Question 1 out of 40 questions

If you have the following classes:

```
public class Point2D {
  public int x;
  public int y;

  public Point2D() {}

  public Point2D(int x,int y) {
     this.x = x;
     this.y = y;
  }
  // other methods
}

public class Point3D extends Point2D
{
   public int z;

   // other code
}
```

Which of the following constructors would be valid for Point3D?

```
I.  public Point3D() {}
II. public Point3D(int x, int y, int z)
    {
       super(x,y);
       this.z = z;
    }
III. public Point3D(int x, int y)
     {
        this.x = x;
        this.y = y;
        this.z = 0;
     }
```

Answer a:
I only

Answer b:
I, II, and III

Answer c:
III only

Answer d:
II only

Answer e:
I and II only

Question 2 out of 40 questions

After the execution of this program, what is the output?

```
for (int j = 1; j < 5; j++)
{
   for (int k = 1; k <= 5; k++)
      System.out.print(j * k + " ");
   System.out.println();
}
```

Answer a:

```
1 2 3 4
2 4 6 8
3 6 9 12
4 8 12 16
5 10 15 20
```

Answer b:

```
1 2 3 4 5 2 4 6 8 10 3 6 9 12 16
```

Answer c:

```
1 2 3 4 5
2 4 6 8 10
3 6 9 12 15
4 8 12 16 20
```

Answer d:

```
1 2 3 4
2 4 6 8
3 6 9 12
```

```
4 8 12 16
```

Answer e:

```
1 2 3 4 5
2 4 6 8 10
3 6 9 12 15
4 8 12 16 20
5 10 15 20 25
```

Question 3 out of 40 questions

Assume that a two-dimensional array matrix is defined as follows.

```
int[][] matrix = new int[4][4];
```

Consider the following code segment.

```
int sum = 0;
int col = matrix[0].length - 2;
for (int row = 0; row < 4; row++)
{
 sum = sum + matrix[row][col];
}
```

Assume that matrix has the following values before the code segment above is executed. Note that matrix[0][3] is 2.

	0	**1**	**2**	**3**
0	1	1	2	2
1	1	2	2	4
2	1	2	3	4
3	1	4	1	2

What is the resulting value of sum?

Answer a:
12

Answer b:
8

Answer c:
9

Answer d:
10

Answer e:
4

Question 4 out of 40 questions

consider the following code segment:

```
char test[] = {'t', 'e', 's', 't'};
 String str = new String(test);
```

which of the following would not compile

Answer a:

```
s = s + s;
```

Answer b:

```
s = s % 2;
```

Answer c:

```
s = 2 * s;
```

Answer d:

None of the above.

Answer e:

```
int i = s[0];
```

Question 5 out of 40 questions

Consider the following output:
1 1 1 1 1
2 2 2 2
3 3 3
4 4
5
Which of the following code segments will produce this output?

Answer a:

```
for (int j = 1; j <= 5; j++)
{
  for (int k = 1; k <= 5; k++)
```

```
  {
    System.out.print(j + " ");
  }
  System.out.println();
}
```

Answer b:

```
for (int j = 1; j <= 5; j++)
{
  for (int k = 5; k >= 1; k--)
  {
    System.out.print(j + " ");
  }
  System.out.println();
}
```

Answer c:

```
for (int j = 1; j <= 5; j++)
{
  for (int k = 5; k >= j; k--)
  {
    System.out.print(j + " ");
  }
  System.out.println();
}
```

Answer d:

```
for (int j = 1; j <= 5; j++)
{
  for (int k = j; k <= 5; k++)
  {
    System.out.print(k + " ");
  }
  System.out.println();
}
```

Answer e:

```
for (int j = 1; j <= 5; j++)
{
  for (int k = 1; k <= j; k++)
  {
```

```
    System.out.print(j + " ");
  }
  System.out.println();
}
```

Question 6 out of 40 questions

Consider the following code segment

```
for(int i = 0; i < 5; i++) {
   for(int j=0; j < 5; j++)
      System.out.println("*");
}
```

How many stars are output when this code is executed?

Answer a:
25

Answer b:
5

Answer c:
50

Answer d:
10

Answer e:
15

Question 7 out of 40 questions

Consider the following declarations.

```
Integer valueOne, valueTwo;
```

Assume that valueOne and valueTwo have been properly initialized. Which of the following is equivalent to the expression below?

```
valueOne.intValue() == valueTwo.intValue()
```

Answer a:
valueOne.intValue().equals(valueTwo.intValue())

Answer b:
valueOne.compareTo(valueTwo)

Answer c:
valueOne == valueTwo

Answer d:
valueOne.equals(valueTwo) == 0

Answer e:
valueOne.compareTo(valueTwo) == 0

Question 8 out of 40 questions

Which will cause the **shortest** execution of a **binary search** looking for a value in an array of integers sorted in ascending order? The array has an odd number of integers.

Answer a:
The value is the first in the array.

Answer b:
The value is in the middle of the array.

Answer c:
The value is the third element in the array.

Answer d:
The value is the last in the array.

Answer e:
The value is not in the array.

Question 9 out of 40 questions

Susan is 5 years older than Matt. Three years from now Susan's age will be twice Matt's age.

```
for (int s = 1; s <= 100; s++) {
   for (int m = 1; m <= 100; m++) {
      if (condition)
         System.out.println("Susan is " + s + " and Matt is " +
m);
   }
}
```

What should be in place of condition to solve this problem?

Answer a:

```
s == m + 5 && s + 3 == 2 * m + 6
```

Answer b:
None of the above is correct

Answer c:

```
(s == (m + 5)) && ((s + 3) == (2 * m + 3))
```

Answer d:

```
(s == m - 5) && (s - 3 == 2 * (m - 3))
```

Answer e:

```
s == (m - 5) && (2 * s + 3) == (m + 3)
```

Question 10 out of 40 questions

```
public class Student {
  private String getFood() {
     return "Pizza";
  }
  public String getInfo()  {
     return this.getFood();
  }
}

public class GradStudent extends Student {
  private String getFood() {
     return "Taco";
  }
  public void teach(){
     System.out.println("Education!");
  }
}
What is the output from this:

Student s1 = new GradStudent();
s1.getInfo();
```

Answer a:
Won't compile since you use this.getFood()

Answer b:
Pizza

Answer c:
Taco

Answer d:
Won't compile since you are creating a GradStudent, not a Student

Answer e:
Won't compile since GradStudent doesn't have a getInfo method.

Question 11 out of 40 questions

The following code fragment deos a sequential search to determine whether a given integer, vlaue, is stored in an array a[0]...a[n-1] int i = 0; while(/*boolean expression*/) { i++; } if (i == n) return -1; else return i; Which of the following should replace (/* boolean expression */)? (a) value != a[i] (b) i < n && value == a[i] (c) va;ue != a[i] && i < n (d) i < n && value != a[i] (e) i < n || value != a[i]

Answer a:
(b)

Answer b:
(a)

Answer c:
(d)i < n && value != a[i]

Answer d:
(e)

Answer e:
(c)

Question 12 out of 40 questions

```
public class Student {
```

```
  public String getFood() {
     return "Pizza";
  }
  public String getInfo()  {
     return this.getFood();
  }
}

public class GradStudent extends Student {
  public String getFood() {
     return "Taco";
  }
}
```

What is the output from this:

```
Student s1 = new GradStudent();
s1.getInfo();
```

Answer a:
Pizza

Answer b:
Taco

Answer c:
Won't compile since you use this.getFood()

Answer d:
Won't compile since you are creating a GradStudent, not a Student

Answer e:
Won't compile since GradStudent doesn?t have a getInfo method

Question 13 out of 40 questions

```
public int max(int a, int b)
{
  if (a > b)
    return a;
  if (b > a)
    return b;
}
```

Why will this code not compile?

Answer a:
A method must end with a return statement.

Answer b:
The two if statements are the same.

Answer c:
A value isn't always returned.

Answer d:
An if statement must have an else part.

Answer e:
A method can't have two returns

Question 14 out of 40 questions

Which of the following method signatures will satisfy the Comparable interface implemented in a class called CurrClass that says it implements Comparable<CurrClass> in the class definition?

```
I.   public boolean compareTo(Object o)
II.  public int compareTo(Object o)
III. public int compareTo(CurrClass c)
IV.  public boolean compareTo(CurrClass c)
```

Answer a:
I only

Answer b:
II only

Answer c:
III only

Answer d:
II and III

Answer e:
IV only

Question 15 out of 40 questions

Consider the following method:

```
public boolean checkID (int id, String name, Student nextStudent)
{
   if ((nextStudent.getName()).equals(name) && id ==
nextStudent.getID())
      return true;
   else
   {
      id = nextStudent.getID();
      nextStudent.setID(0);
      nextStudent.setName("VACANT");
      return false;
   }
}
```

Assume a class `Student` is defined with private instance fields `name` and `ID`. The class also has public accessors and mutators for these two fields. The method intends to check that the `name`and `ID` fields of the passed `nextStudent` match the passed `name` and `id`. If the names and/or the IDs do not match then it sets `id` to the value of `nextStudent.getID()`, resets the fields`ID` and `name`, and returns `false`. The intention is for the calling program to check for false on the return and then get the incorrect id stored in the variable that was passed as the parameter `id`, but this doesn't work. Which answer best describes why this doesn't work?

Answer a:
A method can not pass an object as a parameter.

Answer b:
The method will not compile since you use `(nextStudent.getName()).equals(name)`

Answer c:
The method will not compile since there are two `return` statements in it.

Answer d:
No instance field of a class can be changed by a client method if it is declared `private`.

Answer e:
If you modify a primitive type parameter in Java in a method it will not change the value of the variable in the calling method.

Question 16 out of 40 questions

Which of the following is the decimal value for the following binary number?

```
1001011
```

Answer a:
43

Answer b:
75

Answer c:
67

Answer d:
150

Answer e:
74

Question 17 out of 40 questions

Assume that temp is an int variable initialized to be greater than zero and that a is an array of ints. Consider the following code segment:

```
for ( int k = 0; k < a.length; k++ )
{
   while ( a[ k ] < temp )
   {
      a[ k ] *= 2;
   }
}
```

What of the following will cause an infinite loop?

Answer a:
Whenever a includes a value equal to temp.

Answer b:
When all values in a are larger than temp.

Answer c:
Whenever a includes a value that is less than or equal to zero.

Answer d:
The values don't matter this will always cause an infinite loop.

Answer e:
Whenever a has values larger then temp.

Question 18 out of 40 questions

Consider the following partial class declaration.

```
public class Person implements Comparable
{
   private String firstName;
   private String lastName;

   public int compareTo(Object test)
   {
      // implementation not shown
   }

   // constructors, other fields, and methods not shown
}
```

Assume that the Person objects are ordered by last name and then first name. Which of the following will correctly implement compareTo for the Person class?

```
I.  public int compareTo(Object test)
    {
       Person testP = (Person) test;
       return (lastName.compareTo(testP.lastName) +
               firstName.compareTo(testP.firstName));
    }

II. public int compareTo(Object test)
    {
       Person testP = (Person) test;
       if (firstName.compareTo(testP.firstName == 0)
          return lastName.compareTo(testP.lastName);
       else
          return firstName.compareTo(testP.firstName);
     }

III. public int compareTo(Object test)
     {
       Person testP = (Person) test;
       if (lastName.compareTo(testP.lastName == 0)
          return firstName.compareTo(testP.firstName);
       else
          return lastName.compareTo(testP.lastName);
     }
```

Answer a:
III only

Answer b:
I only

Answer c:
II only

Answer d:
I and II only

Answer e:
I and III only

Question 19 out of 40 questions

Consider the following code segment:

```
if ( x > 0) x = -x;
if (x < 0) x = 0;
```

Which of the following is this equivalent to?

Answer a:

```
if (x > 0) x = 0;
```

Answer b:

```
x = 0;
```

Answer c:

```
if (x < 0) x = 0;
```

Answer d:

```
if ( x < 0) x = 0;
else x = -1;
```

Answer e:

```
if (x > 0) x = -x;
else x = 0;
```

Question 20 out of 40 questions

What is the output of the following code when compiled and run?

```
public class Divisor {
  public static void main(String[] args) {
    int num = 0;
    while(num <= 14) {
      if(num % 3 == 1) {
        System.out.print("1 ");
      }
      else if (num % 3 == 2) {
        System.out.print("2 ");
      }
      else {System.out.print("0 ");
    }
    num += 2;
  }
}
}
```

Answer a:
0 2 1 0 2 1 0 2 1

Answer b:
0 1 2 0 1 2 0 1

Answer c:
0 2 1 0 2 1 0

Answer d:
2 1 0 2 1 0 2 1

Answer e:
0 2 1 0 2 1 0 2

Question 21 out of 40 questions

Assume that variable b is an array of k integers and that the following is true:
`b[0] != b[k] for all k such that 1 <= k`
Which of the following statements is a valid conclusion?

Answer a:
The value in b[0] does not occur anywhere else in the array

Answer b:
Array b contains no duplicates

Answer c:
The value in b[0] is the smallest value in the array

Answer d:
Array b is sorted

Answer e:
Array b is not sorted

Question 22 out of 40 questions

The decision to choose a particular sorting algorithm should be made based on I Run-time Efficiency II Size of the array III Space effiency of the algorithm (a) I only (b) II only (c) III only (d) I and II only (e) I, II and III

Answer a:
I only

Answer b:
II only

Answer c:
III only

Answer d:
I and II only

Answer e:
(e) I, II and III only

Question 23 out of 40 questions

Consider the following code segment:

```
if(!somethingIsTrue())
     return false;
```

```
else
     return true;
}
```

Which one of the following statements would be an accurate replacement for this code?

Answer a:
return !somethingIsTrue();

Answer b:
None of these answers

Answer c:
return somethingIsTrue();

Answer d:
return true;

Answer e:
return false;

Question 24 out of 40 questions

Consider the following classes.

```
public abstract class Animal
{
   public void run()
   {
      System.out.println("Running");
   }
}
public class Cheetah extends Animal
{
   public void run()
   {
      System.out.println("Running really fast");
   }
}
```

What will be printed out when the below code segment is run?

```
Animal c = new Cheetah();
c.run();
```

Answer a:

```
Running
Running really fast
```

Answer b:

```
Running
```

Answer c:
Nothing will be printed, there will be a runtime error.

Answer d:

```
Running really fast
```

Answer e:

```
Running really fast
Running
```

Question 25 out of 40 questions

Given the following method:

```
public boolean check(String s)
{
  return s.length() >= 2 && (s.charAt(0) ==
       s.charAt(1) || check(s.substring(1)));
}
```

This method will return true if and only if:

Answer a:
s.charAt(0) == s.charAt(1)

Answer b:
s contains two or more of the same character in a row

Answer c:
s ends with two or more of the same characters

Answer d:
s starts with two or more of the same characters

Answer e:
s contains two or more of the same characters

Question 26 out of 40 questions

Consider the following classes.

```
public abstract class Animal
{
   public void run()
   {
      System.out.println("Running");
   }
}
public class Cheetah extends Animal
{
   public void run()
   {
      super.run();
      System.out.println("Running really fast");
   }
}
```

What will be printed out when the below code segment is run?

```
Cheetah c = new Animal();
c.run();
```

Answer a:
Nothing will be printed, because of a compiler error.

Answer b:

```
Running really fast
Running
```

Answer c:

```
Running really fast
```

Answer d:

```
Running
Running really fast
```

Answer e:

```
Running
```

Question 27 out of 40 questions

Which of the following is/are correct definitions of an interface?

```
I.    public class Timer {
         public void start();
         public void stop();
         public int getTime();
      }
II.   public interface Timer {
         private void start();
         private void stop();
         private int getTime();
      }
III.  public class Timer {}
IV.   public interface Timer {
         public void start();
         public void stop();
         public int getTime();
      }
```

Answer a:
II and IV

Answer b:
I and IV

Answer c:
IV only

Answer d:
II only

Answer e:
III and IV

Question 28 out of 40 questions

Consider the following method:

```
private int product(int n)
{
    if(n <= 1)
         return 1;
    else
         return n * product(n - 2);
}
```

What is the result of

```
product(5)
```

Answer a:
15

Answer b:
25

Answer c:
10

Answer d:
3125

Answer e:
1

Question 29 out of 40 questions

Under which of these conditions will a sequential search be faster than a binary search?

Answer a:
Sequential Search can never be faster than Binary Search.

Answer b:
The search value is the first element in the array.

Answer c:
The value is in the middle of the array.

Answer d:
The search value is the last element in the array

Answer e:
The search value is not in the array

Question 30 out of 40 questions

Consider the following recursive method.

```
public static int mystery(int n)
{
  if (n == 0)
    return 1;
  else
    return 3 * mystery (n - 1);
}
```

What value is returned as the result of the call mystery(5)?

Answer a:
0

Answer b:
81

Answer c:
27

Answer d:
243

Answer e:
3

Question 31 out of 40 questions

You are given the following array of integers a[2,5,3,7,4,9,10,1]. What will be the final array after you execute the method mystery using this array?

```
public static void mystery(int[] a){
   for(int i = 1; i < a.length; i++)
   {
      int current = a[i];
      int j = i-1;
```

```
      while((j >= 0) && (a[j] > current)){
         a[j+1] = a[j--];
      }

      a[j+1] = current;
   }
}
```

Answer a:
a[2,1,3,4,5,7,9,10]

Answer b:
a[10,9,7,5,4,3,2,1]

Answer c:
a[1,2,3,4,5,7,9,10]

Answer d:
a[2,5,3,7,4,9,10,1]

Answer e:
a[1,2,5,3,7,4,9,10]

Question 32 out of 40 questions

Which of the following expressions is equivalent to
`!(c || d)`

Answer a:

```
(!c) && (!d)
```

Answer b:

```
(!c) || (!d)
```

Answer c:

```
!(c && d)
```

Answer d:

```
(c || d)
```

Answer e:

```
(c && d)
```

Question 33 out of 40 questions

Given the following class definitions:

```
public class ContactInfo
{
  private String name;
  private String phoneNumber;

  public ContactInfo(String theName, String thePhoneNumber)
  {
    this.name = theName;
    this.phoneNumber = thePhoneNumber;
  }

  public String getName() { return name; }

  public String getPhoneNumber() { return phoneNumber; }
}

public class ExtendedContactInfo extends ContactInfo
{
  private String nickname;

  public ExtendedContactInfo (String theNickname,
                              String theName,
                              String thePhoneNumber)
  {
    // missing code
  }
}
```

Which of the following can replace the // missing code?

Answer a:

```
this.nickname = theNickname;
super(theName, thePhoneNumber);
```

Answer b:

```
this.nickname = theNickname;
this.name = theName;
this.phoneNumber = thePhoneNumber;
```

Answer c:

```
super(theName,thePhoneNumber);
this.nickname = theNickname;
```

Answer d:

```
super(theNickname, theName, thePhoneNumber);
```

Answer e:

```
this.name = theName;
this.phoneNumber = thePhoneNumber;
this.nickname = theNickname;
```

Question 34 out of 40 questions

Consider the following method.

```
// precondition: numArray contains no duplicates and the
// elements in numArray are in ascending sorted order and
// 0 <= low <= numArray.length and low - 1 <= high <
numArray.length
public static int mystery(int[] numArray, int low, int high, int
value)
{
   if (low > high)
      return low;

   int mid = (low + high) / 2;

   if (numArray[mid] == value)
      return mid;
   else if (numArray[mid] < value)
      return mystery(numArray, mid + 1, high, value);
   else
      return mystery(numArray, low, mid - 1, value);
}
```

How many calls to mystery (including the initial call) are made as a result of the call `mystery(numArray, 0, numArray.length - 1, 32);` if numArray is declared as follows?

```
int[] numArray = {2, 10, 23, 31, 35, 48, 69, 98};
```

Answer a:
8

Answer b:
4

Answer c:
3

Answer d:
2

Answer e:
1

Question 35 out of 40 questions

A bookstore is working on an on-line ordering system. For each type of published material (books, movies, audio tapes) they need to track the id, title, author(s), date published, and price. Which of the following would be the best design?

Answer a:
Create classes for PublishedMaterial, Books, Movies, AudioTape, Title, Price, ID, Authors, DatePublished

Answer b:
Create one class BookStore with the requested fields plus type

Answer c:
Create classes Book, Movie, and AudioTape and each class has the requested fields

Answer d:
Create one class PublishedMaterial with the requested fields plus type

Answer e:
Create the class PublishedMaterial and have Book, Movie, and AudioTape inherit from it all the listed fields

Question 36 out of 40 questions

What is encapsulation and how does Java implement it?

Answer a:
Encapsulation: data (fields) can be hidden inside of an object and this can be accomplished in Java by using the abstract visibility modifier.

Answer b:
Encapsulation: data (fields) can be directly accessed by code in all classes. Java implements encapsulation using the visibility modifier public.

Answer c:
Encapsulation: data (fields) can be hidden inside an object so that they cannot be directly altered by code in other classes. Java implements encapsulation using the visibility modifier private.

Answer d:
Encapsulation: data (fields) are directly accessible by objects in the same package.

Answer e:
Encapsulation: data (fields) are directly accessible by objects in the same package and in subclasses.

Question 37 out of 40 questions

If you have the following:

```
String s1 = new String("Hi There");
String s2 = new String("Hi There");
String s3 = s1;
```

Which of the following would return true?

```
I.   (s1 == s2)
II.  (s1.equals(s2))
III. (s1 == s3)
IV.  (s2.equals(s3))
```

Answer a:
II and IV

Answer b:
II only

Answer c:
IV only

Answer d:
I, II, III, IV

Answer e:
II, III and IV

Question 38 out of 40 questions

Which one of the following statements about method overloading and overriding is true?

Answer a:
Overloading two methods means that one of the method names has to be different than the other.

Answer b:
Overriding allows for polymorphism which means that the actual method that gets called at runtime depends on the type of the object at runtime.

Answer c:
Overriding means that two methods in the same class have the same name, but different parameter lists.

Answer d:
In overloading, two methods with the same name can have the same sequence of parameters as long as the parameter names are different.

Answer e:
Overloading and overriding of methods are interchangeable terms in the object-oriented paradigm.

Question 39 out of 40 questions

Given an array, which of the following condition must be true in order to search for a value using binary search?

```
I. The values in the array must be integers.
II. The values in the array must be in sorted order.
```

```
III. The array must not contain duplicate values.
```

Answer a:
II and III

Answer b:
I and II

Answer c:
I, II and III

Answer d:
II only

Answer e:
I only

Question 40 out of 40 questions

Consider the following declaration for a class that will be used to represent points in the xy-coordinate plane:

```
public class Point
{
  private int myX; // coordinates
  private int myY;

  public Point( )
  {
    myX = 0;
    myY = 0;
  }

  public Point(int a, int b)
  {
    myX = a;
    myY = b;
  }

// ... other methods not shown

}
```

The following incomplete class declaration is intended to extend the above class so that two-dimensional points can be named.

```
public class NamedPoint extends Point
```

```
{
  private String myName;
  // constructors go here
  // ... other methods not shown
}
```

Consider the following proposed constructors for this class:

```
I.   public NamedPoint()
     {
       myName = "";
     }
II.  public NamedPoint(int d1, int d2, String name)
     {
       myX = d1;
       myY = d2;
       myName = name;
     }
III. public NamedPoint(int d1, int d2, String name)
     {
       super(d1, d2);
       myName = name;
     }
```

Which of these constructors would be legal for the NamedPoint class?

Answer a:
I and III

Answer b:
II only

Answer c:
I only

Answer d:
III only

Answer e:
I and II