COMP 248
Winter 2016

Tutorial 7

Question 1

Write a Java program to find and display the smallest positive integer whose remainder:

- when divided by 3 is 1, and
- when divided by 5 is 2, and
- when divided by 7 is 3.

Question 2

Write a nested for loop to display the following output:

```
a b c d e
b c d e
c d e
d e
e
```

Question 3

Given the following class definition:

```
public class Question
{
   private int gradeQ1;
   private int gradeQ2;
   private int gradeQ3;
   private int total;

   public void questionTotal(){
     …
   }

   public int returnTotalGrade(){
    …
   }

   public boolean getQuestionRight(){
    …
   }
}
```

1- How many states does an object of type class *Question* have and what are their names?

2- What is the complete header of one of the methods of class *Question*?

3- What is the return type of the method *questionTotal()?*

Question 3 – Continued

```
public class Question
{
   private int gradeQ1;
   private int gradeQ2;
   private int gradeQ3;
   private int total;

   public void questionTotal(){
     …
   }


   public int returnTotalGrade(){
    …
   }


   public boolean getQuestionRight(){
    …
   }
}
```

4- What is the return type of the method *getQuestionRight*()?

5- Complete the method *questionTotal*() so that it returns the content of total.

6- Complete the method *returnTotalGrade*() which calculates the total score (sum of *gradeQ1*, *gradeQ2* and *gradeQ3*).

Question 4

Assume the following class that represents a playing card.

```
public class PlayingCard {
    private int value;       //e.g. 1 (ace) to 12 (king)
    private String color;    //e.g. "heart", "diamond", "club", "spade"

    public void writeOutput(){
        System.out.println(value + " of " + color);
    }

    public void randomCard(){
        value = (int)(Math.random()*13) +1;     // a random integer between [1..13]
        switch ((int)(Math.random()*4)+1){      // a random integer between [1..13]
        case 1: color = "heart"; break;
        case 2: color = "diamond";break;
        case 3: color = "spade";break;
        case 4: color = "club";break;
        }
    }

    public int isAFace() {
        // is the value a jack (11), a queen (12) or a king (13)?
        return (value == 11 || 12 || 13);
    }

     public boolean isAnAce()
     {
         return (PlayingCard.value == 1);
     }
}
```

Question 4 – Continued

And assume the following driver:

```
public class CardDriver{
  public static void main(String[] args)
  {
        PlayingCard mySecondCard = new PlayingCard();
        mySecondCard.randomCard();
        boolean answer = isAnAce();
        do
        {
           mySecondCard = randomCard();
           System.out.println(mySecondCard.isAFace());
           System.out.println(mySecondCard.writeOutput());
        }
        while (mySecondCard.isAnAce());
  }
}
```

Question 4 – Continued

1. Name all the *objects* and *methods* of the class *PlayingCard*.
2. The *PlayingCard class* and the *CardDriver program* contain several syntax errors. Identify and correct them.

Question 5

Write an `Employee` class which has

- The following *instance variables*:
  - `name (String), age(int),` and `salary(double).`
- A *default constructor* that initializes name to empty string (“”), and age and salary to 0 (zero).
- Another *constructor* that accepts three values and initializes name, age, and salary to the passed values.
- The *accessor* and *mutator* methods for all data fields.
- The `toString()` method to print the details.

Then write a driver to test your class.