

Exam

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) To define a class that will represent a car, which of the following definitions is most appropriate? 1) _____
- A) public class car
 - B) private class car
 - C) public class Car
 - D) private class Car
 - E) public class CAR
- 2) Having multiple class methods of the same name where each method has a different number of or type of parameters is known as 2) _____
- A) tokenizing
 - B) method overloading
 - C) encapsulation
 - D) importing
 - E) information hiding
- 3) An example of passing a message to a String where the message has a String parameter occurs in which of the following messages? 3) _____
- A) equals
 - B) toUpperCase
 - C) length
 - D) substring
 - E) none of the above, it is not possible to pass a String as a parameter in a message to a String

For question(s) below, use the following class definition

```
import java.text.DecimalFormat;
public class Student
{
    private String name;
    private String major;
    private double gpa;
    private int hours;

    public Student(String newName, String newMajor, double newGPA, int newHours)
    {
        name = newName;
        major = newMajor;
        gpa = newGPA;
        hours = newHours;
    }

    public String toString()
    {
        DecimalFormat df = new DecimalFormat("xxxx"); // xxxx needs to be replaced
        return name + "\n" + major + "\n" + df.format(gpa) + "\n" + hours
    }
}
```

4) Assume that another method has been defined that will compute and return the student's class rank (Freshman, Sophomore, etc). It is defined as:

```
public String getClassRank( )
```

Given that s1 is a student, which of the following would properly be used to get s1's class rank?

- A) s1 = getClassRank();
- B) getClassRank(s1);
- C) s1.getClassRank();
- D) s1.toString();
- E) s1.getHours();

4) _____

5) Another method that might be desired is one that updates the Student's number of credit hours. This method will receive a number of credit hours and add these to the Student's current hours. Which of the following methods would accomplish this?

5) _____

- A)

```
public void updateHours()  
{  
    hours++;  
}
```
- B)

```
public int updateHours()  
{  
    return hours;  
}
```
- C)

```
public updateHours(int moreHours)  
{  
    hours += moreHours;  
}
```
- D)

```
public void updateHours(int moreHours)  
{  
    hours += moreHours;  
}
```
- E)

```
public int updateHours(int moreHours)  
{  
    return hours + moreHours;  
}
```

6) In a class called Rational class, the methods reduce and gcd are declared to be private. Why?

6) _____

- A) Because they do not use any of Rational's instance data
- B) Because they will only be called from methods inside of Rational
- C) Because they will only be called from the constructor of Rational
- D) Because they will never be used
- E) Because it is a typo and they should be declared as public

Use the following information to answer the question(s) below. The Die class has two constructors defined as follows. Assume MIN_FACES is an int equal to 4.

```
Public Die()                public Die(int faces)  
{                          {  
    numFaces = 6;           if (faces < MIN_FACES) numFaces = 6;  
    faceValue = 1;         else numFaces = faces;  
}                            faceValue = 1;  
                             }  
                             }
```

7) The instruction Die d = new Die(10, 0); results in

7) _____

- A) The Die d having numFaces = 6 and faceValue = 10
- B) The Die d having numFaces = 10 and faceValue = 10
- C) A syntax error
- D) The Die d having numFaces = 6 and faceValue = 1
- E) The Die d having numFaces = 10 and faceValue = 1

For the question(s) below, use the following class definition:

```
public class Swapper
{
    private int x;
    private String y;
    public int z;

    public Swapper(int a, String b, int c)
    {
        x = a;
        y = b;
        z = c;
    }

    public String swap( )
    {
        int temp = x;
        x = z;
        z = temp;
        return y;
    }

    public String toString( )
    {
        if (x < z) return y;
        else return "" + x + z;
    }
}
```

- 8) If the instruction `Swapper s = new Swapper(0, "hello", 0);` is executed followed by `s.toString();` what value is returned from `s.toString()`? 8) _____
- A) "00" B) "hello00" C) "0" D) "hello" E) 0
- 9) Which of the following criticisms is valid about the Swapper class? 9) _____
- A) The instance data `z` is visible outside of Swapper
B) The instance data `y` is visible outside of Swapper
C) The instance data `x` is visible outside of Swapper
D) All 3 instance data are visible outside of Swapper
E) none of the methods are visible outside of Swapper

For question(s) below, use the following class definition

```
import java.text.DecimalFormat;
public class Student
{
    private String name;
    private String major;
    private double gpa;
    private int hours;

    public Student(String newName, String newMajor, double newGPA, int newHours)
    {
        name = newName;
        major = newMajor;
        gpa = newGPA;
        hours = newHours;
    }

    public String toString()
    {
        DecimalFormat df = new DecimalFormat("xxxx"); // xxxx needs to be replaced
        return name + "\n" + major + "\n" + df.format(gpa) + "\n" + hours
    }
}
```

- 10) Which of the following could be used to instantiate a new Student s1? 10) _____
- A) Student s1 = new Student();
 - B) new Student(s1);
 - C) Student s1 = new Student("Jane Doe", "Computer Science", 3.333, 33);
 - D) new Student s1 = ("Jane Doe", "Computer Science", 3.333, 33);
 - E) s1 = new Student();

For the question(s) below, assume x and y are String variables with x = "Hello" and y = null.

- 11) The result of (x == y) is 11) _____
- A) a run-time error
 - B) true
 - C) a syntax error
 - D) false
 - E) x being set to the value null
- 12) The result of x.length() + y.length() is 12) _____
- A) 6
 - B) 5
 - C) 10
 - D) 0
 - E) a thrown exception

For the question(s) below, consider a class that stores 2 int values. These values can be assigned int values with the messages set1(x) and set2(x) where x is an int, and these values can be accessed through get1() and get2(). Assume that y and z are two objects of this class. The following instructions are executed:

```
y.set1(5);
y.set2(6);
z.set1(3);
z.set2(y.get1( ));
y = z;
```

13) What would the statement y.get2() do

13) _____

- A) return 0
- B) cause a run-time error
- C) return 6
- D) return 5
- E) return 3

For the question(s) below, use the following class definition:

```
public class StaticExample
{
    private static int x;
    public StaticExample (int y)
    {
        x = y;
    }

    public int incr( )
    {
        x++;
        return x;
    }
}
```

14) Two StaticExamples are below:

14) _____

```
StaticExample a = new StaticExample(5);
StaticExample b = new StaticExample(12);
```

How many versions of the variable x are there

- A) 0 static variables are never created
- B) 1
- C) 2 one for each Static Example
- D) 5
- E) 12

15) What is the value of z after the third statement executes below?

15) _____

```
StaticExample a = new StaticExample(5);  
StaticExample b = new StaticExample(12);  
int z = a.incr( );
```

- A) 13
- B) 5
- C) 6
- D) 12
- E) none, the code is syntactically invalid because a and b are attempting to share an instance data

For the question(s) below, use the following partial class definitions:

```
public class A1  
{  
    public int x;  
    private int y;  
    public int z;  
    ...  
}  
  
public class A2 extends A1  
{  
    public int a;  
    private int b;  
    ...  
}  
  
public class A3 extends A2  
{  
    private int q;  
    ...  
}
```

16) Which of the following is true with respect to A1, A2 and A3?

16) _____

- A) A1, A2 and A3 are all subclasses of the class A
- B) A2 and A3 are both subclasses of A1
- C) A1 is a subclass of A2 and A2 is a subclass of A3
- D) A3 is a subclass of A2 and A2 is a subclass of A1
- E) A1 and A2 are both subclasses of A3

17) Which of the following lists of instance data are accessible in class A2?

17) _____

- A) x, z, a, b
- B) x, y, z, a
- C) a, b
- D) x, y, z, a, b
- E) z, a, b

18) The instruction super(); does which of the following?

18) _____

- A) calls the method super as defined in java.lang
- B) calls the method super as defined in the current class' parent class
- C) calls the constructor as defined in the current class' parent class
- D) calls the constructor as defined in the current class
- E) calls the method super as defined in the current class

For the question(s) below, consider the following class definition:

```
public class AClass
{
    private int x;
    private int y;
    public AClass(int a, int b)
    {
        x = a;
        y = b;
    }

    public int addEm()
    {
        return x + y;
    }
    public void changeEm()
    {
        x++;
        y--;
    }

    public String toString()
    {
        return "" + x + " " + y;
    }
}
```

19) Consider that you want to extend AClass to BClass. BClass will have a third int instance variable, 19) _____

z. Which of the following would best define BClass' constructor?

- A)

```
public BClass(int a, int b, int c)
{
    super(a, b, c);
}
```
- B)

```
public BClass(int a, int b, int c)
{
    x = a;
    y = b;
    z = c;
}
```
- C)

```
public BClass(int a, int b, int c)
{
    z = c;
}
```
- D)

```
public BClass(int a, int b, int c)
{
    super(a, b);
    z = c;
}
```
- E)

```
public BClass(int a, int b, int c)
{
    super();
}
```

20) You want addEm to now add all three values and return the sum and changeEm to change x and y, but leave z alone. Which should you do? 20) _____

- A) Redefine addEm to return the value of `z + super.addEm()` and redefine changeEm to call `super.changeEm()` and then set `z = x + y`
- B) Redefine addEm to return the value of `z + super.addEm()`, but leave changeEm alone
- C) Redefine changeEm to call `super.changeEm()` and then set `z = x + y`, but leave addEm alone
- D) Redefine changeEm to call `super.changeEm()` without doing anything to z, and redefine addEm to return `super.addEm()`
- E) Redefine addEm and changeEm without referencing `super.addEm()` or `super.changeEm()`

21) Which of the following would best redefine the toString method for BClass?

21) _____

- A)

```
public String toString(int z)
{
    return "" + x + "" + y + "" + z;
}
```
- B)

```
public String toString()
{
    return super.toString();
}
```
- C)

```
public String toString()
{
    return super.toString() + "" + z;
}
```
- D)

```
public String toString()
{
    return "" + x + "" + y + "" + z;
}
```
- E)

```
public String toString()
{
    return super.toString() + "" x + "" + y + "" + z;
}
```