COMP 248 S2012 Final Solution

Question 1

1.1	boolean	false
1.2	integer	0
1.3	double	3.5
1.4	integer	1
1.5	boolean	false
1.6	boolean	true
1.7	char	‘j’
1.8	integer	2

Question 2

1.1 d)
1.2 b)
1.3 d)
1.4 b)
1.5 d)
1.6 d)
1.7 b)
1.8 d)
1.9 d)

Question 3

4092635782
1 8
4892635702
3 7
4897635202
7 7
4897635202

Question 4

(A)
```
public static int product_n(int n) {
   int product = 1;

   for (int i = 1; i <= n; i++) {
       product *= i;
   }

   return product;
}
```

(B)
```
for (int i = 1; i <= 50; i++) {
   if (product_n(i) > 1000) {
       System.out.println(product_n(i) +" YES");
   }
   else {
       System.out.println(product_n(i) +" NO");
   }
}
```

Question 5

```
import java.util.Scanner;

public class Question_5 {
   public static void main(String args[]) {
       double[] array1 = new double[100];
       double[] array2 = new double[100];

       Scanner key = new Scanner(System.in);
       System.out.println("Enter 200 doubles");

       for (int i = 0; i < 100; i++) {
           array1[i] = key.nextDouble();
       }

       for (int i = 0; i < 100; i++) {
           array2[i] = key.nextDouble();
       }

       System.out.print("Dot Product: " + innerProduct(array1,
array2));
   }

   public static double innerProduct(double[] array1, double[]
array2) {
       double dotProduct = 0;

       for (int i = 0; i < array1.length; i++) {
           dotProduct += (array1[i] * array2[i]);
       }

       return dotProduct;
   }
}
```

Question 6

(A)

```
public class MusicalNote {
   private int syllable;
   private int duration;

   public MusicalNote() {
       this.syllable = 1;
       this.duration = 1;
   }

   public MusicalNote(int syllable, int duration) {
       this.setSyllable(syllable);
       this.setDuration(duration);
   }

   public void setSyllable(int syllable) {
       if (syllable < 2 || syllable > 7) {
           this.syllable = 1;
       }
       else {
           this.syllable = syllable;
       }
   }

   public void setDuration(int duration) {
       if (duration < 2) {
           this.duration = 1;
       }
       else {
           this.duration = duration;
       }
   }

   public int getSyllable() {
       return this.syllable;
   }

   public int getDuration() {
       return this.duration;
   }
```

```
    public void shorten() {
        if (this.duration > 1) {
            this.duration--;
        }
    }

    public String toString() {
        String note = "";

        switch(this.syllable) {
            case 1: note = "DO"; break;
            case 2: note = "RE"; break;
            case 3: note = "MI"; break;
            case 4: note = "FA"; break;
            case 5: note = "SOL"; break;
            case 6: note = "LA"; break;
            case 7: note = "TI"; break;
        }

        return note + "-" + duration;
    }

    public boolean sameSyllable(MusicalNote m) {
        return this.syllable == m.getSyllable();
    }

    public boolean equals(MusicalNote m) {
        return this.syllable == m.getSyllable() &&
this.duration == m.duration;
    }
}
```

(B)
```
MusicalNote note1 = new MusicalNote(4, 6)
MusicalNote note2 = new MusicalNote();
```

(C)
```
for (int i = 0; i < 15; i++) {
     note1.shorten();
}

System.out.println("Note 1 duration: " +
     note1.getDuration());
```

(D)
```
System.out.println(note1);
```

(E)
```
if (note1.getDuration() < note3.getDuration()) {
     System.out.println("Note 3 has longer duration");
}
else if (note1.getDuration() > note3.getDuration() {
     System.out.println("Note 1 has longer duration");
}
else {
     System.out.println("Both notes have the same
          duration");
}
```

(F)
```
if (note1.equals(note4) {
     System.out.println("Both notes have the same
          content");
}
else {
     System.out.println("The 2 notes have different
          content");
}
```

(G)
```
MusicalNote[] notesArray = new MusicalNote[600];

for (int i = 0; i < notesArray.length; i++) {
     System.out.print("Enter note " + (i + 1) + " syllable:");
     int syllable = kb.nextInt();
     System.out.print("Enter note " + (i + 1) + " duration:");
     int duration= kb.nextInt();

     notesArray[i] = new MusicalNote(syllable, duration);
}
```