;
flavor = "Unknown";
}
}

public class Test {

public static void main(String[] args) { Cake c = new Cake();
bake1(c);

System.out.println(c.model + " " + c.flavor); bake2(c);

System.out.println(c.model + " " + c.flavor);
}

public static Cake bake1(Cake c) { c.flavor = "Strawberry";
c.model = 1200; return c;
}

public static void bake2(Cake c) {
c.flavor = "Chocolate"; c.model = 1230; return;
}
}
```

What is the result?

A. 0 unknown

0 unknown

B. 1200 Strawberry

1200 Strawberry

C. 1200 Strawberry

1230 Chocolate

D. Compilation fails

Answer: C

Explanation: 1200 Strawberry

1230 Chocolate

35. Given:

```
public class TestField { int x;  
  
    int y;  
  
    public void doStuff(int x, int y) { this.x = x;  
    y = this.y;  
    }  
  
    public void display() {  
    System.out.print(x + " " + y + " : ");  
    }  
  
    public static void main(String[] args) { TestField m1 = new TestField(); m1.x = 100;  
    m1.y = 200;  
    TestField m2 = new TestField(); m2.doStuff(m1.x, m1.y); m1.display();  
    m2.display();  
    }  
}
```

What is the result?

A. 100 200 : 100 200

B. 100 0 : 100 0 :

C. 100 200 : 100 0 :

D. 100 0 : 100 200 :

Answer: C

36. Which three statements are benefits of encapsulation?

- A. Allows a class implementation to change without changing the clients
- B. Protects confidential data from leaking out of the objects
- C. Prevents code from causing exceptions
- D. Enables the class implementation to protect its invariants
- E. Permits classes to be combined into the same package
- F. Enables multiple instances of the same class to be created safely

Answer:: A,B,D

37. Given:

```
public class Access {
    private int x = 0;
    private int y = 0;

    public static void main(String[] args) {
        Access accApp = new Access();
        accApp.printThis(1, 2);
        accApp.printThat(3, 4);
    }

    public void printThis(int x, int y) {
        x = x;
        y = y;
        System.out.println("x: " + this.x + " y: " + this.y);
    }

    public void printThat(int x, int y) {
        this.x = x;
        this.y = y;
        System.out.println("x: " + this.x + " y: " + this.y);
    }
}
```

What is the result?

- A. x: 1 y: 2
- B. 3 y: 4
- C. x: 0 y: 0
- D. 3 y: 4
- E. x: 1 y: 2
- F. 0 y: 0

G. x: 0 y: 0

H. 0 y: 0

Answer: C

38. Give:

```
Public Class Test {  
  
}
```

Which two packages are automatically imported into the java source file by the java compiler?

A. Java.lang

B. Java.awt

C. Java.util

D. Javax.net

E. Java.*

F. The package with no name

Answer: A,F

Explanation:

For convenience, the Java compiler automatically imports three entire packages for each source file: (1) the package with no name, (2) the java.lang package, and (3) the current package (the package for the current file).

Note: Packages in the Java language itself begin with java or javax.

39. Given the fragment:

```
24. float var1 = (12_345.01 >= 123_45.00) ? 12_456 : 124_56.02f;  
25. float var2 = var1 + 1024;  
26. System.out.print(var2);
```

What is the result?

A. 13480.0

B. 13480.02

C. Compilation fails

D. An exception is thrown at runtime

Answer: A

40. The catch clause argument is always of type _____.

- A. Exception
- B. Exception but NOT including RuntimeException
- C. Throwable**
- D. RuntimeException
- E. CheckedException
- F. Error

Answer: C

Explanation:

Because all exceptions in Java are the sub-class of `java.lang.Exception` class, you can have a single catch block that catches an exception of type `Exception` only. Hence the compiler is fooled into thinking that this block can handle any exception.

See the following example:

```
try
{
// ...
}
catch(Exception ex)
{
// Exception handling code for ANY exception
}
```

You can also use the `java.lang.Throwable` class here, since `Throwable` is the parent class for the application-specific `Exception` classes. However, this is discouraged in Java programming circles. This is because `Throwable` happens to also be the parent class for the non-application specific `Error` classes which are not meant to be handled explicitly as they are catered for by the JVM itself.

Note: The `Throwable` class is the superclass of all errors and exceptions in the Java language. Only objects that are instances of this class (or one of its subclasses) are thrown by the Java Virtual Machine or can be

thrown by the Java throw statement.

A throwable contains a snapshot of the execution stack of its thread at the time it was created. It can also contain a message string that gives more information about the error.

41. Given:

```
public class X implements Z {
    public String toString() { return "I am X"; }
    public static void main(String[] args) {
        Y myY = new Y();
        X myX = myY;
        Z myZ = myX;
        System.out.println(myZ);
    }
}
class Y extends X {
    public String toString() { return "I am Y"; }
}
interface Z { }
```

What is the reference type of myZ and what is the type of the object it references?

- A. Reference type is Z; object type is Z.
- B. Reference type is Y; object type is Y.
- C. Reference type is Z; object type is Y.**
- D. Reference type is X; object type is Z.

Answer: C

42. Given the code fragment:

```
String color = "teal";
switch (color) {
    case "Red":
        System.out.println("Found Red");
    case "Blue":
        System.out.println("Found Blue");
        break;
    case "Teal":
        System.out.println("Found Teal");
        break;
    default:
        System.out.println("Found Default");
}
```

What is the result?

- A. Found Red Found Default
- B. Found Teal**
- C. Found Red Found Blue Found Teal
- D. Found Red Found Blue Found Teal Found Default
- E. Found Default

Answer: B

43. Which two statements are true for a two-dimensional array?

- A. It is implemented as an array of the specified element type.
- B. Using a row by column convention, each row of a two-dimensional array must be of the same size.
- C. At declaration time, the number of elements of the array in each dimension must be specified.
- D. All methods of the class Object may be invoked on the two-dimensional array.

Answer:: A,D

44. Which two statements are true for a two-dimensional array of primitive data type?

- A. It cannot contain elements of different types.
- B. The length of each dimension must be the same.
- C. At the declaration time, the number of elements of the array in each dimension must be specified.
- D. All methods of the class object may be invoked on the two-dimensional array.

Answer: C,D

Explanation:

<http://stackoverflow.com/questions/12806739/is-an-array-a-primitive-type-or-an-object-or-something-else-entirely>

45. Which two statements correctly describe checked exception?

- A. These are exceptional conditions that a well-written application should anticipate and recover from.
- B. These are exceptional conditions that are external to the application, and that the application usually cannot anticipate or recover from.
- C. These are exceptional conditions that are internal to the application, and that the application usually

cannot anticipate or recover from.

D. Every class that is a subclass of RuntimeException and Error is categorized as checked exception.

E. Every class that is a subclass of Exception, excluding RuntimeException and its subclasses, is categorized as checked exception.

Answer: A,E

Explanation: Reference: Checked versus unchecked exceptions

46. Given:

```
public class App {  
    // Insert code here  
  
    System.out.print("Welcome to the world of Java");  
  
}
```

Which two code fragments, when inserted independently at line // Insert code here, enable the program to execute and print the welcome message on the screen?

A. static public void main (String [] args) {

B. static void main (String [] args) {

C. public static void Main (String [] args) {

D. public staticvoid main (String [] args) {

E. public void main (String [] args) {

Answer: A,D

Explanation: Incorrect:

Not B: No main class found.

Not C: Main method not found not E: Main method is not static.

47. Given the code fragment:

```
int j=0, k=0;

for(int i=0; i < x; i++) {
    do {
        k = 0;
        while (k < z) {
            k++;
            System.out.print(k + " ");
        }
        System.out.println(" ");
        j++;
    } while (j < y);
    System.out.println("----");
}
```

What values of x,y,z will produce the following result?

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

A. X = 4, Y = 3, Z = 2

B. X = 3, Y = 2, Z = 3

C. X = 2, Y = 3, Z = 3

D. X = 4, Y = 2, Z = 3

E. X = 2, Y = 3, Z = 4

Answer: E

Explanation:

Z is for the innermost loop. Should print 1 2 3 4. So Z must be 4.

Y is for the middle loop. Should print three lines of 1 2 3 4. So Y must be set 3. X is for the outmost loop.

Should print 2 lines of. So X should be 2.

48. public class ForTest {

public static void main(String[] args) { int[] arrar= {1,2,3};

```
for ( foo ) {  
    }  
}  
}
```

Which three are valid replacements for foo so that the program will compiled and run?

- A.** int i: array
- B.** int i = 0; i < 1; i++
- C.** ;;
- D. ; i < 1; i++
- E. ; i < 1;

Answer: A,B,C

49. Given:

```
public class ScopeTest {  
    int z;  
    public static void main(String[] args) {  
        ScopeTest myScope = new ScopeTest();  
        int z = 6;  
        System.out.println(z);  
        myScope.doStuff();  
        System.out.println(z);  
        System.out.println(myScope.z);  
    }  
    void doStuff() {  
        int z = 5;  
        doStuff2();  
        System.out.println(z);  
    }  
    void doStuff2() {  
        z = 4;  
    }  
}
```

What is the result?

- A.** 6
- 5
- 6
- 4

B. 6

5

5

4

C. 6

5

6

6

D. 6

5

6

5

Answer: A

Explanation:

Within main z is assigned 6. z is printed. Output: 6

Within doStuff z is assigned 5. DoStuff2 locally sets z to 4 (but MyScope.z is set to 4), but in Dostuff z is still

5. z is printed. Output: 5

Again z is printed within main (with local z set to 6). Output: 6

Finally MyScope.z is printed. MyScope.z has been set to 4 within doStuff2(). Output: 4

50. Given:

```
1. public class TestLoop {
2.     public static void main(String[] args) {
3.         float myarray[] = {10.20f, 20.30f, 30.40f, 50.60f};
4.         int index = 0;
5.         boolean isFound = false;
6.         float key = 30.40f;
7.         // insert code here
8.         System.out.println(isFound);
9.     }
10. }
```

Which code fragment, when inserted at line 7, enables the code print true?

```
C A) while (key == myarray[index++]) {  
    isFound = true;  
}  
  
C B) while (index <= 4) {  
    if (key == myarray[index]) {  
        index++;  
        isFound = true;  
        break;  
    }  
}  
  
C C) while (index++ < 5) {  
    if (key == myarray[index]) {  
        isFound = true;  
    }  
}  
  
C D) while (index < 5) {  
    if (key == myarray[index]) {  
        isFound = true;  
        break;  
    }  
    index++;  
}
```

A. Option A

B. Option B

C. Option C

D. Option D

Answer: A

51. Given a java source file:

```
class X {
    X() { }
    private void one() { }
}

public class Y extends X {
    Y() { }
    private void two() { one(); }
    public static void main(String[] args) {
        new Y().two();
    }
}
```

What changes will make this code compile? **Select Two**

- A. Adding the public modifier to the declaration of class x
- B. Adding the protected modifier to the x() constructor
- C. Changing the private modifier on the declaration of the one() method to protected**
- D. Removing the Y () constructor
- E. Removing the private modifier from the two () method

Answer: C,E

Explanation:

Using the private protected, instead of the private modifier, for the declaration of the one() method, would enable the two() method to access the one() method.

52. Given the for loop construct:

```
for ( expr1 ; expr2 ; expr3 ) { statement;
}
```

Which two statements are true?

- A. This is not the only valid for loop construct; there exists another form of for loop constructor.
- B. The expression expr1 is optional. it initializes the loop and is evaluated once, as the loop begin.**
- C. When expr2 evaluates to false, the loop terminates. It is evaluated only after each iteration through the loop.**
- D. The expression expr3 must be present. It is evaluated after each iteration through the loop.

Answer: B,C

Explanation:

The for statement have this forms: for (init-stmt;condition;next-stmt) { body
}

There are three clauses in the for statement.

The init-stmt statement is done before the loop is started, usually to initialize an iteration variable.

The condition expression is tested before each time the loop is done. The loop isn't executed if the boolean expression is false (the same as the while loop).

The next-stmt statement is done after the body is executed. It typically increments an iteration variable.

53. Given:

```
public class SampleClass {  
    public static void main(String[] args){  
        AnotherSampleClass asc = new AnotherSampleClass();  
        SampleClass sc = new SampleClass();  
        sc = asc;  
        System.out.println("sc: " + sc.getClass());  
        System.out.println("asc: " + asc.getClass());  
    }  
}  
class AnotherSampleClass extends SampleClass {  
}
```

What is the result?

A. sc:class.Object

asc: class.AnotherSampleClass

B. sc: class.SampleClass

asc: class.AnotherSampleClass

C. sc: class.AnotherSampleClass asc: class.SampleClass

D. sc: class.AnotherSampleClass asc: class.AnotherSampleClass

Answer: D

Explanation:

Note: The getClass methodReturns the runtime class of an object. ThatClassobject is the object that is locked bystatic synchronizedmethods of the represented class.

Note: Because Java handles objects and arrays by reference, classes and array types are known as reference types.

54. Given the code in a file Traveler.java:


```
class Tours {  
    public static void main(String[] args) {  
        System.out.print("Happy Journey! " + args[1]);  
    }  
}  
  
public class Traveler {  
    public static void main(String[] args) {  
        Tours.main(args);  
    }  
}
```

And the commands:

Javac Traveler.java

Java Traveler Java Duke What is the result?

- ☒ A. Happy Journey! Duke
- ☐ B. Happy Journey! Java
- ☐ C. An exception is thrown at runtime
- ☐ D. The program fails to execute due to a runtime error

Answer: D

55. Which two items can legally be contained within a java class declaration?

- ☐ A. An import statement
- ☒ B. A field declaration
- ☐ C. A package declaration
- ☒ D. A method declaration

Answer: B,D

Explanation: Reference: <http://docs.oracle.com/javase/tutorial/java/javaOO/methods.html>

56. Given:

```
public class MyFor {  
    public static void main(String[] args) {  
        for (int ii = 0; ii < 4; ii++) { System.out.println("ii = "+ ii); ii = ii +1;  
        }  
    }  
}
```

What is the result?

A. ii = 0 ii = 2

B. ii = 0

ii = 1

ii = 2

ii = 3

C. ii =

D. Compilation fails.

Answer: A

57. Given:

```
class Base {  
  
    public static void main(String[] args) { System.out.println("Base " + args[2]);  
  
    }  
  
}  
  
public class Sub extends Base{  
  
    public static void main(String[] args) { System.out.println("Overriden " + args[1]);  
  
    }  
  
}
```

And the commands: javac Sub.java

java Sub 10 20 30 What is the result?

A. Base 30

B. Overriden 20

C. Overriden 20

Base 30

D. Base 30

Overriden 20

Answer: B

58. Which is a valid abstract class?

- A. public abstract class Car { protected void accelerate();
}
- B. public interface Car {
protected abstract void accelerate();
}
- C. public abstract class Car { protected final void accelerate();
}
- D.** public abstract class Car { protected abstract void accelerate();
}
- E. public abstract class Car { protected abstract void accelerate() {
//more car can do
}}

Answer: D

59. boolean log3 = (5.0 != 6.0) && (4 != 5);

boolean log4 = (4 != 4)|| (4 == 4); System.out.println("log3:"+ log3 + "\nlog4" + log4);

What is the result?

- A. log3:false log4:true
- B. log3:true log4:true
- C. log3:true log4:false
- D. log3:false log4:false

Answer: B

60. Class StaticField { static int i = 7;

public static void main(String[] args) { StaticFied obj =new StaticField(); obj.i++;

StaticField.i++; obj.i++;

System.out.println(StaticField.i + " "+ obj.i);

}

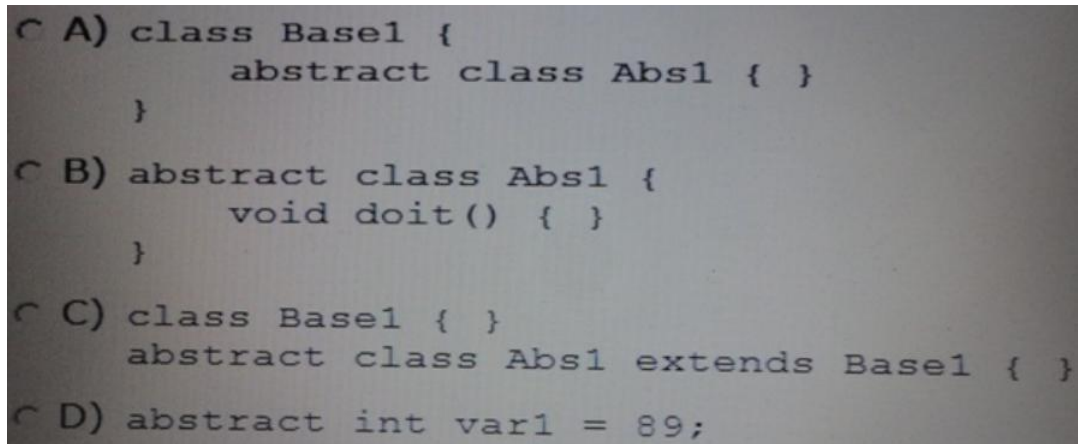
}

What is the result?

- A. 10 10
- B. 8 9
- C. 9 8
- D. 7 10

Answer: A

61. Which code fragment is illegal?



```
C A) class Base1 {  
    abstract class Abs1 { }  
}  
C B) abstract class Abs1 {  
    void doit() { }  
}  
C C) class Base1 { }  
    abstract class Abs1 extends Base1 { }  
C D) abstract int var1 = 89;
```

- A. Option A
- B. Option B
- C. Option C
- D. Option D**

Answer: D

Explanation:

The abstract keyword cannot be used to declare an int variable.

The abstract keyword is used to declare a class or method to be abstract[3]. An abstract method has no implementation; all classes containing abstract methods must themselves be abstract, although not all abstract classes have abstract methods.

62. The protected modifier on a field declaration within a public class means that the field _____.

- A. Cannot be modified

- B. Can be read but not written from outside the class
- C. Can be read and written from this class and its subclasses only within the same package
- D. Can be read and written from this class and its subclasses defined in any package

Answer: D

Explanation: Reference:

<http://beginnersbook.com/2013/05/java-access-modifiers/>

63. Given:

```
public class Natural { private int i;  
void disp() { while (i <= 5) {  
for (int i=1; i <=5;) { System.out.print(i + " "); i++;  
} i++;  
}  
}  
public static void main(String[] args) { new Natural().disp();  
}  
}
```

What is the result?

- A. Prints 1 2 3 4 5 once
- B. Prints 1 3 5 once
- C. Prints 1 2 3 4 5 five times
- D. Prints 1 2 3 4 5 six times
- E. Compilation fails

Answer: D

Explanation: 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5

64. Given:

```
class Star {
    public void doStuff() {
        System.out.println("Twinkling Star");
    }
}

interface Universe {
    public void doStuff();
}

class Sun extends Star implements Universe {
    public void doStuff() {
        System.out.println("Shining Sun");
    }
}

public class Bob {
    public static void main(String[] args) {
        Sun obj2 = new Sun();
        Star obj3 = obj2;
        ((Sun) obj3).doStuff();
        ((Star) obj2).doStuff();
        ((Universe) obj2).doStuff();
    }
}
```

What is the result?

- A. Shining Sun Shining Sun Shining Sun
- B. Shining Sun Twinkling Star Shining Sun
- C. Compilation fails
- D. A ClassCastException is thrown at runtime

Answer: D

65. Given:

```
public class Msg {
    public static String doMsg(char x) {
        return "Good Day!";
    }
    public static String doMsg(int y) {
        return "Good Luck!";
    }
    public static void main(String[] args) {
        char x = 8;
        int z = '8';
        System.out.println(doMsg(x));
        System.out.print(doMsg(z));
    }
}
```

What is the result?

A. Good Day! Good Luck!

B. Good Day! Good Day!

C. Good Luck! Good Day!

D. Good Luck! Good Luck!

E. Compilation fails

Answer: E

66. Given:

```
package p1;
public interface DoInterface {
    void m1(int n);
    public void m2(int n);           // line n1
}

package p3;
import p1.DoInterface;
public class DoClass implements DoInterface{
    int x1,x2;
    DoClass(){
        this.x1 = 0;
        this.x2 = 10;
    }
    public void m1(int p1) { x1+=p1; System.out.println(x1); } // line n2
    public void m2(int p1) { x2+=p1; System.out.println(x2); }
}

package p2;
import p1.*;
import p3.*;
class Test {
    public static void main(String[] args){           // line n3
        DoInterface doi= new DoClass();
        doi.method1(100);
        doi.method2(200);
    }
}
```

What is the result?

A. 100

210

B. Compilation fails due to an error in line n1

C. Compilation fails due to an error at line n2

D. Compilation fails due to an error at line n3

Answer: C

67. Given the code fragment:

```
String[] cartoons = {"tom","jerry","micky","tom"}; int counter =0;
```

```
if ("tom".equals(cartoons[0])) { counter++;  
} else if ("tom".equals(cartoons[1])) { counter++;  
} else if ("tom".equals(cartoons[2])) { counter++;  
} else if ("tom".equals(cartoons[3])) { counter++;  
}
```

System.out.print(counter); What is the result?

A. 1

B. 2

C. 4

D. 0

Answer: A

Explanation: Counter++ will be executed only once because of the else if constructs.

68. Given:

```
7.  StringBuilder sb1 = new StringBuilder("Duke");  
8.  String str1 = sb1.toString();  
9.  // insert code here  
10. System.out.print(str1 == str2);
```

Which code fragment, when inserted at line 9, enables the code to print true?

A. String str2 =str1;

B. String str2 = new string (str1);

C. String str2 = sb1.toString();

D. String str2 = "Duke";

Answer: B

69. Given:


```
public class Test {  
    public static void main(String[] args) {  
        Test ts = new Test();  
        System.out.print(isAvailable + " ");  
        isAvailable = ts.doStuff();  
        System.out.println(isAvailable);  
    }  
    public static boolean doStuff() {  
        return !isAvailable;  
    }  
    static boolean isAvailable = false;  
}
```

What is the result?

- A. true true
- B. true false
- C. false true**
- D. false false
- E. Compilation fails

Answer: E

70. **Given:**

```
class Base {  
    // insert code here  
}  
  
public class Derived extends Base{  
    public static void main(String[] args) {  
        Derived obj = new Derived();  
        obj.setNum(3);  
        System.out.println("Square = " + obj.getNum() * obj.getNum());  
    }  
}
```

Which two options, when inserted independently inside class Base, ensure that the class is being properly encapsulated and allow the program to execute and print the square of the number?

- A. private int num; public int getNum() {return num;} public void setNum(int num) {this.num = num;}**
- B. public int num; protected public int getNum() {return num;} protected public void setNum(int num) {this.num = num;}

C. private int num; public int getNum() {return num;} private void setNum(int num) {this.num = num;}

D. protected int num; public int getNum() {return num;} public void setNum(int num) {this.num = num;}

E. protected int num; private int getNum() {return num;} public void setNum(int num) {this.num = num;}

Answer: A,D

Explanation: Incorrect:

Not B: illegal combination of modifiers: protected and public not C: setNum method cannot be private.

not E: getNum method cannot be private.

71. Given:

```
class Overloading { int x(double d) {  
    System.out.println("one"); return 0;  
}  
  
String x(double d) { System.out.println("two"); return null;  
}  
  
double x(double d) { System.out.println("three"); return 0.0;  
}  
  
public static void main(String[] args) { new Overloading().x(4.0);  
}  
}
```

What is the result?

A. One

B. Two

C. Three

D. Compilation fails.

Answer: D

72. Given:

```
class Sports { int num_players;  
String name, ground_condition;  
Sports(int np, String sname, String sground){ num_players = np;  
name = sname; ground_condition = sground;  
}  
  
class Cricket extends Sports { int num_umpires;  
int num_substitutes;
```

Which code fragment can be inserted at line //insert code here to enable the code to compile?

A. Cricket() {

```
super(11, "Cricket", "Condition OK"); num_umpires =3; num_substitutes=2;  
}
```

B. Cricket() {

```
super.ground_condition = "Condition OK"; super.name="Cricket"; super.num_players = 11;  
num_umpires =3; num_substitutes=2;  
}
```

C. Cricket() {

```
this(3,2);  
super(11, "Cricket", "Condition OK");  
}  
Cricket(int nu, ns) { this.num_umpires =nu; this.num_substitutes=ns;  
}
```

D. Cricket() { this.num_umpires =3; this.num_substitutes=2;

```
super(11, "Cricket", "Condition OK");  
}
```

Answer: A

Explanation: Incorrect:

not C, not D: call to super must be the first statement in constructor.

73. Given the code fragment:

```
int[] lst = {1, 2, 3, 4, 5, 4, 3, 2, 1};
int sum = 0;
for (int frnt = 0, rear = lst.length - 1;
     frnt < 5 && rear >= 5;
     frnt++, rear--) {
    sum = sum + lst[frnt] + lst[rear];
}
System.out.print(sum);
```

What is the result?

- A. 20**
- B. 25
- C. 29
- D. Compilation fails
- E. AnArrayIndexOutOfBoundsException is thrown at runtime

Answer: A

74. A method is declared to take three arguments. A program calls this method and passes only two arguments. What is the result?

- A. Compilation fails.**
- B. The third argument is given the value null.
- C. The third argument is given the value void.
- D. The third argument is given the value zero.
- E. The third argument is given the appropriate false value for its declared type.
- F. An exception occurs when the method attempts to access the third argument.

Answer: A

Explanation:

The problem is noticed at build/compile time. At build you would receive an error message like:

required: int,int,int found: int,int

75. Given:

```
public class X { static int i;  
  
int j;  
  
public static void main(String[] args) { X x1 = new X();  
  
X x2 = new X(); x1.i = 3;  
  
x1.j = 4;  
  
x2.i = 5;  
  
x2.j = 6;  
  
System.out.println( x1.i + " "+  
x1.j + " "+  
x2.i + " "+  
x2.j);  
}  
}
```

What is the result?

- A. 3 4 5 6
- B. 3 4 3 6
- C. 5 4 5 6**
- D. 3 6 4 6

Answer: C

76. Given:

```
public class X {  
    public static void main(String[] args){  
        String theString = "Hello World";  
        System.out.println(theString.charAt(11));  
    }  
}
```

What is the result?

- A. The program prints nothing
- B. d
- C. A StringIndexOutOfBoundsException is thrown at runtime.**
- D. AnArrayIndexOutOfBoundsException is thrown at runtime.

E. A NullPointerException is thrown at runtime.

Answer: C

77. Given:

```
public class Main {  
    public static void main(String[] args) {  
        doSomething();  
    }  
    private static void doSomething() {  
        doSomethingElse();  
    }  
    private static void doSomethingElse() {  
        throw new Exception();  
    }  
}
```

Which approach ensures that the class can be compiled and run?

- A.** Put the throw new Exception() statement in the try block of try – catch
- B. Put the doSomethingElse() method in the try block of a try – catch
- C. Put the doSomething() method in the try block of a try – catch
- D. Put the doSomething() method and the doSomethingElse() method in the try block of a try – catch

Answer: A

Explanation:

We need to catch the exception in the doSomethingElse() method. Such as:

```
private static void doSomethingElse() { try {  
    throw new Exception();} catch (Exception e)  
{  
}
```

Note: One alternative, but not an option here, is to declare the exception in doSomethingElse and catch it in the doSomething method.

```
78. int [] array = {1,2,3,4,5}; for (int i: array) {  
    if ( i < 2) { keyword1;  
}
```

```
System.out.println(i); if ( i == 3) { keyword2 ;  
}}
```

What should keyword1 and keyword2 be respectively, in order to produce output 2345?

- A. continue, break
- B. break, break
- C. break, continue
- D. continue, continue**

Answer: D

79. Which two are Java Exception classes?

- A. SercurityException**
- B. DuplicatePathException
- C. IllegalArgumentException**
- D. TooManyArgumentsException

Answer: A,C

80. Given:

```
public class Test2 {  
    public static void main(String[] args) {  
        int ar1[] = {2, 4, 6, 8};  
        int ar2[] = {1, 3, 5, 7, 9};  
        ar2 = ar1;  
        for (int e2 : ar2) {  
            System.out.print(" " + e2);  
        }  
    }  
}
```

What is the result?

- A. 2 4 6 8**
- B. 2 4 6 8 9
- C. 1 3 5 7
- D. 1 3 5 7 9

Answer: A

81. Given:

```
public class SampleClass {
    public static void main(String[] args){
        SampleClass sc, scA, scB;
        sc = new SampleClass();
        scA = new SampleClassA();
        scB = new SampleClassB();
        System.out.println("Hash is : " +
            sc.getHash() + ", " + scA.getHash() + ", " + scB.getHash());
    }
    public int getHash() {
        return 111111;
    }
}
class SampleClassA extends SampleClass {
    public long getHash() {
        return 44444444;
    }
}
class SampleClassB extends SampleClass {
    public long getHash() {
        return 99999999;
    }
}
```

What is the result?

- A.** Compilation fails
- B. An exception is thrown at runtime
- C. There is no result because this is not correct way to determine the hash code
- D. Hash is: 111111, 44444444, 99999999

Answer: A

Explanation:

The compilation fails as SampleClassA and SampleClassB cannot override SampleClass because the return type of SampleClass is int, while the return type of SampleClassA and SampleClassB is long.

Note: If all three classes had the same return type the output would be: Hash is : 111111, 44444444, 99999999

82. public class Two {

 public static void main(String[] args) { try {

 doStuff(); system.out.println("1");

 }

 catch { system.out.println("2");

 }}

 public static void do Stuff() {


```
if (Math.random() > 0.5) throw new RuntimeException(); doMoreStuff(); System.out.println("3 ");  
}  
public static void doMoreStuff() { System.out.println("4");  
}  
}
```

Which two are possible outputs?

A. 2

B. 4

3

1

C. 1

D. 1

2

Answer: A,B

Explanation:

A: Output is 2 if Math.random() is greater than 0.5.

B: If Math.random() returns a value less equal to 0.5, the code won't throw an exception, it will continue with the doMore() method which will println "4" after which the program will continue with the doStuff() method and will println "3", after that we will be back in main() and the program will print "1".

83. Given the fragment:

```
int[] array = {1,2,3,4,5};  
System.arraycopy(array, 2, array, 1, 2);  
System.out.print(array[1]);  
System.out.print(array[4]);
```

What is the result?

A. 14

B. 15

C. 24

D. 25

E. 34

F. 35

Answer:: F

Explanation:

The two elements 3 and 4 (starting from position with index 2) are copied into position index 1 and 2 in the same array.

After the arraycopy command the array looks like:

{1, 3, 4, 4, 5};

Then element with index 1 is printed: 3 Then element with index 4 is printed: 5

Note: The System class has an arraycopy method that you can use to efficiently copy data from one array into another:

```
public static void arraycopy(Object src, int srcPos, Object dest, int destPos, int length)
```

The two Object arguments specify the array to copy from and the array to copy to. The three int arguments specify the starting position in the source array, the starting position in the destination array, and the number of array elements to copy.

84. A method is declared to take three arguments. A program calls this method and passes only two arguments. What is the result?

A. Compilation fails.

B. The third argument is given the value null.

C. The third argument is given the value void.

D. The third argument is given the value zero.

E. The third argument is given the appropriate false value for its declared type. F) An exception occurs when the method attempts to access the third argument.

Answer: A

85. Given the following four Java file definitions:

```
// Foo.java
```

```
package facades; public interface Foo { }
```

```
// Boo.java package facades;

public interface Boo extends Foo { }

// Woofy.java package org.domain

// line n1

public class Woofy implements Boo, Foo {}

// Test.java package.org; public class Test {

public static void main(String[] args) { Foo obj=new Woofy();
```

Which set modifications enable the code to compile and run?

- A. At line n1, Insert: import facades;At line n2, insert:import facades;importorg.domain;
- B. At line n1, Insert: import facades.*;At line n2, insert:import facades;import org.*;
- C. At line n1, Insert: import facades.*;At line n2, insert:import facades.Boo;import org.*;
- D. At line n1, Insert: import facades.Foo, Boo;At line n2, insert:import org.domain.Woofy;
- E. At line n1, Insert: import facades.*;At line n2, insert:import facades;import org.domain.Woofy;

Answer: E

86. Which two statements are true?

- A. An abstract class can implement an interface.
- B. An abstract class can be extended by an interface.
- C. An interface CANNOT be extended by another interface.
- D. An interface can be extended by an abstract class.
- E. An abstract class can be extended by a concrete class.
- F. An abstract class CANNOT be extended by an abstract class.

Answer: A,E

Explanation:

<http://docs.oracle.com/javase/tutorial/java/landl/abstract.html>

87. Given:

```
public class Calculator {
    public static void main(String[] args) {
        int num = 5;
        int sum;

        do {
            sum += num;
        } while ((num--) > 1);

        System.out.println("The sum is " + sum + ".");
    }
}
```

What is the result?

- A. The sum is 2
- B. The sum is 14
- C. The sum is 15
- D. The loop executes infinite times
- E. Compilation fails

Answer: E

88. Given:

```
Given:

class Caller {
    private void init() {
        System.out.println("Initialized");
    }

    public void start() {
        init();
        System.out.println("Started");
    }
}

public class TestCall {
    public static void main(String[] args) {
        Caller c = new Caller();
        c.start();
        c.init();
    }
}
```

What is the result?

- A. Initialized Started

- B. Initialized Started Initialized
- C. Compilation fails
- D. An exception is thrown at runtime

Answer: B

89. Given the code fragment:

```
12. int row = 10;  
13. for ( ; row > 0 ; ) {  
14.     int col = row;  
15.     while (col >= 0) {  
16.         System.out.print(col + " ");  
17.         col -= 2;  
18.     }  
19.     row = row / col;  
20. }
```

What is the result?

- A. 10 8 6 4 2 0
- B. 10 8 6 4 2
- C. AnArithmeticException is thrown at runtime
- D. The program goes into an infinite loop outputting: 10 8 6 4 2 0. . .
- E. Compilation fails

Answer: B

90. Given the fragments:

```
public class TestA extends Root {
    public static void main(String[] args) {
        Root r = new TestA();
        System.out.println(r.method1());    // line n1
        System.out.println(r.method2());    // line n2
    }
}
class Root {
    private static final int MAX = 20000;
    private int method1() {
        int a = 100 + MAX;                // line n3
        return a;
    }
    protected int method2() {
        int a = 200 + MAX;                // line n4
        return a;
    }
}
```

Which line causes a compilation error?

- A. Line n1
- B. Line n2
- C. Line n3
- D. Line n4

Answer: A

91. Given:

```
public class ColorTest {
    public static void main(String[] args) {
        String[] colors = {"red", "blue", "green", "yellow", "maroon", "cyan"}; int count = 0;
        for (String c : colors) { if (count >= 4) { break;
        }
        else { continue;
        }
        if (c.length() >= 4) { colors[count] = c.substring(0,3);
        }
        count++;
        }
        System.out.println(colors[count]);
    }
}
```

}

}

What is the result?

- A. Yellow
- B. Maroon
- C. Compilation fails
- D. A `StringIndexOutOfBoundsException` is thrown at runtime.

Answer: C

Explanation: Theline, if (c.length() >= 4) {, is never reached. This causes a compilation error.

Note: The continue statement skips the current iteration of a for, while , or do-while loop. An unlabeled break statement terminates the innermost switch, for, while, or do- while statement, but a labeled break terminates an outer statement.

92. Given:

```
public class X {  
    public static void main(String[] args){  
        String theString = "Hello World";  
        System.out.println(theString.charAt(11));  
    }  
}
```

What is the result?

- A. There is no output
- B. d is output
- C. A `StringIndexOutOfBoundsException` is thrown at runtime
- D. An `ArrayIndexOutOfBoundsException` is thrown at runtime
- E. A `NullPointerException` is thrown at runtime
- F. A `StringArrayIndexOutOfBoundsException` is thrown at runtime

Answer: C

Explanation:

There are only 11 characters in the string "Hello World". The code `theString.charAt(11)` retrieves the 12th character, which does not exist. A `StringIndexOutOfBoundsException` is thrown.

Exception in thread "main" java.lang.StringIndexOutOfBoundsException: String index out of range: 11

93. View the exhibit:

```
public class Student { public String name= ""; public int age = 0;
public String major = "Undeclared"; public boolean fulltime = true; public void display() {
System.out.println("Name: " + name + " Major: " + major); } public boolean isFullTime() {
return fulltime;
}
}
```

Which line of code initializes a student instance?

- A. Student student1;
- B. Student student1 = Student.new();
- C. Student student1 = new Student();
- D. Student student1 = Student();

Answer: C

94. Given a code fragment:

```
StringBuilder sb = new StringBuilder();
String h1 = "HelloWorld";
sb.append("Hello").append("World");

if (h1 == sb.toString()) {
    System.out.println("They match");
}
if (h1.equals(sb.toString())) {
    System.out.println("They really match");
}
```

What is the result?

- A. They match They real match
- B. They really match
- C. They match
- D. Nothing is printed to the screen

Answer: B

95. int i, j=0;

i = (3* 2 +4 +5) ;

j = (3 * ((2+4) + 5));

System.out.println("i:" + i + "\nj":+j); What is the result?

A. i: 16

j: 33

B. i: 15

j: 33

C. i: 33

j: 23

D. i: 15

j: 23

A. Option A

B. Option B

C. Option C

D. Option D

Answer: B

96. Given:

```
public class Marklist { int num;
```

```
public static void graceMarks(Marklist obj4) { obj4.num += 10;
```

```
}
```

```
public static void main(String[] args){ MarkList obj1 = new MarkList(); MarkList obj2 = obj1;
```

```
MarkList obj1 = null;
```

```
obj2.num = 60; graceMarks(obj2);
```

```
}
```

```
}
```

How many objects are created in the memory runtime?

A. 1

B. 2

C. 3

D. 4

Answer: B

Explanation: obj1 and obj3.

when you do `e2 = e1` you're copying object references - you're not making a copy of the object - and so the variables `e1` and `e2` will both point to the same object.

97. Given the code fragment:

```
public class ForTest {  
    public static void main(String[] args) { int[] array = {1, 2, 3};  
    for ( foo ) {  
    }  
}
```

Which three code fragments, when replaced individually for `foo`, enables the program to compile?

A. `int i : array`

B. `int i = 0; i < 1;`

C. `;;`

D. `; i < 1; i++`

E. `i = 0; i < 1;`

Answer: A,B,C

98. Which statement is true about the default constructor of a top-level class?

A. It can take arguments.

B. It has private access modifier in its declaration.

C. It can be overloaded.

D. The default constructor of a subclass always invokes the no-argument constructor of its superclass.

Answer: D

Explanation: In both Java and C#, a "default constructor" refers to a nullary constructor that is automatically generated by the compiler if no constructors have been defined for the class. The default constructor is also

empty, meaning that it does nothing. A programmer- defined constructor that takes no parameters is also called a default constructor.

99. Given:

```
Class A { } Class B { }
```

```
Interface X { } Interface Y { }
```

Which two definitions of class C are valid?

- A. Class C extends A implements X { }
- B. Class C implements Y extends B { }
- C. Class C extends A, B { }
- D. Class C implements X, Y extends B { }
- E. Class C extends B implements X, Y { }

Answer: A,E

Explanation: extends is for extending a class.

implements is for implementing an interface.

Java allows for a class to implement many interfaces.

100. Given:

```
public class TestOperator {  
    public static void main(String[] args) { int result = 30 - 12 / (2*5)+1; System.out.print("Result = " + result);  
    }  
}
```

What is the result?

- A. Result = 2
- B. Result = 3
- C. Result = 28
- D. Result = 29
- E. Result = 30

Answer: E

101. Given the code fragments:

```
interface Contract{ }
class Super implements Contract{ }
class Sub extends Super {}

public class Ref {
    public static void main(String[] args) {
        List objs = new ArrayList();

        Contract c1 = new Super();
        Contract c2 = new Sub();           // line n1
        Super s1 = new Sub();

        objs.add(c1);
        objs.add(c2);
        objs.add(s1);                     // line n2

        for(Object itm: objs) {
            System.out.println(itm.getClass().getName());
        }
    }
}
```

What is the result?

- A. Super Sub
- Sub
- B. Contract Contract Super
- C. Compilation fails at line n1
- D. Compilation fails at line n2

Answer: D

102. Given the code fragment:

```
for (int ii = 0; ii < 3; ii++) { int count = 0;
for (int jj = 3; jj > 0; jj--) { if (ii == jj) {
++count; break;
}
}
System.out.print(count); continue;
}
```

What is the result?

- A. 011

B. 012

C. 123

D. 000

Answer: A

103. Given:

```
public class CharToStr {
    public static void main(String[] args) {
        String str1 = "Java";
        char str2[] = { 'J', 'a', 'v', 'a' };
        String str3 = null;
        for (char c : str2) {
            str3 = str3 + c;
        }
        if (str1.equals(str3))
            System.out.print("Successful");
        else
            System.out.print("Unsuccessful");
    }
}
```

What is result?

A. Successful

B. Unsuccessful

C. Compilation fails

D. An exception is thrown at runtime

Answer: C

104. Given:

```
package p1; public class Test {
    static double dvalue; static Test ref;
    public static void main(String[] args) { System.out.println(ref); System.out.println(dvalue);
    }
}
```

What is the result?

- A. p1.Test.class 0.0
- B. <the summary address referenced by ref> 0.000000
- C. Null 0.0
- D. Compilation fails
- E. A NullPointerException is thrown at runtime

Answer: C

105. Given:

```
public class Test {  
    public static void main(String[] args) { try {  
        String[] arr =new String[4]; arr[1] = "Unix";  
        arr[2] = "Linux"; arr[3] = "Solaris"; for (String var : arr) {  
            System.out.print(var + " ");  
        }  
    } catch(Exception e) { System.out.print (e.getClass());  
    }  
}
```

What is the result?

- A. Unix Linux Solaris
- B. Null Unix Linux Solaris
- C. Class java.lang.Exception
- D. Class java.lang.NullPointerException

Answer: B

Explanation: null Unix Linux Solaris

The first element, arr[0], has not been defined.

106. View the exhibit.


```
class MissingInfoException extends Exception { }
class AgeOutOfRangeException extends Exception { }
class Candidate {
    String name;
    int age;
    Candidate(String name, int age) throws Exception {
        if (name == null) {
            throw new MissingInfoException();
        } else if (age <= 10 || age >= 150) {
            throw new AgeOutOfRangeException();
        } else {
            this.name = name;
            this.age = age;
        }
    }
    public String toString() {
        return name + " age: " + age;
    }
}
```

Given the code fragment:

```
4. public class Test {
5.     public static void main(String[] args) {
6.         Candidate c = new Candidate("James", 20);
7.         Candidate c1 = new Candidate("Williams", 32);
8.         System.out.println(c);
9.         System.out.println(c1);
10.    }
11. }
```

Which change enables the code to print the following? James age: 20

Williams age: 32

- A. Replacing line 5 with public static void main (String [] args) throws MissingInfoException, AgeOutOfRangeException {
- B. Replacing line 5 with public static void main (String [] args) throws.Exception {
- C. Enclosing line 6 and line 7 within a try block and adding: catch(Exception e1) { //code goes here}
catch (missingInfoExceptione2) { //code goes here} catch (AgeOutOfRangeException e3) { //code goes here}
- D. Enclosing line 6 and line 7 within a try block and adding: catch (missingInfoException e2) { //code goes here}
catch (AgeOutOfRangeException e3) { //code goes here}

Answer: C

107. Which declaration initializes a boolean variable?

- A. boolean h = 1;
- B. boolean k = 0;
- C. boolean m = null;
- D. boolean j = (1 < 5);

Answer: D

Explanation:

The primitive type boolean has only two possible values: true and false. Here j is set to (1 < 5), which evaluates to true.

108. Given the code fragment:

```
String name = "Spot"; int age = 4;
```

```
String str = "My dog " + name + " is " + age; System.out.println(str);
```

And

```
StringBuilder sb = new StringBuilder();
```

Using StringBuilder, which code fragment is the best option to build and print the following string My dog Spot is 4

- A. sb.append("My dog " + name + " is " + age); System.out.println(sb);
- B. sb.insert("My dog ").append(name + " is " + age); System.out.println(sb);
- C. sb.insert("My dog ").insert(name).insert(" is ").insert(age); System.out.println(sb);
- D. sb.append("My dog ").append(name).append(" is ").append(age); System.out.println(sb);

Answer: A,D

109. Given the code fragment:

```
interface Contract{ }
class Super implements Contract{ }
class Sub extends Super {}

public class Ref {
    public static void main(String[] args) {
        List objs = new ArrayList();

        Contract c1 = new Super();
        Contract c2 = new Sub();           // line n1
        Super s1 = new Sub();

        objs.add(c1);
        objs.add(c2);
        objs.add(s1);                     // line n2

        for(Object itm: objs) {
            System.out.println(itm.getClass().getName());
        }
    }
}
```

- A. Super Sub
- Sub
- B. Contract Contract Super
- C. Compilation fails at line n1
- D. Compilation fails at line n2

Answer: D

110. Given:

```
public class FieldInit { char c;

booleanb; float f;

void printAll() { System.out.println("c = " + c); System.out.println("c = " + b); System.out.println("c = " + f);
}

public static void main(String[] args) { FieldInit f = new FieldInit(); f.printAll();
}
}
```

What is the result?

- A. c = null b = false
- f = 0.0F
- B. c = 0
- b = false f = 0.0f

C. c = null b = true

f = 0.0

D. c =

b = false f = 0.0

Answer: D

111. Given:

```
public class Basic {  
    private static int letter;  
    public static int getLetter();  
    public static void Main(String[] args) {  
        System.out.println(getLetter());  
    }  
}
```

Why will the code not compile?

A. A static field cannot be private.

B. The getLetter method has no body.

C. There is no setLetter method.

D. The letter field is uninitialized.

E. It contains a method named Main instead of ma

Answer: B

Explanation:

The getLetter() method needs a body public static int getLetter() { }; .

112. Given:

```
public class Test {  
  
    public static void main(String[] args) { int arr[] = new int[4];  
  
    arr[0] = 1;  
    arr[1] = 2;  
    arr[2] = 4;  
    arr[3] = 5;
```

```
int sum = 0; try {  
    for (int pos = 0; pos <= 4; pos++) { sum = sum +arr[pos];  
    }  
} catch (Exception e) { System.out.println("Invalid index");  
}  
System.out.println(sum);  
}  
}
```

What is the result?

- A. 12
- B. Invalid Index 12
- C. Invalid Index
- D. Compilation fails

Answer: B

Explanation: The loop (for (int pos = 0; pos <= 4; pos++) { }, it should be pos <= 3, causes an exception, which is caught. Then the correct sum is printed.

113. Given:

```
public class DoBreak1 {  
    public static void main(String[] args) {  
        String[] table = {"aa", "bb", "cc", "dd"}; for (String ss: table) {  
            if ( "bb".equals(ss)){ continue;  
        }  
        System.out.println(ss); if ( "cc".equals(ss)) { break;  
    }  
    }  
    }  
    }  
}
```

What is the result?

- A. aa cc
- B. aa bb
- cc
- C. cc dd
- D. cc
- E. Compilation fails.

Answer: A

114. Which two are valid instantiations and initializations of a multi dimensional array?

```
☐ A) int[][] array2D = { {0,1,2,4}, {5,6} };  
☐ B) int[][] array2D = new int[][2];  
    array2D[0][0] = 1;  
    array2D[0][1] = 2;  
    array2D[1][0] = 3;  
    array2D[1][1] = 4;  
☐ C) int[][][] array3D = { {0,1}, {2,3}, {4,5} };  
☐ D) int[] array = {0,1};  
    int[][][] array3D = new int[2][2][2];  
    array3D[0][0] = array;  
    array3D[0][1] = array;  
    array3D[1][0] = array;  
    array3D[1][1] = array;  
☐ E) int[][] array2D = { 0,1 };
```

- A. Option A
- B. Option B
- C. Option C
- D. Option D
- E. Option E

Answer: A,D

115. Given:

```
public class DoWhile1 {  
    public static void main(String[] args) {  
        int ii = 2;  
        do {  
            System.out.println(ii);  
        } while (--ii);  
    }  
}
```

What is the result?

A. 2

1

B. 2

1

0

C. null

D. an infinite loop

E. compilation fails

Answer: E

Explanation:

The line while (--ii); will cause the compilation to fail. ii is not a boolean value.

A correct line would be while (--ii>0);

116. Given:

```
public class TestLoop {  
    public static void main(String[] args) { int array[] = {0, 1, 2, 3, 4};  
    int key = 3;  
    for (int pos = 0; pos < array.length; ++pos) { if (array[pos] == key) {  
        break;  
    }  
    }  
    System.out.print("Found " + key + "at " + pos);  
}
```


}

What is the result?

- A. Found 3 at 2
- B. Found 3 at 3
- C. Compilation fails
- D. An exception is thrown at runtime

Answer: C

Explanation: The following line does not compile: `System.out.print("Found " + key + "at " + pos);`

The variable `pos` is undefined at this line, as its scope is only valid in the for loop. Any variables created inside of a loop are LOCAL TO THE LOOP.

117. Given:

```
1. public class SampleClass {
2.     public static void main(String[] args) {
3.         AnotherSampleClass asc = new AnotherSampleClass();
4.         SampleClass sc = new SampleClass();
5.         //insert code here
6.     }
7. }
8. class AnotherSampleClass extends SampleClass {
9. }
```

Which statement, when inserted into line 5, is valid change?

- A. `asc = sc;`
- B. `sc = asc;`
- C. `asc = (object) sc;`
- D. `asc = sc.clone ()`

Answer: B

Explanation: Works fine.

118. Given:

```
public class Palindrome {  
    public static int main(String[] args) {  
        System.out.print(args[1]);  
        return 0;  
    }  
}
```

And the commands:
javac Palindrome.java
java Palindrome Wow Mom

What is the result?

- A. Compilation fails
- B. The code compiles, but does not execute.
- C. Paildrome
- D. Wow
- E. Mom

Answer: B

119. Which three are advantages of the Java exception mechanism?

- A. Improves the program structure because the error handling code is separated from the normal program function
- B. Provides a set of standard exceptions that covers all the possible errors
- C. Improves the program structure because the programmer can choose where to handle exceptions
- D. Improves the program structure because exceptions must be handled in the method in which they occurred
- E. allows the creation of new exceptions that are tailored to the particular program being

Answer: A,C,E

Explanation:

- A: The error handling is separated from the normal program logic.
- C: You have some choice where to handle the exceptions. E: You can create your own exceptions.

120. Given:

```

class SpecialException extends Exception {
    public SpecialException(String message) {
        super(message);
        System.out.println(message);
    }
}

public class ExceptionTest {
    public static void main(String[] args) {
        try {
            doSomething();
        }
        catch (SpecialException e) {
            System.out.println(e);
        }
    }
    static void doSomething() throws SpecialException {
        int[] ages = new int[4];
        ages[4] = 17;
        doSomethingElse();
    }
    static void doSomethingElse() throws SpecialException {
        throw new SpecialException("Thrown at end of doSomething() method");
    }
}

```

What will be the output?

- ☐ A) SpecialException: Thrown at end of doSomething() method
- ☐ B) Error in thread "main" java.lang.ArrayIndexOutOfBoundsException
- ☐ C) Exception in thread "main" java.lang.ArrayIndexOutOfBoundsException: 4
at ExceptionTest.doSomething(ExceptionTest.java:13)
at ExceptionTest.main(ExceptionTest.java:4)
- ☐ D) SpecialException: Thrown at end of doSomething() method
at ExceptionTest.doSomethingElse(ExceptionTest.java:16)
at ExceptionTest.doSomething(ExceptionTest.java:13)
at ExceptionTest.main(ExceptionTest.java:4)

A. Option A

B. Option B

C. Option C

D. Option D

Answer: D

121. Which two are valid declarations of a two-dimensional array?

- A. int [] [] array2D;
- B. int [2] [2] array2D;
- C. int array2D [];
- D. int [] array2D [];
- E. int [] [] array2D [];

Answer: A,D

Explanation:

int[][] array2D; is the standard convention to declare a 2-dimensional integer array. int[] array2D[]; works as

well, but it is not recommended.

122. Given the code fragment:

```
String[] colors = {"red", "blue", "green", "yellow", "maroon", "cyan"};
```

Which code fragment prints blue, cyan, ?

```
C A) for (String c:colors){
    if (c.length() != 4) {
        continue;
    }
    System.out.print(c+" ");
}

C B) for (String c:colors[]) {
    if (c.length() <= 4) {
        continue;
    }
    System.out.print(c+" ");
}

C C) for (String c:String[] colors) {
    if (c.length() >= 3) {
        continue;
    }
    System.out.print(c+" ");
}

C D) for (String c:colors){
    if (c.length() != 4) {
        System.out.print(c+" ");
        continue;
    }
}
```

A. Option A

B. Option B

C. Option C

D. Option D

Answer: A

123. Given:

```
public class TestTry {
    public static void main(String[] args) {
        StringBuilder message = new StringBuilder("hello java!");
        int pos = 0;
        try {
            for ( pos = 0; pos < 12; pos++) {
                switch (message.charAt(pos)) {
                    case 'a':
                    case 'e':
                    case 'o':
                        String uc=Character.toString(message.charAt(pos)).toUpperCase();
                        message.replace(pos, pos+1, uc);
                }
            }
        } catch (Exception e) {
            System.out.println("Out of limits");
        }
        System.out.println(message);
    }
}
```

What is the result?

- A. hElIOjAvA!
- B. Hello java!
- C. Out of limits hElIOjAvA!**
- D. Out of limits

Answer: C

124. An unchecked exception occurs in a method dosomething()

Should other code be added in the dosomething() method for it to compile and execute?

- A. The Exception must be caught
- B. The Exception must be declared to be thrown.
- C. The Exception must be caught or declared to be thrown.
- D. No other code needs to be added.**

Answer: D

Explanation:

Because the Java programming language does not require methods to catch or to specify unchecked exceptions (RuntimeException, Error, and their subclasses), programmers may be tempted to write code that throws only unchecked exceptions or to make all their exception subclasses inherit from RuntimeException. Both of these shortcuts allow programmers to write code without bothering with compiler errors and without bothering to specify or to catch any exceptions. Although this may seem convenient to the programmer, it sidesteps the intent of the catch or specify requirement and can cause problems for others

using your classes.

125. Given the code fragment:

```
System.out.println ("Result: " +3+5); System.out.println ("Result: " + (3+5));
```

What is the result?

A. Result: 8

Result: 8

B. Result: 35

Result: 8

C. Result: 8

Result: 35

D. Result: 35

Result: 35

Answer: B

Explanation:

In the first statement 3 and 5 are treated as strings and are simply concatenated. In the second statement 3 and 5 are treated as integers and their sum is calculated.

126. Given:

```
public class String1 {  
    public static void main(String[] args) { String s = "123";  
        if (s.length() >2)  
            s.concat("456");  
        for(int x = 0; x <3; x++) s += "x";  
        System.out.println(s);  
    }  
}
```

What is the result?

A. 123

B. 123xxx

C. 123456

D. 123456xxx

E. Compilation fails

Answer: B

Explanation: 123xxx

The if clause is not applied. Note: Syntax of if-statement:

```
if ( Statement ) {  
  
}
```

127. Given the fragment:

```
String[][] arra = new String[3][]; arra[0] = new String[]{"rose", "lily"};
```

```
arra[1] = new String[]{"apple", "berry", "cherry", "grapes"};
```

```
arra[0] = new String[]{"beans", "carrot", "potato"};
```

```
// insert code fragment here
```

Which code fragment when inserted at line '// insert code fragment here', enables the code to successfully change arra elements to uppercase?

A.

```
String[][] arra = new String[3][];
```

```
arra[0] = new String[]{"rose", "lily"};
```

```
arra[1] = new String[]{"apple", "berry", "cherry", "grapes"};
```

```
arra[0] = new String[]{"beans", "carrot", "potato"}; for (int i = 0; i < arra.length; i++) {
```

```
for (int j=0; j < arra[i].length; j++) { arra[i][j] = arra[i][j].toUpperCase();
```

```
}
```

```
}
```

B.

```
for (int i = 0; i < 3; i++) { for (int j=0; j < 4; j++) {
```

```
arra[i][j] = arra[i][j].toUpperCase();
```

```
}
```

```
}
```

C.

```
for (String a[]:arra[]) { for (String x:a[]) {
```


D. toUpperCase();

}

}

E. for (int i:arra.length) { for (String x:arra) { arra[i].toUpperCase();

}

}

Answer: C

Explanation: Incorrect:

not A: arra.length is 3, but the subarrays have 2, 3 and 4 elements. Index will be out of bound.

not B: The subarrays are of different lengths. Index will be out of bound. not D: Compile error.

128. Given the code fragment:

```
public class Test {  
    public static List data = new ArrayList();  
  
    // insert code here  
    {  
        for (String x : strs) {  
            data.add(x);  
        }  
        return data;  
    }  
  
    public static void main(String[] args) {  
        String[] d = {"a", "b", "c"};  
        update(d);  
        for (String s : d) {  
            System.out.print(s + " ");  
        }  
    }  
}
```

Which code fragment, when inserted at // insert code here, enables the code to compile and print a b c?

A. List update (String[] strs)

B. Static ArrayList update (String [] strs)

C. Static List update (String [] strs)

D. Static void update (String[] strs)

E. ArrayList static update (String [] strs)

Answer: E

129. Given:

```
public class Test3 {  
    public static void main(String[] args) {  
        String names[] = new String[3];  
        names[0] = "Mary Brown";  
        names[1] = "Nancy Red";  
        names[2] = "Jessy Orange";  
        try {  
            for(String n: names) {  
                try {  
                    String pwd = n.substring(0, 3)+n.substring(6,10);  
                    System.out.println(pwd);  
                }  
                catch (StringIndexOutOfBoundsException sie) {  
                    System.out.println("string out of limits");  
                }  
            }  
        }  
        catch (ArrayIndexOutOfBoundsException e) {  
            System.out.println("array out of limits");  
        }  
    }  
}
```

What is the result?

- A. Marrown String out of limits JesOran
- B. Marrown String out of limits Array out of limits
- C. Marrown String out of limits
- D. Marrown NanRed JesOran

Answer: A

130. Given:

```
public class Main {  
    public static void main(String[] args) { try {  
        doSomething();  
    }  
    catch (SpecialException e) { System.out.println(e);  
    }  
    static void doSomething() { int [] ages = new int[4]; ages[4] = 17; doSomethingElse();  
    }  
    static void doSomethingElse() {
```

```
throw new SpecialException("Thrown at end of doSomething() method"); }  
}
```

What is the output?

- A. SpecialException: Thrown at end of doSomething() method
- B. Error in thread "main" java.lang. ArrayIndexOutOfBoundsException
- C. Exception in thread "main" java.lang. ArrayIndexOutOfBoundsException: 4 at Main.doSomething(Main.java:12)
at Main.main(Main.java:4)
- D. SpecialException: Thrown at end of doSomething() method at Main.doSomethingElse(Main.java:16)
at Main.doSomething(Main.java:13) at Main.main(Main.java:4)

Answer: C

Explanation:

The following line causes a runtime exception (as the index is out of bounds): `ages[4] = 17;`

A runtime exception is thrown as an `ArrayIndexOutOfBoundsException`.

Note: The third kind of exception (compared to checked exceptions and errors) is the runtime exception.

These are exceptional conditions that are internal to the application, and

that the application usually cannot anticipate or recover from. These usually indicate programming bugs, such as logic errors or improper use of an API.

Runtime exceptions are not subject to the Catch or Specify Requirement. Runtime exceptions are those indicated by `RuntimeException` and its subclasses.

131. Given the code fragment:

```
int b = 3;
```

```
if ( !(b > 3) ) {
```

```
    System.out.println("square ");
```

```
    {
```

```
        System.out.println("circle ");
```

```
    }
```

```
System.out.println("...");
```

What is the result?

- A. square...
- B. circle...
- C. squarecircle...
- D. Compilation fails.

Answer: C

132. Given:

```
public class Case {  
    public static void main(String[] args) {  
        String product = "Pen";  
        product.toLowerCase();  
        product.concat(" BOX".toLowerCase());  
        System.out.print(product.substring(4, 6));  
    }  
}
```

What is the result?

- A. box
- B. nbo
- C. bo
- D. nb
- E. An exception is thrown at runtime

Answer: E

133. Given:

```
class Jump {  
    static String args[] = {"lazy", "lion", "is", "always"};  
    public static void main(String[] args) {  
        System.out.println(  
            args[1] + " " + args[2] + " " + args[3] + " jumping");  
    }  
}
```

And the commands: Javac Jump.java

Java Jump crazy elephant is always What is the result?

- A. Lazy lion is jumping
- B. Lion is always jumping
- C. Crazy elephant is jumping

D. Elephant is always jumping

E. Compilation fails

Answer: D

134. Given:

```
Given:

class Dog {
    Dog() {
        try {
            throw new Exception();
        } catch (Exception e) { }
    }
}

class Test {
    public static void main(String[] args) {
        Dog d1 = new Dog();
        Dog d2 = new Dog();
        Dog d3 = d2;
        // do complex stuff
    }
}
```

How many objects have been created when the line // do complex stuff is reached?

A. Two

B. Three

C. Four

D. Six

Answer: C

135. Given:

```
public class MyFor1 {
    public static void main(String[] args) {
        int[] x = {6, 7, 8};
        for (int i : x) {
            System.out.print(i + " ");
            i++;
        }
    }
}
```

What is the result?

- A. 6 7 8
- B. 7 8 9
- C. 0 1 2
- D. 6 8 10
- E. Compilation fails

Answer: A

136. Given:

```
class Test {  
    public static void main(String[] args) {  
        int numbers[];  
        numbers = new int[2];  
        numbers[0] = 10;  
        numbers[1] = 20;  
  
        numbers = new int[4];  
        numbers[2] = 30;  
        numbers[3] = 40;  
        for (int x : numbers) {  
            System.out.print(" " + x);  
        }  
    }  
}
```

What is the result?

- A. 10 20 30 40
- B. 0 0 30 40
- C. Compilation fails
- D. An exception is thrown at runtime

Answer: A

137. Given:

```
public class Painting { private String type;  
  
    public String getType() { return type;  
  
    }  
}
```

```
public void setType(String type) { this.type = type;
}

public static void main(String[] args) { Painting obj1 = new Painting(); Painting obj2 = new Painting();
obj1.setType(null); obj2.setType("Fresco");
System.out.print(obj1.getType() + " : " + obj2.getType());
}
}
```

What is the result?

- A. : Fresco
- B. null : Fresco
- C. Fresco : Fresco
- D. A NullPointerException is thrown at runtime

Answer: B

138. Given the code fragment?

```
public class Test {
public static void main(String[] args) { Test t = new Test();
int[] arr = new int[10]; arr = t.subArray(arr,0,2);
}

// insert code here
}
```

Which method can be inserted at line // insert code here to enable the code to compile?

- A. public int[] subArray(int[] src, int start, int end) { return src;
}
- B. public int subArray(int src, int start, int end) { return src;
}
- C. public int[] subArray(int src, int start, int end) { return src;
}
- D. public int subArray(int[] src, int start, int end) { return src;

}

Answer: A

139. Given the code fragment:

```
String color = "Red";

switch (color) {
    case "Red":
        System.out.println("Found Red");
    case "Blue":
        System.out.println("Found Blue");
        break;
    case "White":
        System.out.println("Found White");
        break;
    default:
        System.out.println("Found Default");
}
```

What is the result?

- A. Found Red
- B. Found Red Found Blue
- C. Found Red Found Blue Found White
- D. Found Red Found Blue Found White Found Default

Answer: B

Explanation: As there is no break statement after the case "Red" statement the case Blue statement will run as well.

Note: The body of a switch statement is known as a switch block. A statement in the switch block can be labeled with one or more case or default labels. The switch statement evaluates its expression, then executes all statements that follow the matching case label.

Each break statement terminates the enclosing switch statement. Control flow continues with the first statement following the switch block. The break statements are necessary because without them, statements in switch blocks fall through: All statements after the matching case label are executed in sequence, regardless of the expression of subsequent case labels, until a break statement is encountered.

140. Give:

```
class Alpha {
    public String[] main = new String[2];
    Alpha(String[] main) {
        for (int ii = 0; ii < main.length; ii++) {
            this.main[ii] = main[ii] + 5;
        }
    }
    public void main() {
        System.out.print(main[0] + main[1]);
    }
}

public class Test {
    public static void main(String[] args) {
        Alpha main = new Alpha(args);
        main.main();
    }
}

And the commands:

javac Test.java
java Test 1 2
```

What is the result?

- A. 1525
- B. 13
- C. Compilation fails
- D. An exception is thrown at runtime
- E. The program fails to execute due to runtime error

Answer: D

141. Give:

```
public class MyFive {
    public static void main(String[] args) {
        short ii;
        short jj = 0;
        for (ii = kk; ii > 6; ii -= 1) {    // line x
            jj++;
        }
        System.out.println("jj = " + jj);
    }
}
```

What value should replace kk in line x to cause jj = 5 to be output?

- A. -1
- B. 1
- C. 5
- D. 8
- E. 11

Answer: E

Explanation:

We need to get jj to 5. It is initially set to 0. So we need to go through the for loop 5 times. The for loop ends when ii > 6 and ii decreases for every loop. So we need to initially set ii to 11. We set kk to 11.

142. Which two may precede the word 'class' in a class declaration?

- A. local
- B. public
- C. static
- D. volatile
- E. synchronized

Answer: B,C

Explanation:

B: A class can be declared as public or private.

C: You can declare two kinds of classes: top-level classes and inner classes.

You define an inner class within a top-level class. Depending on how it is defined, an inner class can be one of the following four types: Anonymous, Local, Member and Nested top-level.

A nested top-level class is a member class with a static modifier. A nested top-level class is just like any other top-level class except that it is declared within another class or interface. Nested top-level classes are typically used as a convenient way to group related classes without creating a new package.

The following is an example:

```
public class Main { static class Killer {
```

143. Given:

```
class Patient {  
    String name;  
    public Patient(String name) {  
        this.name = name;  
    }  
}
```

And the code fragment:

```
8. public class Test {  
9.     public static void main(String[] args) {  
10.         List ps = new ArrayList();  
11.         Patient p2 = new Patient("Mike");  
12.         ps.add(p2);  
13.  
14.         // insert code here  
15.  
16.         if (f >= 0) {  
17.             System.out.print("Mike Found");  
18.         }  
19.     }  
20. }
```

Which code fragment, when inserted at line 14, enables the code to print Mike Found?

- A. `int f = ps.indexOf {new patient ("Mike")};`
- B. `int f = ps.indexOf (patient("Mike"));`
- C. `patient p = new Patient ("Mike");`
`int f = pas.indexOf(P)`
- D. `int f = ps.indexOf(p2);`

Answer: C

144. 1. class StaticMethods {
2. static void one() {
3. two();
4. StaticMethods.two();
5. three();
6. StaticMethods.four();
7. }
8. static void two() { }
9. void three() {
10. one();

11. StaticMethods.two();
12. four();
13. StaticMethods.four();
14. }
15. void four() { }
16. }

Which three lines are illegal?

- A. line 3
- B. line 4
- C. line 5
- D. line 6
- E. line 10
- F. line 11
- G. line 12
- H. line 13

Answer: C,D,H

145. Given:

```
abstract class X {  
    public abstract void methodX();  
}  
interface Y{  
    public void methodY();  
}
```

Which two code fragments are valid?

- ☐ A) class Z extends X implements Y(
 public void methodZ() {}
 }
- ☐ B) abstract class Z extends X implements Y(
 public void methodZ() {}
 }
- ☐ C) class Z extends X implements Y(
 public void methodX() {}
 }
- ☐ D) abstract class Z extends X implements Y(
 }
- ☐ E) class Z extends X implements Y(
 public void methodY() {}
 }

A. Option A

B. Option B

C. Option C

D. Option D

E. Option E

Answer:: B,C

Explanation: When an abstract class is subclassed, the subclass usually provides implementations for all of the abstract methods in its parent class (C). However, if it does not, then the subclass must also be declared abstract (B).

Note: An abstract class is a class that is declared abstract—it may or may not include abstract methods.

Abstract classes cannot be instantiated, but they can be subclassed.

146. Given:

```
public class ScopeTest { int j, int k;  
  
public static void main(String[] args) { ew ScopeTest().doStuff(); }  
  
void doStuff() { nt x = 5; oStuff2();  
  
System.out.println("x");  
  
}  
  
void doStuff2() { nt y = 7;  
  
System.out.println("y");
```

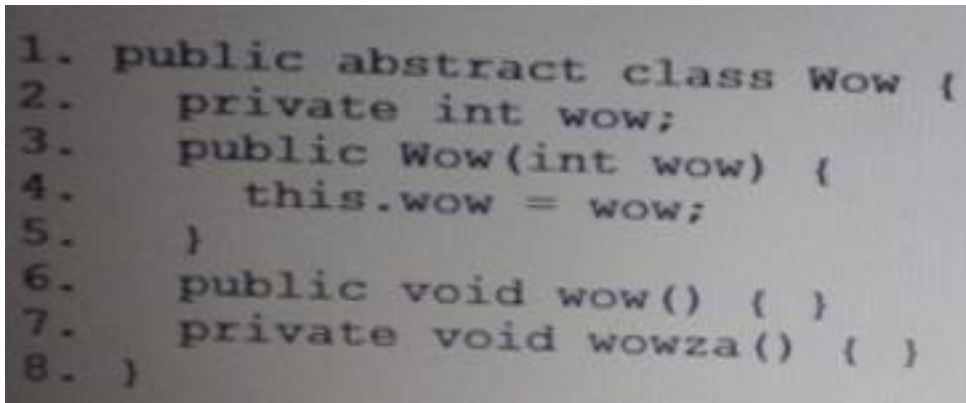
```
or (int z = 0; z < 5; z++) { system.out.println("z");  
system.out.println("y");  
}
```

Which two items are fields?

- A. j
- B. k
- C. x
- D. y
- E. z

Answer: A,B

147. Given:



```
1. public abstract class Wow {  
2.     private int wow;  
3.     public Wow(int wow) {  
4.         this.wow = wow;  
5.     }  
6.     public void wow() { }  
7.     private void wowza() { }  
8. }
```

What is true about the class Wow?

- A. It compiles without error.
- B. It does not compile because an abstract class cannot have private methods.
- C. It does not compile because an abstract class cannot have instance variables.
- D. It does not compile because an abstract class must have at least one abstract method.
- E. It does not compile because an abstract class must have a constructor with no arguments.

Answer: A

148. Given:

```
class X {}
```

```
class Y { Y ( ) { } }
```

```
class Z { Z (int i) { } }
```

Which class has a default constructor?

- A. X only
- B. Y only
- C. Z only
- D. X and Y
- E. Y and Z
- F. X and Z
- G. X, Y and Z

Answer: A

149. Given:

```
public class Test { static boolean bVar;  
public static void main(String[] args) { boolean bVar1 = true;  
int count =8; do {  
System.out.println("Hello Java! " +count); if (count >= 7) {  
bVar1 = false;  
}  
} while (bVar != bVar1 && count > 4); count -= 2;  
}  
}
```

What is the result?

- A. Hello Java! 8 Hello Java! 6
Hello Java! 4
- B. Hello Java! 8 Hello Java! 6
- C. Hello Java! 8
- D. Compilation fails

Answer: C

Explanation: Hello Java! 8

150. Given the code fragment:

```
System.out.println("Result: " + 2 + 3 + 5);
```

```
System.out.println("Result: " + 2 + 3 * 5);
```

 What is the result?

A. Result: 10

Result: 30

B. Result: 10

Result: 25

C. Result: 235

Result: 215

D. Result: 215

Result: 215

E. Compilation fails

Answer: C

Explanation: First line:

```
System.out.println("Result: " + 2 + 3 + 5);
```

 String concatenation is produced.

Second line:

```
System.out.println("Result: " + 2 + 3 * 5);
```

3*5 is calculated to 15 and is appended to string 2. Result 215.

The output is: Result: 235

Result: 215

Note #1:

To produce an arithmetic result, the following code would have to be used: `System.out.println("Result: " + (2 + 3 + 5));`

```
System.out.println("Result: " + (2 + 1 * 5));
```

 run:

Result: 10

Result: 7

Note #2:

If the code was as follows:

```
System.out.println("Result: " + 2 + 3 + 5");
```

```
System.out.println("Result: " + 2 + 1 * 5");
```

The compilation would fail. There is an unclosed string literal, 5", on each line.

151. Given:

```
public class Test2 {  
    public static void doChange(int[] arr) {  
        for(int pos = 0; pos < arr.length; pos++){  
            arr[pos] = arr[pos] + 1;  
        }  
    }  
    public static void main(String[] args) {  
        int[] arr = {10, 20, 30};  
        doChange(arr);  
        for(int x: arr) {  
            System.out.print(x + ", ");  
        }  
        doChange(arr[0], arr[1], arr[2]);  
        System.out.print(arr[0] + ", " + arr[1] + ", " + arr[2]);  
    }  
}
```

What is the result?

- A. 11, 21, 31, 11, 21, 31
- B. 11, 21, 31, 12, 22, 32
- C. 12, 22, 32, 12, 22, 32
- D. 10, 20, 30, 10, 20, 30

Answer: D

152. Given the code fragment:

```
int[][] array2D = { {0,1,2}, {3,4,5,6} };  
System.out.print(array2D[0].length + " ");  
System.out.print(array2D[1].getClass().isArray() + " ");  
System.out.println(array2D[0][1]);
```

What is the result?

- A. 3 false 1
- B. 2 true 3
- C. 2 false 3
- D. 3 true 1

E. 3 false 3

F. 2 true 1

G. 2 false 1

Answer: D

Explanation:

The length of the element with index 0, {0, 1, 2}, is 3. Output: 3

The element with index 1, {3, 4, 5, 6}, is of type array. Output: true

The element with index 0, {0, 1, 2} has the element with index 1: 1. Output: 1

153. Given the code fragment:

```
int [] [] array = {{0}, {0, 1}, {0, 2, 4}, {0, 3, 6, 9}, {0, 4, 8, 12, 16}};
```

```
System.out.println(array [4] [1]);
```

```
System.out.println (array) [1] [4]);
```

 What is the result?

A. 4

Null

B. Null 4

C. An `IllegalArgumentException` is thrown at run time

D. 4

An `ArrayIndexOutOfBoundsException` is thrown at run time

Answer: D

Explanation:

The first `println` statement, `System.out.println(array [4][1]);`, works fine. It selects the element/array with index 4, {0, 4, 8, 12, 16}, and from this array it selects the element with index 1, 4. Output: 4

The second `println` statement, `System.out.println(array) [1][4]);`, fails. It selects the array/element with index 1, {0, 1}, and from this array it try to select the element with index

4. This causes an exception.

Output: 4

Exception in thread "main" java.lang.ArrayIndexOutOfBoundsException: 4

154. Given:

```
public class MyClass {  
    public static void main(String[] args) { String s = " Java Duke ";  
    int len = s.trim().length(); System.out.print(len);  
    }  
}
```

What is the result?

- A. 8
- B. 9
- C. 11
- D. 10
- E. Compilation fails

Answer: B

Explanation: Java -String trim() Method

This method returns a copy of the string, with leading and trailing whitespace omitted.

155. Given the code fragment `int var1 = -5;`

```
int var2 = var1--;  
int var3 = 0; if (var2 < 0) {  
    var3 = var2++;  
} else {  
    var3 = --var2;  
}
```

`System.out.println(var3);`

What is the result?

- A. - 6
- B. - 4
- C. - 5
- D. 5

E. 4

F. Compilation fails

Answer: C

156. Given:

```
public class Test {  
    public static void main(String[] args) { int day = 1;  
    switch (day) {  
        case "7": System.out.print("Uranus");  
        case "6": System.out.print("Saturn");  
        case "1": System.out.print("Mercury");  
        case "2": System.out.print("Venus");  
        case "3": System.out.print("Earth");  
        case "4": System.out.print("Mars");  
        case "5": System.out.print("Jupiter");  
    }  
    }  
}
```

Which two modifications, made independently, enable the code to compile and run?

- A. Adding a break statement after each print statement
- B. Adding a default section within the switch code-block
- C. Changing the string literals in each case label to integer
- D. Changing the type of the variable day to String
- E. Arranging the case labels in ascending order

Answer: A,C

Explanation: The following will work fine:

```
public class Test {  
    public static void main(String[] args) { int day = 1;  
    switch (day) {
```

```
case 7: System.out.print("Uranus"); break; case 6: System.out.print("Saturn"); break; case 1:
System.out.print("Mercury"); break; case 2: System.out.print("Venus"); break; case 3:
System.out.print("Earth"); break; case 4: System.out.print("Mars"); break; case 5:
System.out.print("Jupiter"); break;
}
}
}
```

157. A method `doSomething ()` that has no exception handling code is modified to trail a method that throws a checked exception. Which two modifications, made independently, will allow the program to compile?

- A. Catch the exception in the method `doSomething()`.
- B. Declare the exception to be thrown in the `doSomething()` method signature.
- C. Cast the exception to `aRunTimeException` in the `doSomething()` method.
- D. Catch the exception in the method that calls `doSomething()`.

Answer: A,B

Explanation: Valid Java programming language code must honor the Catch or Specify Requirement. This means that code that might throw certain exceptions must be enclosed by either of the following:

- * A try statement that catches the exception. The try must provide a handler for the exception, as described in Catching and Handling Exceptions.
- * A method that specifies that it can throw the exception. The method must provide a throws clause that lists the exception, as described in Specifying the Exceptions Thrown by a Method.

Code that fails to honor the Catch or Specify Requirement will not compile.

158. Given:

```
class Overloading {
    void x(int i) {
        System.out.println("one");
    }

    void x(String s) {
        System.out.println("two");
    }

    void x(double d) {
        System.out.println("three");
    }

    public static void main(String[] args) {
        new Overloading().x(4.0);
    }
}
```

What is the result?

- A. One
- B. Two
- C. Three
- D. Compilation fails

Answer: C

Explanation:

In this scenario the overloading method is called with a double/float value, 4.0. This makes the third overload method to run.

Note:

The Java programming language supports overloading methods, and Java can distinguish between methods with different method signatures. This means that methods within a class can have the same name if they have different parameter lists. Overloaded methods are differentiated by the number and the type of the arguments passed into the method.

159. Given:

```
public class App {  
    public static void main(String[] args) {  
        int i = 10;  
        int j = 20;  
        int k = j += i / 5;  
        System.out.print(i + " : " + j + " : " + k);  
    }  
}
```

What is the result?

- A. 10 : 22 : 20
- B. 10 : 22 : 22
- C. 10 : 22 : 6
- D. 10 : 30 : 6

Answer: B

160. Given the code fragment:

```
int a = 0; a++;
```

```
System.out.println(a++); System.out.println(a);
```

What is the result?

- A. 1
2
- B. 0
1
- C. 1
1
- D. 2
2

Answer: A

Explanation:

The first println prints variable a with value 1 and then increases the variable to 2.

161. Given:

```
class MarksOutOfBoundsException extends IndexOutOfBoundsException { }

public class GradingProcess {

void verify(int marks) throws IndexOutOfBoundsException { if (marks > 100) {

throw new MarksOutOfBoundsException();

}

if (marks > 50) { System.out.print("Pass");

} else { System.out.print("Fail");

}

}

public static void main(String[] args) { int marks = Integer.parseInt(args[2]); try {

new GradingProcess().verify(marks);

} catch(Exception e) { System.out.print(e.getClass());

}

}

}
```

And the command line invocation: Java grading process 89 50 104 What is the result?

- A. Pass
- B. Fail
- C. Class MarketOutOfBoundsException
- D. Class IndexOutOfBoundsException
- E. Class Exception

Answer: C

Explanation: The value 104 will cause a MarketOutOfBoundsException

162. You are writing a method that is declared not to return a value. Which two are permitted in the method body?

- A. omission of the return statement
- B. return null;
- C. return void;

D. return;

Answer: A,D

Explanation:

Any method declared void doesn't return a value. It does not need to contain a return statement, but it may do so. In such a case, a return statement can be used to branch out of a control flow block and exit the method and is simply used like this:

return;

163. Given the code fragment:

```
public class Test {  
  
    static String[][] arr =new String[3][]; private static void doPrint() {  
  
        //insert code here  
  
    }  
  
    public static void main(String[] args) { String[] class1 = {"A","B","C"};  
    String[] class2 = {"L","M","N","O"}; String[] class3 = {"I","J"};  
    arr[0] = class1; arr[1] = class2; arr[2] = class3; Test.doPrint();  
  
    }  
}
```

Which code fragment, when inserted at line //insert code here, enables the code to print COJ?

A. int i = 0;

```
for (String[] sub: arr) { int j = sub.length -1; for (String str: sub) {  
  
    System.out.println(str[j]); i++;  
  
    }  
  
}
```

B. private static void doPrint() { for (int i = 0;i < arr.length;i++) { int j = arr[i].length-1;
System.out.print(arr[i][j]);

 }

}

C. int i = 0;

```
for (String[] sub: arr[i]) { int j = sub.length; System.out.print(arr[i][j]); i++;  
}
```

```
D. for (int i = 0; i < arr.length-1; i++) { int j = arr[i].length-1;  
System.out.print(arr[i][j]); i++;  
}
```

Answer: B

Explanation: Incorrect:

not A: The following line causes a compile error: System.out.println(str[j]);

Not C: Compile error line: for (String[] sub: arr[i]) not D: Output: C

164. Given:

```
class X {  
    int x1, x2, x3;  
}  
class Y extends X {  
    int y1;  
    Y() {  
        x1 = 1;  
        x2 = 2;  
        y1 = 10;  
    }  
}  
class Z extends Y {  
    int z1;  
    Z() {  
        x1 = 3;  
        y1 = 20;  
        z1 = 100;  
    }  
}  
And,  
public class Test3 {  
    public static void main(String[] args) {  
        Z obj = new Z();  
        System.out.println(obj.x3 + ", " + obj.y1 + ", " + obj.z1);  
    }  
}
```

Which constructor initializes the variable x3?

- A. Only the default constructor of class X
- B. Only the no-argument constructor of class Y
- C. Only the no-argument constructor of class Z
- D. Only the default constructor of object class

Answer: C

165. Given the code fragment:

```
//insert code here arr[0] = new int[3]; arr[0][0] = 1;

arr[0][1] = 2;

arr[0][2] = 3;

arr[1] = new int[4]; arr[1][0] = 10;

arr[1][1] = 20;

arr[1][2] = 30;

arr[1][3] = 40;
```

Which two statements, when inserted independently at line // insert code here, enable the code to compile?

- A. `int [] [] arr = null;`
- B. `int [] [] arr = new int [2];`
- C. `int [] [] arr = new int [2] [];`
- D. `int [] [] arr = new int [] [4];`
- E. `int [] [] arr = new int [2] [0];`
- F. `int [] [] arr=new int [0] [4];`

Answer: C,E

166. Given:

```
abstract class A1 {

public abstract void m1();

public void m2() { System.out.println("Green"); }

}

abstract class A2 extends A1 { public abstract void m3();

public void m1() { System.out.println("Cyan"); } public void m2() { System.out.println("Blue"); }

}

public class A3 extends A2 {

public void m1() { System.out.println("Yellow"); } public void m2() { System.out.println("Pink"); } public void

m3() { System.out.println("Red"); } public static void main(String[] args) {

A2 tp = new A3(); tp.m1();
```

tp.m2();

tp.m3();

}

}

What is the result?

- A. Yellow Pink Red
- B. Cyan Blue Red
- C. Cyan Green Red
- D. Compilation Fails

Answer: A

167. Given:

```
public class Circle {
    double radius;
    public double area;
    public Circle(double r) { radius = r; }
    public double getRadius() { return radius; }
    public void setRadius(double r) { radius = r; }
    public double getArea() { return /* ??? */; }
}

class App {
    public static void main(String[] args) {
        Circle c1 = new Circle(17.4);
        c1.area = Math.PI * c1.getRadius() * c1.getRadius();
    }
}
```

The class is poorly encapsulated. You need to change the circle class to compute and return the area instead.

Which two modifications are necessary to ensure that the class is being properly encapsulated?

- A. Remove the area field.
- B. Change the getArea() method as follows:
`public double getArea () { return Match.PI * radius * radius; }`
- C. Add the following method:
`public double getArea () {area = Match.PI * radius * radius; }`
- D. Change the caccess modifier of the SerRadius () method to be protected.

Answer: B,D

168. Given the code fragment:

```
float x = 22.00f % 3.00f; int y = 22 % 3;
```

System.out.print(x + ", " + y); What is the result?

- A. 1.0, 1
- B. 1.0f, 1
- C. 7.33, 7
- D. Compilation fails
- E. An exception is thrown at runtime

Answer: A

169. Which two actions will improve the encapsulation of a class?

- A. Changing the access modifier of a field from public to private
- B. Removing the public modifier from a class declaration
- C. Changing the return type of a method to void
- D. Returning a copy of the contents of an array or ArrayList instead of a direct reference

Answer: A,D

Explanation: Reference: http://www.tutorialspoint.com/java/java_access_modifiers.htm

170. Given:

```
public class DoCompare4 {  
    public static void main(String[] args) {  
        String[] table = {"aa", "bb", "cc"};  
        int ii = 0;  
        do  
            while (ii < table.length)  
                System.out.println(ii++);  
        while (ii < table.length);  
    }  
}
```

What is the result?

- A. 0
- B. 0

1

2

C. 0

1

2

0

1

2

0

1

2

D. Compilation fails

Answer: B

Explanation:

table.length is 3. So the do-while loop will run 3 times with ii=0, ii=1 and ii=2. The second while statement will break the do-loop when ii = 3.

Note: The Java programming language provides a do-while statement, which can be expressed as follows:

```
do { statement(s)
} while (expression);
```

171. Which three statements are true about the structure of a Java class?

- A. A class can have only one private constructor.
- B. A method can have the same name as a field.
- C. A class can have overloaded static methods.
- D. A public class must have a main method.
- E. The methods are mandatory components of a class.
- F. The fields need not be initialized before use.

Answer: A,B,C

Explanation: A: Private constructors prevent a class from being explicitly instantiated by its callers.

If the programmer does not provide a constructor for a class, then the system will always provide a default, public no-argument constructor. To disable this default constructor, simply add a private no-argument constructor to the class. This private constructor may be empty.

B: The following works fine: `int cake() {
int cake=0; return (1);
}`

C: We can overload static method in Java. In terms of method overloading static method are just like normal methods and in order to overload static method you need to provide another static method with same name but different method signature.

Incorrect:

Not D: Only a public class in an application need to have a main method. Not E:

Example:

```
class A  
{  
public string something; public int a;  
}
```

Q: What do you call classes without methods? Most of the time: An anti pattern.

Why? Because it facilitates procedural programming with "Operator" classes and data structures. You separate data and behaviour which isn't exactly good OOP.

Often times: A DTO (Data Transfer Object)

Read only datastructures meant to exchange data, derived from a business/domain object. Sometimes: Just data structure.

Well sometimes, you just gotta have those structures to hold data that is just plain and simple and has no operations on it.

Not F: Fields need to be initialized. If not the code will not compile. Example:

Uncompilable source code - variable x might not have been initialized

172. Given:

```
public class Test {  
    static void dispResult(int[] num) {  
        try {  
            System.out.println(num[1] / (num[1] - num[2]));  
        } catch (ArithmeticException e) {  
            System.err.println("first exception");  
        }  
        System.out.println("Done");  
    }  
  
    public static void main(String[] args) {  
        try {  
            int[] arr = {100, 100};  
            dispResult(arr);  
        } catch (IllegalArgumentException e) {  
            System.err.println("second exception");  
        } catch (Exception e) {  
            System.err.println("third exception");  
        }  
    }  
}
```

What is the result?

- A. 0
- Done
- B. First Exception Done
- C. Second Exception
- D. Done
- Third Exception
- E. Third Exception

Answer: B

173. Given:


```
1. import java.io.Error;
2.     public class TestApp {
3.         public static void main(String[] args) {
4.             TestApp t = new TestApp();
5.             try {
6.                 t.doPrint();
7.                 t.doList();
8.
9.             } catch (Exception e2) {
10.                System.out.println("Caught " + e2);
11.            }
12.        }
13.        public void doList() throws Exception {
14.            throw new Error("Error");
15.        }
16.        public void doPrint() throws Exception {
17.            throw new RuntimeException("Exception");
18.        }
19.    }
```

What is the result?

- ☐ A) Caught java.lang.RuntimeException: Exception
Exception in thread "main" java.lang.Error: Error
at TestApp.doList(TestApp.java: 14)
at TestApp.main(TestApp.java: 6)
- ☐ B) Exception in thread "main" java.lang.Error: Error
at TestApp.doList(TestApp.java: 14)
at TestApp.main(TestApp.java: 6)
- ☐ C) Caught java.lang.RuntimeException: Exception
Caught java.lang.Error: Error
- ☐ D) Caught java.lang.RuntimeException: Exception

A. Option A

B. Option B

C. Option C

D. Option D

Answer:: C

174. Given the following code:

```
1. public class Simple {
2.     public float price;
3.     public static void main(String[] args) {
4.         Simple price = new Simple();
5.         price = 4;
6.     }
7. }
```

What will make this code compile and run?

- A. Change line 2 to the following: Publicint price
- B. Change line 4 to the following: int price = new simple ();
- C. Change line 4 to the following: Float price = new simple ();
- D. Change line 5 to the following: Price = 4f;
- E. Change line 5 to the following: price.price = 4;
- F. Change line 5to the following: Price = (float) 4:
- G. Change line 5 to the following: Price = (Simple) 4;
- H. The code compiles and runs properly; no changes are necessary

Answer: E

Explanation:

price.price =4; is correct, not price=4;

The attribute price of the instance must be set, not the instance itself.

175. Given the classes:

- * AssertionError
- * ArithmeticException
- * ArrayIndexOutOfBoundsException
- * FileNotFoundException
- * IllegalArgumentException
- * IOError
- * IOException
- * NumberFormatException
- * SQLException

Which option lists only those classes that belong to the unchecked exception category?

- A. AssertionError, ArrayIndexOutOfBoundsException, ArithmeticException
- B. AssertionError, IOError, IOException
- C. ArithmeticException, FileNotFoundException, NumberFormatException
- D. FileNotFoundException, IOException, SQLException
- E. ArrayIndexOutOfBoundsException, IllegalArgumentException, FileNotFoundException

Answer: A

Explanation: Not B: IOException and IOException are both checked errors. Not C, not D, not E:

FileNotFoundException is a checked error.

Note:

Checked exceptions:

- * represent invalid conditions in areas outside the immediate control of the program (invalid user input, database problems, network outages, absent files)
- * are subclasses of Exception
- * a method is obliged to establish a policy for all checked exceptions thrown by its implementation (either pass the checked exception further up the stack, or handle it somehow)

Note:

Unchecked exceptions:

- * represent defects in the program (bugs) - often invalid arguments passed to a non-private method. To quote from The Java Programming Language, by Gosling, Arnold, and Holmes: "Unchecked runtime exceptions represent conditions that, generally speaking, reflect errors in your program's logic and cannot be reasonably recovered from at run time."
- * are subclasses of RuntimeException, and are usually implemented using IllegalArgumentException, NullPointerException, or IllegalStateException
- * method is not obliged to establish a policy for the unchecked exceptions thrown by its implementation (and they almost always do not do so)

176. Given the code fragment:

```
Boolean b1 = true; Boolean b2 = false; int i = 0;  
while (foo) { }
```

Which one is valid as a replacement for foo?

- A. b1.compareTo(b2)
- B. i = 1
- C. i == 2? -1 : 0
- D. "foo".equals("bar")

Answer: D

Explanation:

Equals works fine on strings equals produces a Boolean value.

```
177. public class StringReplace {  
    public static void main(String[] args) {  
        String message = "Hi everyone!";  
        System.out.println("message = " + message.replace("e", "X")); }  
    }
```

What is the result?

- A. message = Hi everyone!
- B. message = Hi XvXryonX!
- C. A compile time error is produced.
- D. A runtime error is produced.
- E. message =
- F. message = Hi Xeveryone!

Answer: B

178. Which three are valid types for switch?

- A. int
- B. float
- C. double
- D. integer
- E. String
- F. Float

Answer: A,D,E

Explanation:

A switch works with the byte, short, char, and int primitive data types. It also works with enumerated types theString class, and a few special classes that wrap certain primitive types: Character, Byte, Short, and

Integer.

179. Given:

```
class X {  
    String str = "default";  
    X(String s) { str = s; }  
    void print() { System.out.println(str); }  
    public static void main(String[] args) {  
        new X("hello").print();  
    }  
}
```

What is the result?

- A. Hello
- B. Default
- C. Compilation fails
- D. The program prints nothing
- E. An exception is thrown at run time

Answer: A

Explanation:

The program compiles fine. The program runs fine. The output is: hello

180. Given:

```
package p1;  
  
public interface DoInterface { void method1(int n1); // line n1  
}  
  
package p3;  
import p1.DoInterface;  
  
public class DoClass implements DoInterface { public DoClass(int p1) { }  
    public void method1(int p1) { } // line n2 private void method2(int p1) { } // line n3  
}  
  
public class Test {  
  
    public static void main(String[] args) { DoInterface doi= new DoClass(100); // line n4 doi.method1(100);  
}
```

```
doi.method2(100);
```

```
}
```

```
}
```

Which change will enable the code to compile?

- A. Adding the public modifier to the declaration of method1 at line n1
- B. Removing the public modifier from the definition of method1 at line n2
- C. Changing the private modifier on the declaration of method 2 public at line n3
- D. Changing the line n4 DoClass doi = new DoClass ();

Answer: C

Explanation: Private members (both fields and methods) are only accessible inside the class they are declared or inside inner classes. private keyword is one of four access modifier provided by Java and its a most restrictive among all four e.g. public, default(package), protected and private.

Read more: <http://javarevisited.blogspot.com/2012/03/private-in-java-why-should-you-always.html#ixzz3Sh3mOc4D>

181. Given the code fragment:

```
class Student {  
    int rollnumber; String name;  
    List courses = new ArrayList();  
    // insert code here public String toString() {  
    return rollnumber + " : " + name + " : " + courses;  
    }  
}
```

And,

```
public class Test {  
    public static void main(String[] args) { List cs = new ArrayList(); cs.add("Java");  
    cs.add("C");  
    Student s = new Student(123,"Fred", cs); System.out.println(s);  
}
```

}

Which code fragment, when inserted at line // insert code here, enables class Test to print 123 : Fred : [Java, C]?

A. private Student(int i, String name, List cs) {

/* initialization code goes here */

}

B. public void Student(int i, String name, List cs) {

/* initialization code goes here */

}

C. Student(int i, String name, List cs) {

/* initialization code goes here */

}

D. Student(int i, String name, ArrayList cs) {

/* initialization code goes here */

}

Answer: C

Explanation: Incorrect:

Not A: Student has private access line: Student s = new Student(123,"Fred", cs);

Not D: Cannot be applied to given types.Line: Student s = new Student(123,"Fred", cs);

182. Which statement will empty the contents of aStringBuilder variable named sb?

A. sb.deleteAll();

B. sb.delete(0, sb.size());

C. sb.delete(0, sb.length());

D. sb.removeAll();

Answer: C

183. Given:

```
class Test {
    int sum = 0;
    public void doCheck(int number) {
        if (number % 2 == 0) {
            break;
        } else {
            for (int i = 0; i < number; i++) {
                sum += i;
            }
        }
    }
    public static void main(String[] args) {
        Test obj = new Test();
        System.out.println("Red " + obj.sum);
        obj.doCheck(2);
        System.out.println("Orange " + obj.sum);
        obj.doCheck(3);
        System.out.println("Green " + obj.sum);
    }
}
```

What is the result?

- A. Red 0
- Orange 0
- Green 3
- B. Red 0
- Orange 0
- Green 6
- C. Red 0
- Orange 1
- D. Green 4
- E. Compilation fails

Answer: E

184. Given:


```
public static void main(String[] args) {  
  
    int a, b, c = 0;  
    int a, b, c;  
    int g, int h, int i = 0;  
    int d, e, F;  
    Int k, l, m = 0;  
}
```

Which two declarations will compile?

- A. int a, b, c = 0;
- B. int a, b, c;
- C. int g, int h, int i = 0;
- D. int d, e, F;
- E. int k, l, m; = 0;

Answer: A,D

185. Given the code fragment:

```
StringBuilder sb = new StringBuilder ( ) ; Sb.append ("world");
```

Which code fragment prints Hello World?

- A. sb.insert(0,"Hello "); System.out.println(sb);
- B. sb.append(0,"Hello "); System.out.println(sb);
- C. sb.add(0,"Hello "); System.out.println(sb);
- D. sb.set(0,"Hello "); System.out.println(sb);D

Answer: A

Explanation: The java.lang.StringBuilder.insert(int offset, char c) method inserts the string representation of the char argument into this sequence.

The second argument is inserted into the contents of this sequence at the position indicated by offset. The length of this sequence increases by one. The offset argument must be greater than or equal to 0, and less than or equal to the length of this sequence.

Reference: Java.lang.StringBuilder.insert() Method

186. Which two will compile, and can be run successfully using the command: Java fred1 hello walls

```
☐ A) class fred1 {  
    public static void main(String args) {  
        System.out.println(args[1]);  
    }  
}  
  
☐ B) class fred1 {  
    public static void main(String[] args) {  
        System.out.println(args[2]);  
    }  
}  
  
☐ C) class fred1 {  
    public static void main(String[] args) {  
        System.out.println(args);  
    }  
}  
  
☐ D) class fred1 {  
    public static void main(String[] args) {  
        System.out.println(args[1]);  
    }  
}
```

A. Option A

B. Option B

C. Option C

D. Option D

Answer: C,D

Explanation: Throws java.lang.ArrayIndexOutOfBoundsException: 2 at

certquestions.Fred1.main(Fred1.java:3)

:C. Prints out: [Ljava.lang.String;@39341183

:D. Prints out: walls

187. Given: Given:

```
public class SuperTest {  
  
    public static void main(String[] args) { statement1  
statement2 statement3  
}  
  
}  
  
class Shape { public Shape() {
```

```
System.out.println("Shape: constructor");  
  
}  
  
public void foo() { System.out.println("Shape: foo");  
  
}  
  
}  
  
class Square extends Shape { public Square() {  
    super();  
}  
  
    public Square(String label) { System.out.println("Square: constructor");  
  
    }  
  
    public void foo() { super.foo();  
  
    }  
  
    public void foo(String label) { System.out.println("Square: foo");  
  
    }  
  
    }  
  
    }  
  
    }
```

What should statement1, statement2, and statement3, be respectively, in order to produce the result?

Shape: constructor Square: foo Shape: foo

A. Square square = new Square ("bar"); square.foo ("bar");
square.foo();

B. Square square = new Square ("bar"); square.foo ("bar");
square.foo ("bar");

C. Square square = new Square (); square.foo ();
square.foo(bar);

D. Square square = new Square (); square.foo ();
square.foo("bar");

E. Square square = new Square (); square.foo ();
square.foo ();

F. Square square = newSquare(); square.foo("bar");
square.foo();

Answer: F

188. Given the code fragment:

```
9.    int a = -10;
10.   int b = 17;
11.   int c = expression1;
12.   int d = expression2;
13.   c++;
14.   d--;
15.   System.out.print(c + ", " + d);
```

What could expression1 and expression2 be, respectively, in order to produce output -8, 16?

- A. + +a, - -b
- B. + +a, b - -
- C. A + +, - - b
- D. A + +, b - -

Answer: B

189. Given:

```
import java.io.IOException;

public class Y {
    public static void main(String[] args) {
        try {
            doSomething();
        }
        catch (RuntimeException e) {
            System.out.println(e);
        }
    }
    static void doSomething() {
        if (Math.random() > 0.5) throw new IOException();
        throw new RuntimeException();
    }
}
```

Which two actions, used independently, will permit this class to compile?

- A. Adding throws IOException to the main() method signature
- B. Adding throws IOException to the doSoomething() method signature

- C. Adding throws IOException to the main() method signature and to the dosomething() method
- D. Adding throws IOException to the dosomething() method signature and changing the catch argument to IOException
- E. Adding throws IOException to the main() method signature and changing the catch argument to IOException

Answer: C,E

190. Given:

```
public class DoCompare1 {
    public static void main(String[] args) {
        String[] table = {"aa", "bb", "cc"};
        for (String ss: table) {
            int ii = 0;
            while(ii < table.length){
                System.out.println(ss + ", " + ii);
                ii++;
            }
        }
    }
}
```

How many times is 2 printed as a part of the output?

- A. Zero
- B. Once
- C. Twice
- D. Thrice
- E. Compilation fails.

Answer: A

191. Given:

```
String message1 = "Wham bam!";
String message2 = new String("Wham bam!");

if (message1 == message2)
    System.out.println("They match");

if (message1.equals(message2))
    System.out.println("They really match");
```

What is the result?

- A. They match They really match
- B. They really match
- C. They match
- D. Nothing Prints
- E. They reallymatch They really match

Answer: B

Explanation:

The strings are not the same objects so the == comparison fails. See note #1 below. As the value of the strings are the same equals is true. The equals method compares values for equality.

Note: #1 ==

Compares references, not values. The use of == with object references is generally limited to the following:

Comparing to see if a reference is null.

Comparing two enum values. This works because there is only one object for each enum constant.

You want to know if two references are to the same object.

192. Given:

```
public class ComputeSum {  
    public int x; public int y; public int sum;  
    public ComputeSum (int nx, int ny) { x = nx; y =ny;  
    updateSum();  
}  
    public void setX(int nx) { x =nx; updateSum();} public void setY(int ny) { x = ny; updateSum();} void  
    updateSum() { sum = x + y;}  
}
```

This class needs to protect an invariant on the sum field.

Which three members must have the private access modifier to ensure that this invariant is maintained?

- A. The x field
- B. The y field

- C. The sum field
- D. The ComputerSum () constructor
- E. The setX () method
- F. The setY () method

Answer: C,E,F

Explanation: The sum field and the two methods (setX and SetY) that updates the sum field.

193. Given:

```
interface Pet { }
```

```
class Dog implements Pet { } public class Beagle extends Dog{ }
```

Which three are valid?

- A. Pet a = new Dog();
- B. Pet b = new Pet();
- C. Dog f = new Pet();
- D. Dog d = new Beagle();
- E. Pet e = new Beagle();
- F. Beagle c = new Dog();

Answer: A,D,E

Explanation: Incorrect:

Not B, not C: Pet is abstract, cannot be instantiated. Not F: incompatible type. Required Beagle, found Dog.

194. Given:


```
class Overloading {
    int x(double d) {
        System.out.println("one");
        return 0;
    }

    String x(double d) {
        System.out.println("two");
        return null;
    }

    double x(double d) {
        System.out.println("three");
        return 0.0;
    }

    public static void main(String[] args) {
        new Overloading().x(4.0);
    }
}
```

What is the result?

- A. One
- B. Two
- C. Three
- D. Compilation fails**

Answer: D

195. Given the code fragment:

```
int b = 4;
b--;
System.out.println(--b);
System.out.println(b);
```

What is the result?

- A. 2**
- 2
- B. 1
- 2

C. 3

2

D. 3

3

Answer: A

Explanation: Variable b is set to 4.

Variable b is decreased to 3.

Variable b is decreased to 2 and then printed. Output: 2 Variable b is printed. Output: 2

196. Given the code fragment:

```
public class Test {  
  
    public static void main(String[] args) { boolean isChecked = false;  
  
    int array[] = {1,3,5,7,8,9};  
  
    int index = array.length; while ( <code1> ) {  
    if (array[index-1] % 2 ==0) { isChecked = true;  
    }  
    <code2>  
    }  
  
    System.out.print(array[index]+", "+isChecked));  
    }  
}
```

Which set of changes enable the code to print 1, true?

A. Replacing <code1> with `index > 0` and replacing <code2> with `index--`;

B. Replacing <code1> with `index > 0` and replacing <code2> with `--index`;

C. Replacing <code1> with `index > 5` and replacing <code2> with `--index` ;

D. Replacing <code1> with `index` and replacing <code2> with `--index` ;

Answer: A

Explanation:

Note: Code in B (code2 is `--index`;) also works fine.

197. Given:

```
public class Equal {  
    public static void main(String[] args) { String str1 = "Java";  
    String[] str2 = {"J","a","v","a"}; String str3 = "";  
    for (String str : str2) { str3 = str3+str;  
    }  
    boolean b1 = (str1 == str3); boolean b2 = (str1.equals(str3)); System.out.print(b1+" "+b2);  
}
```

What is the result?

- A. true, false
- B. false, true**
- C. true, true
- D. false, false

Answer: B

Explanation: == strict equality. equals compare state, not identity.

198. Identify two benefits of using ArrayList over array in software development.

- A. reduces memory footprint**
- B. implements the Collection API
- C. is multi.thread safe
- D. dynamically resizes based on the number of elements in the list**

Answer: A,D

Explanation:

ArrayList supports dynamic arrays that can grow as needed. In Java, standard arrays are of a fixed length. After arrays are created, they cannot grow or shrink, which means that you must know in advance how many elements an array will hold. But, sometimes, you may not know until run time precisely how large of an array you need. To handle this situation, the collections framework defines ArrayList. In essence, an ArrayList is a variable-length array of object references. That is, an ArrayList can dynamically increase or

decrease in size. Array lists are created with an initial size. When this size is exceeded, the collection is automatically enlarged. When objects are removed, the array may be shrunk.

199. Given the class definitions:

```
class Alpha {  
    public String doStuff(String msg) {  
        return msg;  
    }  
}  
class Beta extends Alpha {  
    public String doStuff(String msg) {  
        return msg.replace('a', 'e');  
    }  
}  
class Gamma extends Beta {  
    public String doStuff(String msg) {  
        return msg.substring(2);  
    }  
}
```

And the code fragment of the main() method,

```
12. List<Alpha> strs = new ArrayList<Alpha>();  
13. strs.add(new Alpha());  
14. strs.add(new Beta());  
15. strs.add(new Gamma());  
16. for (Alpha t : strs) {  
17.     System.out.println(t.doStuff("Java"));  
18. }
```

What is the result?

- A. Java Java Java
- B. Java Jeve va**
- C. Java Jeve ve
- D. Compilation fails

Answer: D

200. Given the code fragment:

String h1 = "Bob";

String h2 = new String ("Bob");

What is the best way to test that the values of h1 and h2 are the same?

- A. if (h1 == h2)
- B. if (h1.equals(h2))**
- C. if (h1 == h2)
- D. if (h1.same(h2))

Answer: B

Explanation:

The equals method compares values for equality.

201. Given:

```
public class Main {  
    public static void main(String[] args) throws Exception {  
        doSomething();  
    }  
    private static void doSomething() throws Exception {  
        System.out.println("Before if clause");  
        if (Math.random() > 0.5) {  
            throw new Exception();  
        }  
        System.out.println("After if clause");  
    }  
}
```

Which two are possible outputs?

- ☐ A) Before if clause
Exception in thread "main" java.lang.Exception
at Main.doSomething(Main.java:8)
at Main.main(Main.java:3)
- ☐ B) Before if clause
Exception in thread "main" java.lang.Exception
at Main.doSomething(Main.java:8)
at Main.main(Main.java:3)
After if clause
- ☐ C) Exception in thread "main" java.lang.Exception
at Main.doSomething(Main.java:8)
at Main.main(Main.java:3)
- ☐ D) Before if clause
After if clause

- A. Option A**
- B. Option B
- C. Option C
- D. Option D**

Answer: A,D

Explanation:

The first println statement, `System.out.println("Before if clause");`, will always run.

If `Math.Random() > 0.5` then there is an exception. The exception message is displayed and the program terminates.

If `Math.Random() > 0.5` is false, then the second println statement runs as well.

202. Given the code fragment:

```
public static void main(String[] args) {  
    String[] table = {"aa", "bb", "cc"};  
    for (String ss: table) {  
        int ii = 0;  
        while(ii < table.length){  
            System.out.println(ii);  
            ii++;  
            break;  
        }  
    }  
}
```

How many times is 2 printed?

- A. Zero
- B. Once
- C. Twice
- D. Thrice
- E. It is not printed because compilation fails

Answer: B

Explanation:

The outer loop will run three times, one time each for the elements in table. The break statement breaks the inner loop immediately each time.

2 will be printed once only.

Note: If the line `int ii = 0;` is missing the program would not compile.

203. Which statement initializes a `StringBuilder` to a capacity of 128?

- A. `StringBuilder sb = new String ("128");`
- B. `StringBuilder sb = StringBuilder.setCapacity (128);`
- C. `StringBuilder sb = StringBuilder.getInstance (128);`
- D. `StringBuilder sb = new StringBuilder (128);`**

Answer: D

Explanation:

`StringBuilder(int capacity)`

Constructs a string builder with no characters in it and an initial capacity specified by the `capacity` argument.

Note: An instance of a `StringBuilder` is a mutable sequence of characters.

The principal operations on a `StringBuilder` are the `append` and `insert` methods, which are overloaded so as to accept data of any type. Each effectively converts a given datum to a string and then appends or inserts the characters of that string to the string builder. The `append` method always adds these characters at the end of the builder; the `insert` method adds the characters at a specified point.

204. Given the code fragment: `List colors = new ArrayList(); colors.add("green"); colors.add("red"); colors.add("blue"); colors.add("yellow"); colors.remove(2); colors.add(3,"cyan"); System.out.print(colors);`

What is the result?

- A. [green, red, yellow, cyan]**
- B. [green, blue, yellow, cyan]
- C. [green, red, cyan, yellow]
- D. An `IndexOutOfBoundsException` is thrown at runtime

Answer: A

Explanation: First the list [green, red, blue, yellow] is build. The blue element is removed:

[green, red, yellow]

Finally the element cyan is added at then end of the list (index 3). [green, red, yellow, cyan]

205. Given:

```
public class SuperTest {
    public static void main(String args[]) {
        statement1
        statement2
        statement3
    }
}

class Shape {
    public Shape() {
        System.out.println("Shape: constructor");
    }
    public void foo() {
        System.out.println("Shape: foo");
    }
}

class Square extends Shape {
    public Square() {
        super();
    }
    public Square(String label) {
        System.out.println("Square: constructor");
    }
    public void foo() {
        super.foo();
    }
    public void foo(String label) {
        System.out.println("Square: foo");
    }
}
```

What should statement1, statement2, and statement3, be respectively, in order to produce the result?

Shape: constructor Square: foo Shape: foo

- ☐ A) Square square = new Square("bar");
square.foo("bar");
square.foo();
- ☐ B) Square square = new Square("bar");
square.foo();
square.foo("bar");
- ☐ C) Square square = new Square();
square.foo();
square.foo("bar");
- ☐ D) Square square = new Square();
square.foo("bar");
square.foo();
- ☐ E) Square square = new Square();
square.foo();
square.foo();

- A. Option A
- B. Option B
- C. Option C
- D. Option D**
- E. Option E

Answer: D

206. View the exhibit:

```
public class Student {  
    public String name = "";  
    public int age = 0;  
    public String major = "Undeclared";  
    public boolean fulltime = true;  
    public void display() {  
        System.out.println("Name: " + name + " Major: " + major);  
    }  
    public boolean isFullTime() {  
        return fulltime;  
    }  
}
```

Given:

```
Public class TestStudent {  
    public static void main(String[] args) {  
        Student bob = new Student ();  
        bob.name = "Bob";  
        bob.age = 18;  
        bob.year = 1982;  
    }  
}
```

What is the result?

- A. year is set to 1982.
- B. bob.year is set to 1982
- C. A runtime error is generated.
- D. A compile time error is generated.**

Answer: D

207. View the Exhibit.

```
public class Hat { public int ID =0;
public String name = "hat";
public String size = "One Size Fit All";
public String color="";
public String getName() { return name; }
public void setName(String name) {
this.name = name;
}
}
```

Given

```
public class TestHat {
public static void main(String[] args) {
Hat blackCowboyHat = new Hat();
}
}
```

Which statement sets the name of the Hat instance?

- A. blackCowboyHat.setName = "Cowboy Hat";
- B. setName("Cowboy Hat");
- C. Hat.setName("Cowboy Hat");
- D. blackCowboyHat.setName("Cowboy Hat");**

Answer: D

208. Given:

```
public class MyClass {  
    public static void main(String[] args) {  
        while (int ii = 0; ii < 2) {  
            ii++;  
            System.out.println("ii = " + ii);  
        }  
    }  
}
```

What is the result?

- A. ii = 1 ii = 2
- B. Compilation fails**
- C. The program prints nothing
- D. The program goes into an infinite loop with no output
- E. The program goes to an infinite loop outputting: ii =1

ii = 1

Answer: B

Explanation: The while statement is incorrect. It has the syntax of a for statement.

The while statement continually executes a block of statements while a particular condition is true. Its syntax can be expressed as:

```
while (expression) { statement(s)  
}
```

The while statement evaluates expression, which must return a boolean value. If the expression evaluates to true, the while statement executes the statement(s) in the while block. The while statement continues testing the expression and executing its block until the expression evaluates to false.

Reference: The while and do-while Statements

209. Given the code fragment:

```
int [][] array2d = new int[2][3];
```

```
System.out.println("Loading the data.");  
  
for ( int x = 0; x < array2d.length; x++) {  
    for ( int y = 0; y < array2d[0].length; y++) {  
  
        System.out.println(" x = " + x);  
  
        System.out.println(" y = " + y);  
  
        // insert load statement here.  
  
    }  
  
}
```

```
System.out.println("Modify the data. ");  
  
for ( int x = 0; x < array2d.length; x++) {  
    for ( int y = 0; y < array2d[0].length; y++) {  
  
        System.out.println(" x = " + x);  
  
        System.out.println(" y = " + y);  
  
        // insert modify statement here.  
  
    }  
  
}
```

Which pair of load and modify statement should be inserted in the code?

The load statement should set the array's x row and y column value to the sum of x and y
The modify statement should modify the array's x row and y column value by multiplying it by 2

A. Load statement: `array2d(x, y) = x + y;`

Modify statement: `array2d(x, y) = array2d(x, y) * 2`

B. Load statement: `array2d[x y] = x + y;`

Modify statement: `array2d[x y] = array2d[x y] * 2`

C. Load statement: `array2d[x, y] = x + y;`

Modify statement: `array2d[x, y] = array2d[x, y] * 2`

D. Load statement: `array2d[x][y] = x + y;`

Modify statement: `array2d[x][y] = array2d[x][y] * 2`

E. Load statement: `array2d[[x][y]] = x + y;`

Modify statement: `array2d[[x][y]] = array2d[[x][y]] * 2`

Answer: D

210. Given:

```
public class X implements Z {
    public String toString() {
        return "X ";
    }
    public static void main(String[] args) {
        Y myY = new Y();
        X myX = myY;
        Z myZ = myX;
        System.out.print(myX);
        System.out.print((Y)myX);
        System.out.print(myZ);
    }
}

class Y extends X {
    public String toString() {
        return "Y ";
    }
}
```

- A. X XX
- B. X Y X
- C. Y Y X
- D. Y YY**

Answer: D

211. Given:

```
public class Circle {
    double radius;
    public double area;
    public Circle(double r) { radius = r; }
    public double getRadius() { return radius; }
    public void setRadius(double r) { radius = r; }
    public double getArea() { return /* ??? */; }
}

class App {
    public static void main(String[] args) {
        Circle c1 = new Circle(17.4);
        c1.area = Math.PI * c1.getRadius() * c1.getRadius();
    }
}
```

This class is poorly encapsulated. You need to change the circle class to compute and return the area instead.

What three modifications are necessary to ensure that the class is being properly encapsulated?

- A. Change the access modifier of the setRadius () method to private
- B. Change the getArea () method public double getArea () { return area; }
- C. When the radius is set in the Circle constructor and the setRadius () method, recomputed the area and store it into the area field
- D. Change the getRadius () method: public double getRadius () {
area = Math.PI * radius * radius; return radius;
}

Answer: B,C,D

212. Given:

```
Test.java

public class Test {
    public static void main(String[] args) {
        Integer num = Integer.parseInt(args[1]);
        System.out.println("Number is : " + num);
    }
}
```

And the commands: Javac Test.java Java Test 12345

What is the result?

- A. Number us : 12345
- B. A NullPointerException is thrown at runtime
- C. A NumberFormatException is thrown at runtime
- D. AnArrayIndexOutOfBoundsException is thrown at runtime.

Answer: A

213. Given:

```
public class MainMethod { void main() { System.out.println("one");
}

static void main(String args) { System.out.println("two");
}
```

```
public static void main(String[] args) { System.out.println("three");  
}  
void mina(Object[] args) { System.out.println("four");  
}  
}
```

What is printed out when the program is executed?

- A. one
- B. two
- C. three
- D. four

Answer: C

```
214. Given: class Mid {  
    public int findMid(int n1, int n2) {  
        return (n1 + n2) / 2;  
    }  
}  
  
public class Calc extends Mid {  
    public static void main(String[] args) {  
        int n1 = 22, n2 = 2;  
        // insert code here  
        System.out.print(n3);  
    }  
}
```

Which two code fragments, when inserted at // insert code here, enable the code to compile and print 12?

- A. `Calc c = new Calc(); int n3 = c.findMid(n1,n2);`
- B. `int n3 = super.findMid(n1,n3);`
- C. `Calc c = new Mid();`
`int n3 = c.findMid(n1, n2);`

D. Mid m1 = new Calc();

int n3 = m1.findMid(n1, n2);

E. int n3 = Calc.findMid(n1, n2);

Answer: A,D

Explanation: Incorrect:

Not B: circular definition of n3.

Not C: Compilation error. line Calc c = new Mid(); required: Calc
found: Mid

Not E: Compilation error. line int n3 = Calc.findMid(n1, n2);
non-static method findMid(int,int) cannot be referenced from a static context

215. Given the code fragment:

```
String valid = "true";  
if (valid) System.out.println("valid");  
else      System.out.println("not valid");
```

What is the result?

A. Valid

B. Not valid

C. Compilation fails

D. An IllegalArgumentException is thrown at run time

Answer: C

Explanation:

In segment 'if (valid)' valid must be of type boolean, but it is a string. This makes the compilation fail.

216. Given:

```
public class TestLoop1 {  
    public static void main(String[] args) {  
        int a = 0, z=10;  
        while (a < z) { a++;
```

```
--Z;  
  
}  
System.out.print(a + " : " + z);  
  
}  
}
```

What is the result?

- A. 5 : 5
- B. 6 : 4
- C. 6 : 5
- D. 5 : 4

Answer: A