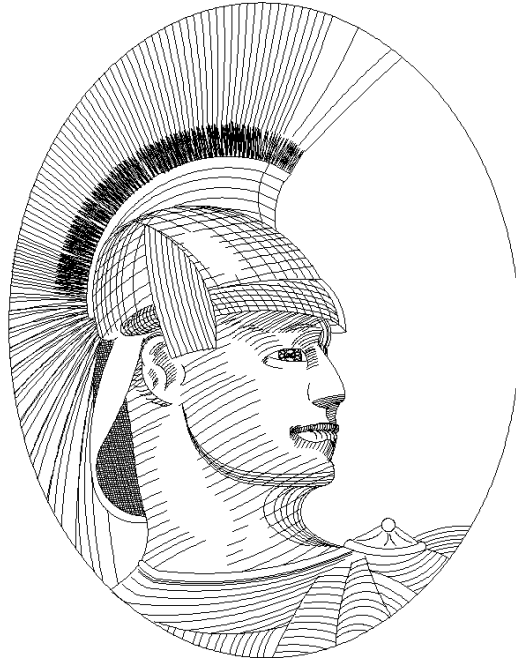


Cram Bible Lab



EasyJAVA Cram Bible ***Sun Certified Java Programmer*** ***Exam 310-022/310-025***

(Release 1.0)

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**(Part 3) SUN CERTIFIED PROGRAMMER FOR THE JAVA PLATFORM, JDK 1.1/JAVA 2
(120 Test Questions)**

NTOE: Those 120 questions are almost the same as what you'll meet with in the real tests of JAVA1.1 and JAVA2. If you study the previous 2 parts thoroughly and really understand what is behind the questions/answers/explanations, you should have no difficulties to give the correct answers. Please don't email us to ask for the answers, we won't provide any answers to the following questions. You know why, don't you?

Given a TextArea using a proportional pitch font and constructed like this:

```
TextArea t = new TextArea("12345", 5, 5);
```

Which statements are true?

- A. The displayed width will show exactly five characters on each line, unless otherwise constrained.
- B. The displayed height will be five lines, unless otherwise constrained.
- C. The maximum number of characters in a line will be five.
- D. The user will be able to edit the character string.
- E. The string can be displayed in multiple fonts.

Given a List constructed like this:

```
List theList = new List(5, true);
```

Which statements are true?

- A. Five rows of items will be visible at a time, unless otherwise constrained.
- B. Five columns of items will be visible at a time, unless otherwise constrained.
- C. Both text and graphic items can be displayed.
- D. A maximum of five items can be in the list at one time.
- E. Multiple items can be selected simultaneously.

Which modifier should be applied to a method for the lock of the object this to be obtained prior to executing any of the method body?

- A. abstract
- B. final
- C. Protected
- D. static
- E. synchronized

Which method should you define as the starting point of a new thread in a class from which new threads of execution can be made?

- A. public static void main(String args[])
- B. public void run()
- C. public void start()
- D. public void init()
- E. public void runnable()

What might cause the current thread to stop executing?

- A. A thread of higher priority becomes ready (runnable).
- B. The thread constructs a new Thread.
- C. The thread executes a sleep() call.
- D. The thread executes a read() call on an InputStream.

Given the following skeleton class definitions, in separate source files:

```
public class Fred {  
    public Fred( ) {
```

```

    }
    public void method() {
    }
}
public class Jim extends Fred {
}

```

Which methods are correct when added individually to the class Jim?

- A. public void otherMethod() {}
- B. public void method(String s) {}
- C. public abstract void otherMethod();
- D. int method() {return 0;}
- E. int method(StringBuffer s) {return 0;}

Given this skeleton of a class currently under construction:

```

public class Example {
    int x, z;
    float y;

    public Example(int a, int b) {
// lots of complex Computation
x=a;
z=b;
    }

    public Example(int a, int b, float c) {
// do everything that the two-argument
// version of constructor does
// including assign x = a and z =b
        y=c;
    }
}

```

In the constructor which accepts two arguments, what is the most concise way to code the "do everything . . ." part?

Examine this program:

- 1) class ExSuper {
- 2) String primary;
- 3) String secondary;
- 4)
- 5) public ExSuper(String p, String s) {
- 6) primary = p;
- 7) secondary = s;
- 8) }
- 9)
- 10) public String toString() {
- 11) return primary;
- 12) }
- 13) }
- 14)
- 15) public class Example extends ExSuper {
- 16)
- 17) public Example(String p, String s) {

```

18)    super(p, s);
19)        }
20)
21)    public String toString() {
22)    return primary + ":" + secondary;
23)
24)
25) public static void main(string args[]) {
26)    ExSuper a = new ExSuper("First", "1st");
27)    ExSuper b = new Example("Second", "2nd");
28)
29)    System.out.println("a is" + a.toString( ));
30)    System.out.println("b is" + b.toString( ));
31)        }
32)    }

```

What happens when the user issues this command:

```
java -cs Example
```

- A. A compiler error occurs at line 21.
- B. An object of type `ClassCastException` is thrown at line 27.
- C. The following output:
a is First
b is Second
- D. The following output:
a is First
b is Second:2nd
- E. The following output:
a is First:1st
b is Second:2nd

The following piece of preliminary analysis work describes a class that will be used frequently in many unrelated parts of a project:

"The Employee object is a Person. An Employee has appointments stored in a vector, a hire date and a number of dependents."

Type in the correct initial declaration for the Employee class using only the following pool of words and spaces:

Date
Employee
public
Person
Int
Vector
Object
Class
extends

You are writing a class that is to handle the events issued by a user interface Component. Which statements are true?

- A. The class should implement some listener interface.
- B. A subclass of an AWT component cannot listen to its own events.
- C. When implementing a listener interface, a class need only provide those handler methods that it chooses.
- D. A class can implement multiple listeners if desired.

E. Subclassing an adapter is inappropriate in this case.

Given the declaration:

```
String s = "Example";
```

Which are legal code?

- A. `s >>>= 3;`
- B. `int i =s.length();`
- C. `s[3]="x";`
- D. `String shorts = s.trim();`
- E. `string t = "For" + s;`

Given the declaration:

```
string s = "hello";
```

Which are legal code?

- A. `char c = s[3];`
- B. `int i = s.length();`
- C. `s >>= 2;`
- D. `string lower s = s.toLowerCase();`
- E. `s += "there";`

The following piece of preliminary analysis work describes a class that will be used frequently in many unrelated parts of a project:

"The Polygon object is a Drawable. A Polygon has vertex information stored in a vector, a color and a "fill" flag which is true or false."

Which item types should be used when defining member variables of the Polygon class, so it most closely corresponds to this analysis?

- A. Drawable
- B. Polygon
- C. Color
- D. object
- E. boolean
- F. Vector

Given the following two classes which are defined in separate files:

```
public Class Base
    public int b;

    public void m_a(float f) {
        int a;
    }
}

public class Sub extends Base {
private float c;

public void m_b() {
    Base ba=new Base();
    int i;
```

```

float g;
//Point x
    }
}

```

Which are syntactically valid statements at //Point X?

- A. i=ba.a;
- B. i=ba. b;
- C. g=c;
- D. g=ba.f;
- E. ba.m_a(6.2F);

Given the following Java source file:

```

//Point X
public class Interesting {
}

```

Which would be correct Java syntax at Point X in the source?

- A. package local.until;
- B. class MoreInteresting {}
- C. public class MoreInteresting {}
- D. protected class MoreInteresting {}
- E. public static final int MORE = 10000;
- F. import java.awt.*;

Given this class outline:

```

class Example
    private int x;
    // rest of class body
}

```

Assuming that you invoke this code with javaExample, which statement is true?

- A. Changing private int x to public int x would make this. x accessible from the main() method of class Example.
- B. Changing private int x to int x would make this. x accessible from the main() method of Class Example.
- C. Changing private int x to static int x would make this.x accessible from the main() method of Class Example.
- D. Changing Class Example to public class Example would make this.x accessible from the main() method of Class Example.
- E. This.x is accessible from the main method of class Example.

The following code, which is the entire contents of a file called Example.java, causes precisely one error during compilation:

- 1) class SubClass extends Baseclass {
- 2) }
- 3) class BaseClass {
- 4) String s;
- 5) public BageClass() {
- 6) }
- 7) public BaseClass(String st) {
- 8) s = st;

```

9)          }
10)         }
11) public class Example {
12)     public void method() {
13)         SubClass s = new SubClass("There");
14)         BaseClass b = new BaseClass("Hello");
15)     }
16) }

```

Which line causes the error?

- A. 1
- B. 3
- C. 7
- D. 13
- E. 14

Which are correct class declarations ? Assume in each case that the code constitutes the entire contents of a file called Fred.java on a system with a case-sensitive file system.

- ```

public class Fred
 public int x = 0;
 public Fred(int xval) {
 x = xval;
 }
}

```
- B. public class FRED {  
 public int x = 0;  
 public FRED(int xval) {  
 x -xval;  
 }  
}
- C. public class Fred extends Object, MyBaseClass {  
 public int x = 0;  
 public Fred(int xval) {  
 x = xval;  
 }  
}
- D. static class Fred {  
 static private int x = 0;  
 static private Fred(int xval) {  
 x = xval;  
 }  
}
- E. import java.io.\*;  
 public class Fred extends Object {  
 private int x = 0;  
 public Fred(int xval) {  
 x = xval;  
 }  
}

Which statements correctly declare a variable a which is suitable for referring to an array of 50 string objects?

- A. `String a [50];`
- B. `Object a [50];`
- C. `String [] a;`
- D. `String a [];`
- E. `char a[] [];`

Which modifier should be applied to a declaration of a class member variable for the value of the variable to remain constant after the creation of the object?

A class design requires that a particular member variable should not be accessible in any way to code outside the package to which the class belongs. What should be done to achieve this?

- A. The variable should be marked `public`
- B. The variable should be marked `private`.
- C. The variable should be marked `protected`.
- D. The variable should have no special access modifier.
- E. The variable should be marked `private`, and an accessor method should be provided that returns the value of the variable.

Which declares a native method in a Java class?

- A. `public native void method() {}`
- B. `public native void method();`
- C. `public native method();`
- D. `public void method () {native;}`
- E. `public void nativeMethod();`

For all methods defined in the interface `MouseListener`, what is the argument type?

Which statements about listeners are true?

- A. Most components allow multiple listeners to be added.
- B. If multiple listeners are added to a single component, the order of invocation of the listener is specified to be the order in which they were added.
- C. The return value from a listener is of boolean type.
- D. A copy of the original event is passed into a listener method.

In the class `java.awt.AWTEvent`, which is the parent class upon which all 1.1 AWT events are based, there is a method called `getID()`. Which phrase most accurately describes the significance of the return value of this method?

- A. It is a reference to the object directly affected by the cause of the event.
- B. It is an indication of the nature of the cause of the event.
- C. It is an indication of the position of the mouse when it caused the event,
- D. In the case of a mouse click, it is an indication of the text under the mouse at the time of the event.
- E. It tells the state of certain keys on the keyboard at the time of the event.
- F. It is an indication of the time at which the event occurred.



What is the return type of any listener method?

- int
- boolean
- Boolean
- void

It depends on the particular listener.

Given the following method:

```
public void method() {
 try {
 delicate();
 System.out.println("Point 1");
 }
 catch (ArrayIndexOutOfBoundsException e) {
 system.out.println("Point 2");
 }
 finally {
 System.out.println("Point 3");
 }
 SyStem.out.println("Point 4");
}
```

Which messages will be displayed if the method delicate() completes normally, without throwing any exception?

- A. Point 1
- B. Point 2
- C. Point 3
- D. Point 4
- E. none

Given the following incomplete method:

```
1) public void method() {
2)
3) if (SomeTestFails()) {
4)
5) }
6)
7) }
```

You want to make this method throw an IOException if, and only if, the method someTestFails () returns a value of true. Which of the changes provided below must be made to achieve this?

- A. Add at line 2: IOException e;
- B. Add at line 4: throw e;
- C. Add at line 4: throw new IOException( );
- D. Add at line 6: throw new IOException( );
- E. Modify the method declaration to indicate that an object of type Exception might be thrown.

Given the following method body:

```
1)
2) {
3) if (sometest()) {
4) sensitive();
```

```

5) }
6) else {
7) insensitive();
8) }
9) }

```

The method sensitive( ) might throw a ProtocolException (which is not a subclass of RuntimeException). Which could be used as a correct method declaration when added at line 1?

- A. public ProtocolException methodName()
- B. public void methodName()
- C. public void methodName() throw IOException
- D. public void methodName() throws ProtocolException
- E. public void methodName() throws Exception

Given the following code:

```

public class Example
public static void main(String args[])
 int i = 0;

 do {
 system.out.println("Doing it for i is" + i);
 } while (--i > 0);
 System.out.println("Finished");
 }
}

```

Which lines would be output when the program is run?

- A. Doing it for i is 3
- B. Doing it for i is 2
- C. Doing it for i is 1
- D. Doing it for i is 0
- E. Doing it for i is -1
- F. Finished

Given the following code which is the entire contents of a file called Example.java in the user's current directory:

```

public class Example {
 public static void main(String args[]) {
outer:
 for (int x = 0; x < 2; x++) {
inner:
 for (int a = 0; a < 2; a++) {
 if (a == 1) {
 continue outer;
 }
 system.out.println("Values are a = " + a +
 "and x = " + x);
 }
 }
 }
 }
}

```

Which lines are output when the program is run?

- A. Values are a = 0 and x = 0

- B. Values are a = 0 and x = 1
- C. Values are a = 0 and x = 2
- D. Values are a = 1 and x = 0
- E. Values are a = 1 and x = 1
- F. Values are a = 1 and x = 2
- G. Values are a = 2 and x = 0
- H. Values are a = 2 and x = 1
- I. Values are a = 2 and x = 2

Given the following code fragment:

```

if (x > 4) {
 System.out.println("Test 1");
}
else if (x > 9) {
 System.out.println("Test 2");
}
else {
 System.out.println("Test 3");
}

```

Which ranges of values of x would produce the Output Test 2?

- A. less than 0
- B. 0 to 4
- C. 5 to 9
- D. 10 and greater
- E. none

Given the following code fragment:

```

1) switch (x) {
2) case 1:
3) System.out.println("Test 1");
4) case 2:
5) case 3:
6) System.out.println("Test 2");
7) break;
8) default:
9) System.out.println("Test 3");
10) }

```

Which values of x would cause Test 2 to be included in the output?

- A. 1
- B. 2
- C. 3
- D. 4
- E. none

Which one or more are normally invoked by the AWT to perform redrawing in response to an area of a Component being exposed?

- A. setVisible( )
- B. actionPerformed( )
- C. paint( )

- D. repaint()
- E. update()

Given the following complete program:

```
import java.io.*;
public class Example
 public static void main(string args[]) throws
 Throwable {
 FileOutputStream f = new
 FileoutputStream("old.text");
 DataoutputStream d = new DataOutputStream(f);
 d.writeBytes("Bye.");
```

Before the program is executed, the file old.text exists and contains 10 bytes. What is the length of the file after the program is executed?

- A. 4 bytes
- B. 8 bytes
- C. 14 bytes
- D. 18 bytes
- E. 20 bytes

Which cannot be added to a container?

- A. an Applet
- B. a component
- C. a Container
- D. a MenuComponent
- E. a Panel

What is the numerical range of a char in Java?

- A.  $0 \dots (2^8) - 1$
- B.  $-2^7 \dots (2^7) - 1$
- C.  $0 \dots (2^{16}) - 1$
- D.  $-2^{15} \dots (2^{15}) - 1$
- E. It depends on the platform.

A Socket object has been created and connected to a standard Internet service on a remote network server. Which construction would give the most suitable means for reading ASCII data one line at a time from the Socket?

- A. `InputStream in = s.getInputStream();`
- B. `DataInputStream in = new DataInputStream(s.getInputStream());`
- C. `ByteArrayInputStream in = new ByteArrayInputStream(s.getInputStream());`
- D. `BufferedReader in = new BufferedReader(new  
InputStreamReader(s.getInputStream()));`
- E. `BufferedReader in = new BufferedReader(new  
InputStreamReader(s.getInputStream(), "8859_1"));`

Which statements are true about threads?

- A. A thread can be created only by subclassing `java.lang.Thread`.

- B. Uncoordinated changes to shared data by multiple threads may result in the data being read, or left, in an inconsistent state.
- C. The execution of a specific Thread can be suspended indefinitely if required.
- D. The Java interpreter exits when the main() method exits even if other user threads are running.
- E. Threads created from the same class all finish together.

FilterInputStream is the parent class for BufferedInputStream, DataInputStream and LineNumberInputStream. Which classes, individually, are valid as an argument for the constructor of FilterInputStream?

- A. InputStream
- B. OutputStream
- C. File
- D. RandomAccessFile
- E. StreamTokenizer

Which statements about the garbage collection mechanism are true?

- A. Garbage collection requires additional program code in cases where multiple threads are running.
- B. The programmer can indicate that a reference through a local variable is no longer of interest.
- C. The programmer has a mechanism that explicitly and immediately frees the memory used by Java objects.
- D. The garbage collection mechanism releases memory at predictable times.
- E. The garbage collection system never reclaims memory from objects which are still accessible to a running user thread.

Given the following method:

- ```

1) public void method(String s) {
2)   String a, b
3)   a = new String("Hello");
4)   b = new String("Goodbye");
5)   System.out.println(a+b);
6)   a = null;
7)   a = b,
8)   System.out.println(a+b);
9)   }
```

What is the earliest point at which the memory space of the String object constructed in line 3 can be released?

- A. just before line 5
- B. just before line 6
- C. just before line 7
- D. just before line 8
- E. never in this method

The argument for a class's main() method is called args, and the class is invoked as follows:

```
java Example fred
```

What would be the effect of trying to access args[0] in the main method?

An object of type NullPointerException is thrown.

An object of type `ArrayIndexOutOfBoundsException` is thrown.
The value produced is fred.
The value produced is Example.
The value produced is java.

What is the range of an int in Java?

- A. $0 \dots (2^{32})-1$
- B. $-2^{31} \dots (2^{31})-1$
- C. $0 \dots (2^{64})-1$
- D. $-2^{63} \dots (2^{63})-1$
- E. It depends on the platform.

While investigating code written by someone else, you find a variable of class X (defined in the JDK) and notice that a method `y()` is being invoked upon it. You are unfamiliar with the class X, so you decide to look it up in the standard HTML/javadoc documentation. Your web browser shows you the page for class X, but you cannot see an entry for the method `y()`, even after using the "Find" or "Search" facility of that browser. What should you examine next?

- A. the java library source code
- B. the source code of this class more closely
- C. the documentation for each subclass of x in turn
- D. the documentation for each superclass of x in turn
- E. the descriptive list of methods at the lower part of the documentation page

Write the number 7 as an octal literal. Note: do not declare a variable.

Which are legal identifiers in Java?

- A. fred
- B. thisfred
- C. 2fred
- D. %fred
- E. *fred

What is the argument list of the `main()` method that will be the starting point of execution for its enclosing class?

- A. `char argv[][]`
- B. `int argc`
- C. `String argv[]`
- D. `String args`
- E. `char *argv[]`

What would be the result of attempting to compile and run this piece of code?

```
public class Test
```

```

        public static void main(string args[]) {
            int [] x = new int [10];
            System.out.println("Value is" + x[5]);
        }
    }

```

- A. An object of type `ArrayIndexOutOfBoundsException` would be thrown.
- B. An object of type `NullPointerException` would be thrown.
- C. An "illegal array declaration syntax" compiler error would occur.
- D. A "possible reference before assignment" compiler error would occur.
- E. The output "Value is 0" would be printed.

Which are keywords in Java?

- A. `sizeof`
- B. `implements`
- C. `instanceof`
- D. `NULL`
- E. `TRUE`

What would be the result of attempting to compile and run the following piece of code?

```

public class Test {
    static int [] x = new int [10];
    public static Void main(string args[]) {
        System.out.println("Value is" + x[5]);
    }
}

```

- A. An object of type `ArrayIndexOutOfBoundsException` is thrown.
- B. An object of type `NullPointerException` is thrown.
- C. An "illegal array declaration syntax" compiler error occurs.
- D. A "possible reference before assignment" compiler error occurs.
- E. The output value is 0 is printed.

What should you use to position a `Button` within an application `Frame`, so that the width of the `Button` is affected by the `Frame` size but the height is not?

- A. the North or South area of a `BorderLayout`
- B. the East or West area of a `BorderLayout`
- C. the center area of a `BorderLayout`
- D. a `GridLayout`
- E. a `FlowLayout`

What should you use to position a `Button` within an application `Frame` so that the size of the `Button` is not affected by the `Frame` size?

- A. the North or South area of a `BorderLayout`
- B. the East or West area of a `BorderLayout`
- C. the center area of a `BorderLayout`
- D. a `GridLayout`
- E. a `FlowLayout`

Given the following declarations:

```
class C { private long val; public C (long v) {val = v;}}
C x = new C(10L);
C y = new C(10L);
C z = y;
long a = 10L;
int b = 10;
```

Which logical expressions are both valid and have the value true?

- A. (a == b)
- B. (a == x)
- C. (y == z)
- D. (x == y)
- E. (a == 10.0)

Given the following declarations:

```
Float s = new Float(0.9F);
Float t = new Float(0.9F);
Double u = new Double(0.9);
```

Which tests would return true?

- A. (s.equals(t))
- B. (s.equals(u))
- C. (s.equals (new Float (0. 9F)))
- D. (s == t)
- E. (s == u)

Given the following code:

```
public class x (
    public static void main(String args[]) {
StringBuffer sb1 = new StringBuffer("Hello");
StringBuffer sb2 = new StringBuffer("Hello");
method(sb1, sb2);
System.out.println("sb1 is" + sb1 +
"\nsb2 is" +
        sb2);
    }
    public static void method(StringBuffer b1,
StringBuffer b2)
        b2.append(" there");
        b1 = b2;
    }
}
```

Which correctly describes the result of attempting to compile and run the program?

- A. The compilation is successful and the output is the following:
sb1 is Hello
sb2 is Hello there
- B. The compilation is successful and the output is the following:
sb1 is Hello there
sb2 is Hello there
- C. The compilation is successful and the output is the following:
sb1 is Hello
sb2 is Hello
- D. The assignment "b1 = b2" is rejected by the compiler since the StringBuffer class cannot

overload the operator

E. The expression ("Sb1 is " + sb1 + "\nsb2 is " + sb2) is rejected by the compiler since the StringBuffer class cannot overload the operator "+".

A particular int variable has this bit pattern:

1000 0000 0000 0000 0000 0000 0000 1010

Which statements are true?

- A. Subjected to the operation `>> 4`, the pattern would be 0000 1000 0000 0000 0000 0000 0000 0000.
- B. Subjected to the operation `>>> 4`, the pattern would be 0000 1000 0000 0000 0000 0000 0000 0000.
- C. Subjected to the operation `>> 4`, the pattern would be 1111 1000 0000 0000 0000 0000 0000 0000.
- D. Subjected to the operation `>>> 4`, the pattern would be 1111 1000 0000 0000 0000 0000 0000 0000.
- E. Subjected to the operation `>>> 4`, the pattern would be 1010 1000 0000 0000 0000 0000 0000 0000.

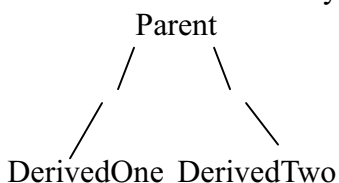
Given the following definition:

```
String s = null;
```

Which code fragments will cause an object of type NullPointerException to be thrown?

- A. `if ((s != null) & (s.length() > 0))`
- B. `if ((s != null) && (s.length() > 0))`
- C. `if ((s != null) | (s.length() == 0))`
- D. `if ((s != null) || (s.length() == 0))`

Given this class hierarchy diagram:



A method declares three variables as shown below and assigns them non-null values.

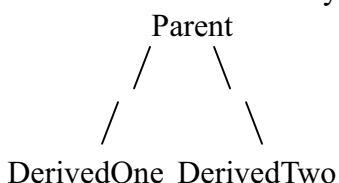
```
Parent p;  
DerivedOne d1;  
DerivedTwo d2;
```

Which statement describes the following assignment?

```
p = d1;
```

- A. It is legal at compilation and definitely legal at execution.
- B. It is legal at compilation but possibly illegal at runtime.
- C. It is definitely illegal at compilation.

Given this class hierarchy diagram:



A method declares three variables as shown below and assigns them non-null values.

```
Parent P;  
DerivedOne d1;  
DerivedTwo d2;
```

Which statement describes the following assignment?

```
d1 = (DerivedOne)p;
```

It is legal at compilation and definitely legal at execution.

It is legal at compilation but possibly illegal at runtime.

It is definitely illegal at compilation.

A class design requires that a particular member variable should not be accessible in anyway to code outside the class definition. What should be done to achieve this?

A. The variable should be marked public.

B. The variable should be marked private.

C. The variable should be marked protected.

D. The variable should have no special access modifier.

E. The variable should be marked private, and an accessor method should be provided that returns the value of the variable.

The following piece of preliminary analysis work describes a class that will be used frequently in many unrelated parts of a project:

"The Employee object is a Person. An Employee has appointments stored in a vector, a hire date and a number of dependents."

Which item types should be used when defining member variables of the Employee Class, so it most closely corresponds to this analysis?

A. Person

B. Employee

C. Date

D. Object

E. int

F. Vector

You are writing a method whose correct operation is vital to your system's security and integrity. You want to ensure that your method cannot be overridden in a subclass, but your class must allow subclassing. Which modifier should you apply to the method to achieve this?

Which correctly creates a two-dimensional array of int?

A. `int a[] [] = new int[10,10];`

B. `int a[10][10] = new int[][];`

C. `int a[] [] = new int [10] [10] ;`

D. `int []a[] = new int[10] [10];`

E. `int [][]a = new int[10][10];`

The following code, which is the entire contents of a file called Fred.java, causes precisely one error during compilation:

```

1) public class Fred {
2)     public void fredMethod() {
3)         BaseClass b = new BaseClass("Hello");
4)         SubClass s = new SubClass("There");
5)     }
6) }
7) class BaseClass {
8)     String s;
9)     public BaseClass() {
10)    }
11)     public BaseClass(String st) {
12)         s = st;
13)     }
14) }
15) class SubClass extends BaseClass {
16) }

```

Which line causes the error?

- A. 3
- B. 4
- C. 7
- D. 11
- E. 15

The following is the entire contents of a file called Test.java:

```

1) public class Test {
2)     int x;
3)
4)     public static void main(String args[]) {
5)         x = 8;
6)     }
7) }

```

What happens when you run the compiler like this?

```
javac Test.java
```

- A. The code compiles successfully .
- B. A compiler error occurs at line 1.
- C. A compiler error occurs at line 2.
- D. A compiler error occurs at line 4.
- E. A compiler error occurs at line 5.

Given the following Java source file

```

//Point x
public class Interesting {
}

```

Which would be correct Java syntax at //Point X in the source?

- A. package local.util;
- B. class MoreInteresting {}
- C. public class MoreInteresting {}
- D. protected class MoreInteresting ()
- E. public static final int MORE = 10000;
- F. import java.awt.*;

Given the following two classes which are defined in separate files:

```
public class Base {
    public int x;
    public void m1(int a)
        int y;
    }
}

public class Sub extends Base {
    private float f;

    public void m2( ) {
        Base b=new Base( );
        int i;
        float g;
        //Point x
    }
}
```

Which are syntactically valid statements at //Point X?

- A. i=b.a;
- B. g=f;
- C. i=b.x;
- D. i=b.y;
- E. b.m1(6);

Which are correct class declarations? Assume in each case that the code constitutes the entire contents of a file called Fred.java on a system with a case-sensitive file system.

- A.

```
public class Fred {
    public int x = 0;
    public Fred(int xval) {
        x = xval;
    }
}
```
- B.

```
public class fred {
    public int x = 0;
    public fred(int xval) {
        x = xval;
    }
}
```
- ```
import java.applet.Applet;
public class Fred extends Applet, MyBaseClass {
 public int x = 0;
 public Fred(int xval) {
 x = xval;
 }
}
```
- D. 

```
private class Fred {
 private int x = 0;
 private Fred(int xval) {
 x = xval;
 }
}
```

```

E. public class Fred extends Object {
 private int x = 0;
 public Fred(int xval) {
 x = xval;
 }
}

```

Which declares an abstract method in an abstract Java class?

- A. public abstract void Method() {}
- B. public abstract void method();
- C. public abstract method();
- D. public void method() (abstract;)
- E. public void abstract Method();

Given the declaration

```
String s = "Example",
```

Which are legal code?

- A. s >>>= 3 ;
- B. int i = s.length();
- C. s[3] = "x";
- D. String shortS = s.trim();
- E. String t = "For " + s;

Which methods do not change the contents of a String object?

- A. equals()
- B. toLowerCase()
- C. toUpperCase()
- D. substring()
- E. toString()

Given the following method body:

```

1)
2) {
3) if (sometest()) {
4) delicate();
5) }
6) else {
7) robust();
8) }
9) }

```

The method delicate() might throw an IOException (which is not a subclass of RuntimeException). Which could be used as a correct method declaration when added at line 1?

- A. public IOException methodName()
- B. public void methodName()
- C. public void methodName() throw IOException
- D. public void methodName() throws IOException
- E. public void methodName() throws Exception

Given the following incomplete method

```

1) public void method() {
2)
3) if (someTestFails()) {
4)
5) }
6)
7) }

```

You want to make this method throw an IOException if, and only if, the method someTestFails() returns a value of true. Which of the changes provided below must be made to achieve this?

- A. Add at line 2: IOException e;
- B. Add at line 4: throw e;
- C. Add at line 4: throw new IOException();
- D. Add at line 6: throw new IOException();
- E. Modify the method declaration to indicate that an object of type Exception might be thrown.

Given the following code which is the entire contents of a file called Example.java in the user's current directory.

```

public class Example {
 public static void main(String args[]) {
outer:
 for (int i = 1; i < 3; i++) {
inner:
 for (int j = 1; j < 3; j++) {
 if (j == 2) {
 continue outer;
 }
 System.out.println("Values are" + i + "" + j),
 }
 }
 }
}

```

Which lines are output when the program is run?

- A. Values are 1 0
- B. Values are 1 1
- C. Values are 1 2
- D. Values are 2 0
- E. Values are 2 1
- F. values are 2 2
- G. Values are 3 0
- H. Values are 3 1
- I. Values are 3 2

Given the following method:

```

public void method() {
 try {
 delicate();
 System.out.println("Point 1");
 }
 catch (ArrayIndexOutOfBoundsException e) {
 System.out.println("Point 2");
 }
}

```

```

 finally {
 System.out.println("Point 3");
 }
 System.out.println("Point 4");
 }

```

Which messages will be displayed if the method `delicate()` throws an object of type `NullPointerException`?

- A. Point 1
- B. Point 2
- C. Point 3
- D. Point 4
- E. none

Given the following code fragment.

```

if (x > 4) {
 System.out.println("Test 1");
}
else if (x > 9) {
 System.out.println("Test 2");
}
else {
 System.out.println("Test 3");
}

```

Which ranges of values of `x` would produce the output Message, Test 3?

- less than 0
- 0 to 4
- 5 to 9
- 10 and greater
- none

Given the following code fragment

```

1) switch (x) {
2) case 1:
3) System.out.println("Test 1");
4) case 2:
5) case 3:
6) System.out.println("Test 2");
7) break;
8) default:
9) System.out.println("Test 3");
10) }

```

Which value of `x` would cause Test 3 to be included in the output?

- A. 1
- B. 2
- C. 3
- D. 4
- E. none

Given the following code:

```

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

```

```

 int i = 0;
 while (i-- > 0) {
 System.out.println("Doing it for i is" + i);
 }
 System.out.println("Finished");
}
}

```

Which lines would be output when the program is run?

- A. Doing it for i is 3
- B. Doing it for i is 2
- C. Doing it for i is 1
- D. Doing it for i is 0
- E. Doing it for i is -1
- F. Finished

What might cause the current thread to stop executing?

- A. A thread of higher priority becomes ready (runnable)
- B. The thread constructs a new Thread.
- C. The thread executes a wait() call.
- D. The thread executes a waitforID() call on a MediaTracker.

Which method should you call, after creating an instance of a Thread, to begin the execution of that thread?

- A. run()
- B. start()
- C. init()
- D. begin()
- E. join()

Which modifier should be applied to a method for the lock of the object this to be obtained prior to executing any of the method body?

- A. abstract
- B. final
- C. protected
- D. static
- E. synchronized

For all methods defined in the interface KeyListener, what is the argument type?

Which are acceptable modifiers for a listener method?

- A. public
- B. protected
- C. static
- D. private
- E. default, or no explicit access modifier



Which statements about listeners are true?

- A. At most one listener can be added to any single Component.
- B. If multiple listeners are added to a single Component, the order of invocation of the listener is not specified.
- C. The return value from a listener is used to control the invocation of other listeners.
- D. In the java.awt package, listener methods generally take an argument which is an instance of the some subclass of java.awt.AWTEvent class.

In the class java.awt.AWTEvent, which is the parent class upon which all 1.1 AWT events are based, there is a method called `getID()`. Which phrase most accurately describes the significance of the return value of this method?

- A. It is a reference to the object directly affected by the cause of the event.
- B. It is an indication of the nature of the cause of the event.
- C. It is an indication of the position of the mouse when it caused the event.
- D. In the case of a mouse click, it is an indication of the text under the mouse at the time of the event.
- E. It tells the state of certain keys on the keyboard at the time of the event.
- F. It is an indication of the time at which the event occurred

Given a TextArea using a proportional pitch font and constructed like this:

```
TextArea t = new TextArea("12345", 5, 5);
```

Which statements are true?

- The displayed width will show exactly five characters on each line, unless otherwise constrained.
- The displayed height will be five lines, unless otherwise constrained.
- The maximum number of characters in a line will be five.
- The user will be able to edit the character string.
- E. The string can be displayed in multiple fonts.

Given a TextField using a fixed pitch (i.e. non-proportional) font constructed like this:

```
TextField t = new TextField("12345", 5);
```

Which statements are true?

- A. The displayed width is five characters, unless otherwise constrained.
- B. The displayed height is five lines, unless otherwise constrained.
- C. The text field will limit the string to five characters.
- D. The user will be able to edit the character string
- E. Different fonts can be used for different parts of the string.

What would be the result of attempting to compile and run the following piece of code?

```
public class Test {
 static int x;
 public static void main(String args[]) {
 System.out.println("Value is " + x);
 }
}
```

- A. An object of type `ArrayIndexOutOfBoundsException` is thrown.
- B. An object of type `NullPointerException` is thrown.
- C. An "illegal array declaration syntax" compiler error occurs.
- D. A "possible reference before assignment" compiler error occurs.
- E. The output "Value is 0" is printed.

What is the range of an int in Java?

- A.  $0 \dots (2^{32}) - 1$
- B.  $-2^{31} \dots (2^{31}) - 1$
- C.  $0 \dots (2^{64}) - 1$
- D.  $-2^{63} \dots (2^{63}) - 1$
- E. It depends on the platform.

Write the number 7 as a hexadecimal literal, Note: do not declare a variable.

While investigating code written by someone else, you find a variable of class X (defined in the JDK) and notice that a method y() is being invoked upon it. You are unfamiliar with the class X, so you decide to look it up in the standard HTML/javadoc documentation. Your web browser shows you the page for class X, but you cannot see an entry for the method y(), even after using the "Find" or "Search" facility of that browser. What should you examine next?

- A. the java library source code
- B. the source code of this class more closely
- C. the documentation for each subclass of X in turn
- D. the documentation for each superclass of x in turn
- E. the descriptive list of methods at the lower part of the documentation page

What is the return type of the main() method that will be the starting point of execution for its enclosing class?

- A. int
- B. null
- C. void
- D. Integer
- E. Object

If a Java class is invoked as follows:

```
java Example fred jim sheila
```

How many elements are present in the array which contain the command line arguments in the main() method?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5

Which are legal identifiers in Java?

- A. fred
- B. thisfred
- C. 2fred
- D. %fred
- E. \*fred

Which are keywords in Java?

sizeof

extends  
synchronized  
D. NULL  
E. friend

What should you use to position a Button within an application Frame so that the height of the Button is affected by the Frame size but the width is not?

- A. the North or South area of a BorderLayout
- B. the East or West area of a BorderLayout
- C. the center area of a BorderLayout
- D. a GridLayout
- E. a FlowLayout

What should you use to position a Button within an application Frame, so that the width of the Button is affected by the Frame size but the height is not?

- A. the North or South area of a BorderLayout
- B. the East or West area of a BorderLayout
- C. the center area of a BorderLayout
- D. a GridLayout
- E. a FlowLayout

Given the following code:

```
import java.util.Stack;
public class Example
{
 public static void main(String args[]) {
 Stack s1 = new Stack();
 Stack s2 = new Stack();
 method(s1, s2);
 System.out.println("s1 is " + s1 + "\ns2 is " +
 s2);
 }
 public static void method(Stack s1, Stack s2) {
 s2.push(new Integer(100));
 s1 = s2;
 }
}
```

Which correctly describes the result of attempting to compile and run the program?

- A. The compilation is successful and the output is the following:  
s1 is []  
s2 is [100]
- B. The compilation is successful and the output is the following:  
s1 is [1001]  
s2 is [100]
- C. The compilation is successful and the output is the following:  
s1 is []  
s2 is []
- D. The assignment "s1 = s2" is rejected by the compiler since the Stack class cannot overload the operator "=".
- E. The expression ("s1 is " + s1 + "\ns2 is " + s2) is rejected by the compiler since the Stack class cannot overload the operator "+".

Given the following declarations:

```

class C { Private int val; public C (int v){val = v;} }
C a = new C(10);
C b = new C(10),
C c = b;
int x = 10;
long y =10L;

```

Which logical expressions are both valid and have the value true?

- A. (a == x)
- B. (a == b)
- C. (b == c)
- D. (x == y)
- E. (y ==10.0)

Given the following declarations:

```

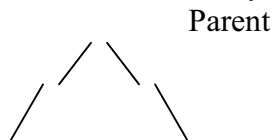
Integer s = new Integer(9);
Integer t = new Integer(9);
Long u = new Long(9);

```

Which tests would return true?

- A. (s.equals(t))
- B. (s.equals(new Integer(9)))
- C. (s.equals(9))
- D. (s == t)
- E. (s == u)

Given this class hierarchy diagram:



DerivedOne DerivedTwo

A method declares three variables as shown below and assigns them non-null values.

```

Parent p;
DerivedOne d1;
DerivedTwo d2;

```

Which statement describes the following assignment?

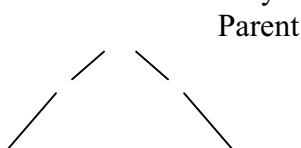
```
p = d1;
```

It is legal at compilation and definitely legal at execution.

It is legal at compilation but possibly illegal at runtime

It is definitely illegal at compilation.

Given this class hierarchy diagram



DerivedOne DerivedTwo

A method declares three variables as shown below and assigns them non-null values.

```

Parent p;
DerivedOne d1;

```

DerivedTwo d2;

Which statement describes the following assignment?

```
d1 = (DerivedOne)p;
```

It is legal at compilation and definitely legal at execution.

It is legal at compilation but possibly illegal at runtime.

It is definitely illegal at compilation.

Given the following code fragment:

```
int b1 = 1 << 31;
int b2 = 1 << 31;
b1 >>>= 31;
b1 >>>= 1;
b2 >>= 31;
b2 >>= 1;
```

What is the result of compiling or attempting to compile and execute this code?

b1 is all zeros, and b2 is all zeros.

B1 is all zeros, and b2 is all ones

b1 is all ones, and b2 is all zeros

b1 is all ones, and b2 is all ones

A compiler error occurs because >>> is illegal on int types.

Which statement correctly describes characteristics of the >> and >>> operators?

A. >> works on integral types, and >>> should be used on floating point types.

B. >> performs a shift, and >>> performs a rotate.

C. >> performs a rotate, and >>> performs a shift.

D. >> performs a signed shift, and >>> performs an unsigned shift.

E. >> performs an unsigned shift, and >>> performs a signed shift.

Given the following definition:

```
String s = null;
```

Which code fragments will cause an object of type NullPointerException to be thrown?

A. if ((s != null) & (s.length() > 0))

B. if ((s != null) && (s.length() > 0))

C. if ((s == null) | (s.length() == 0))

D. if ((s == null) || (s.length() == 0))

Given the following skeleton class definitions, in separate source files:

```
public class Fred {
 public Fred() {
 }
 public void method()
 }
}
public class Jim extends Fred {
}
```

Which methods are correct when added individually to the class Jim?

A. public void otherMethod() {}

B. public void method(String s) {}

- C. public abstract void otherMethod();
- D. int method() {return 0;}
- E. int method(StringBuffer s) {return 0;}

Given this skeleton of a class currently under construction:

```
public class Example {
 float x, z;
 int y;
 public Example(float a, float b) {
 // lots of complex computation
 x = a;
 z = b;
 }
 public Example(float a, float b, int c) {
 //do everything that the two-argument
 //version of constructor does
 //including assign x = a and z = b
 y = c;
 }
}
```

In the constructor that accepts three arguments, what is the most concise way to code the "do everything..." part?

The following piece of preliminary analysis work describes a class that will be used frequently in many unrelated parts of a project.

"The Polygon object is a Drawable. A Polygon has vertex information stored in a vector, has a color and a "fill" flag which is true or false."

Type in the correct initial declaration for the Polygon class using only the following pool of words and spaces:

- boolean
- Color
- Drawable
- Polygon
- public
- Vector
- class
- extends
- Object

Examine this program:

- 1) class ExSuper {
- 2) String name;
- 3) String nickname;
- 4)
- 5) public ExSuper(String s, String t) {
- 6) name = s;
- 7) nickname = t;
- 8) }
- 9)
- 10) public String toString() {
- 11) return name;

```

12) }
13) }
14)
15) public class Example extends ExSuper {
16)
17) public Example(String s, String t) {
18) super(s, t);
19) }
20)
21) public String toString() {
22) return name + " a.k.a. " + nickname;
23) }
24)
25) public static void main(String args[]) {
26) ExSuper a = new ExSuper("Fred", "Freddy");
27) ExSuper b = new Example("Jim", "Jimmy");
28)
29) System.out.println("a is" + a.toString());
30) System.out.println("b is" + b.toString());
31) }
32) }

```

What happens when the user attempts to compile and run this code:

```
Java -cs Example
```

- A. A compiler error occurs at line 21.
- B. The following output  
a is Fred  
b is Jim
- C. The following output:  
a is Fred  
b is Jim a.k.a. Jimmy
- D. The following output  
a is Fred a.k.a. Freddy  
b is Jim a.k.a. Jimmy
- E. An object of type `ClassCastException` is thrown at line 27.

You are writing a class that is to handle the events issued by a user interface `Component`. Which statements are true?

- A. The class should implement some listener interface,
- B. A subclass of an AWT component cannot listen to its own events.
- C. When implementing a listener interface, a class need only provide those handler methods that it chooses.
- D. A class can implement multiple listeners if desired
- E. Subclassing an adapter is inappropriate in this case

Which statements about the garbage collection mechanisms are true?

- A. The programmer can indicate that a reference through a local variable is no longer of interest
- B. A correct program must not depend upon the timing or order of garbage collection.
- C. The programmer has a mechanism that explicitly and immediately frees the memory used by Java objects,
- D. The garbage collection mechanism releases memory at predictable times
- E. Garbage collection ensures that a program will not run out of memory during execution.

Given the following method:

```
1) public void method(String s) {
2) String a, b
3) a = new String("Hello");
4) b = new String("Goodbye");
5) System.out.println(a+b);
6) a = null;
7) a = b;
8) System.out.println(a+b);
9) }
```

What is the earliest point at which the memory space of the String object constructed in line 3 can be released?

- A. just before line 5
- B. just before line 6
- C. just before line 7
- D. just before line 8
- E. never in this method

Which would you normally call to cause the redrawing of a Component?

- A. setVisible()
- B. actionPerformed()
- C. paint ()
- D. repaint ()
- E. update()

A file stored on local disk is to be read one line at a time into String Objects. Which construction would be the most suitable for reading the file?

- A. `FileInputStream in = new FileInputStream("file.name");`
- B. `DataInputStream in = new DataInputStream(new FileInputStream("file.name"));`
- C. `DataInputStream in = new DataInputStream(new FileInputStream("file.name", "r" ) ) ;`
- D. `BufferedReader in = new BufferedReader(new InputStreamReader(new  
FileInputStream("file.name")));`
- E. `BufferedReader in = new BufferedReader(new InputStreamReader(new  
FileInputStream("file.name"), "8859_1)),`

Which statements about threads are true?

- A. A thread can be created only by subclassing `java.lang.Thread`.
- B. Uncoordinated changes to shared data by multiple threads may result in the data being read, or left, in an inconsistent state.
- C. Invoking the `suspend ()` method stops a thread so that it cannot be restarted,
- D. The Java interpreter's natural exit occurs when no non-daemon threads remain alive
- E. Threads created from the same class all finish together.

What is the numerical range Of a char in Java?

- A. 0 ... (2<sup>8</sup>)-1



- B.  $-2^7 \dots (2^7) - 1$
- C.  $0 \dots (2^{16}) - 1$
- D.  $-2^{15} \dots (2^{15}) - 1$
- E. It depends on the platform.

Which cannot be added to a Container?

- A. an Applet
- B. a Component,
- C. a Container
- D. a MenuItem
- E. a Panel

Given the following complete program:

```
import java.io.*;
public class Example {
 public static void main(String args[]) throws
 Throwable {
 FileOutputStream f = new
 FileOutputStream("old.text");
 DataOutputStream d = new DataOutputStream(f);
 d.writeBytes("Bye.");
 }
}
```

Before the program is executed, the file old text exists and contains 10 bytes. What is the length of the file after the program is executed?

- A. 4 bytes
- B. 8 bytes
- C. 14 bytes
- D. 18 bytes
- E. 20 bytes

FilterInputStream is the parent class for BufferedInputStream, DataInputStream and LineNumberInputStream. Which classes, individually, are valid as an argument for the constructor of FilterInputStream?

- A. FileInputStream
- B. FileOutputStream
- C. File
- D. RandomAccessFile
- E. PrintStream.