CMP-326 – Fall 2013 Exam 1 Name: ________________________

110 Points

Version 1

1. (15 Points) What is the output of the following:

```
int i = 0;
int j = i + 1;
do {
      if (i <= j) {
            System.out.print("i = " + i + " : ");
            i = i + 2;
      } else {
            System.out.println("j = " + j);
            j = j + 3;
      }
} while (i <= 13);
System.out.println();
System.out.println("No More!");
```

2. (15 Points) What is the output of the following:

```
for (int i = 0 ; i <= 6 ; i += 2) {
      for (int j = 0 ; j <= 6 ; j += 2) {
            if (i == j) {
                  break;
            } else if (i < j) {
                  continue;
            }
            System.out.println("i = " + i + " : " + "j = " + j);
      }
}
```

3. (15 Points) What is the output of the following:

```
for (int i = 5; i >= 0; i--) {
      switch (i) {
            case 0:
                  System.out.println(i + ":" + i);
            case 1:
                  System.out.println(i + ":" + i*2);
                  break;
            case 2:
                  System.out.println(i + ":" + i*3);
            case 3:
                  System.out.println(i + ":" + i*4);
                  break;
            case 4:
                  System.out.println(i + ":" + i*5);
            default:
                  System.out.println(i + ":" + i*8);
                  break;
      }
}
```

4. (15 Points) Write Java code (not the entire program) that asks the user for the time of the day as `hours` and `minutes` in order to compute the total number of `seconds` that have passed since the start of the day.

   For example, for `hours` = 18, and `minutes` = 10, the
   output will be `seconds` = 65,400

   Useful conversion formulas are: 1 h = 60 m, and 1 m = 60 s

5. (15 Points) Write Java code (not the entire program) that asks the user for a `String` and then alters the given `String` by swapping consecutive pairs of characters. You can assume that the given `String` has an even number of characters.

   For example, for an input `String` = "fakhouri"
   The output `String` = "afhkuoir"

6. (35 Points) Write a complete Java class named `Shopping` that has the following `private` attributes:

   a. shoes, a `float` representing the cost of the shoes.
   b. socks, a `float` representing the cost of the socks.
   c. pants, a `float` representing the cost of the pants.
   d. shirt, a `float` representing the cost of the shirt.
   e. tax, a `float` representing the tax percentage.

   And the following methods:

   a. `public` Shopping() – Constructor that sets all attributes to zero.
   b. `public` Shopping(`float` tax) – Constructor that initializes the tax rate and sets all other attributes to zero.
   c. `public` Shopping(`float` shoes, `float` socks, `float` pants, `float` shirt) – Constructor that initializes the specified attributes to the given values.
   d. `public float` getTotal() – Computes and returns the total for the shopping spree, if and only if the tax has been initialized. Returns -1.0 otherwise. The total is the sum of all the expenses + the additional tax.
   e. `Public boolean` equals(`Shopping` otherShopping) – Compares the two objects and returns `true` if they are equal, and `false` otherwise. The two objects are considered equal if and only if all their attributes are equal.
   f. get and set methods for all the attributes.

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Version 2

1. (15 Points) What is the output of the following:

```
int i = 0;
int j = i + 2;
do {
      if (i <= j) {
            System.out.print("i = " + i + " : ");
            i = i + 3;
      } else {
            System.out.println("j = " + j);
            j = j + 4;
      }
} while (i <= 15);
System.out.println();
System.out.println("No More!");
```

2. (15 Points) What is the output of the following:

```
for (int i = 0 ; i <= 9 ; i += 3) {
      for (int j = 0 ; j <= 9 ; j += 3) {
            if (i == j) {
                  break;
            } else if (i < j) {
                  continue;
            }
            System.out.println("i = " + i + " : " + "j = " + j);
      }
}
```

3. (15 Points) What is the output of the following:

```
for (int i = 5; i >= 0; i--) {
      switch (i) {
            case 0:
                  System.out.println(i + ":" + i);
                  break;
            case 1:
                  System.out.println(i + ":" + i*5);
            case 2:
                  System.out.println(i + ":" + i*3);
                  break;
            case 3:
                  System.out.println(i + ":" + i*9);
            case 4:
                  System.out.println(i + ":" + i*7);
            default:
                  System.out.println(i + ":" + i*8);
                  break;
      }
}
```

4. (15 Points) Write Java code (not the entire program) that asks the user for a distance in `kilometers` and `meters` in order to compute the distance in `centimeters`.

   For example, for `kilometers` = 18, and `meters` = 10, the
   output will be `centimeters` = 1,801,000

   Useful conversion formulas are: 1 kilometer = 1000 m and 1 m = 100 cm

5. (15 Points) Write Java code (not the entire program) that asks the user for a `String` and then alters the given `String` by reversing it.

   For example, for an input `String` = "fakhouri"
   The output `String` = "iruohkaf"

6. (35 Points) Write a complete Java class named `Dinner` that has the following `private` attributes:

   a. mealOne, a `float` representing the cost of the first meal.
   b. mealTwo, a `float` representing the cost of the second meal.
   c. mealThree, a `float` representing the cost of the third meal.
   d. mealFour, a `float` representing the cost of the fourth meal.
   e. tax, a `float` representing the tax percentage.

   And the following methods:

   g. `public` Dinner() – Constructor that sets all attributes to zero.
   h. `public` Dinner(`float` tax) – Constructor that initializes the tax rate and sets all other attributes to zero.
   i. `public` Dinner(`float` mealOne, `float` mealTwo, `float` mealThree, `float` mealFour) – Constructor that initializes the specified attributes to the given values.
   j. `public float` getTotal() – Computes and returns the total for the dinner, if and only if the tax has been initialized. Returns -1.0 otherwise. The total is the sum of all the meals + the additional tax.
   k. `Public boolean` equals(`Dinner` otherDinner) – Compares the two objects and returns `true` if they are equal, and `false` otherwise. The two objects are considered equal if and only if all their attributes are equal.
   l. get and set methods for all the attributes.

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110 Points

Version 3

1. (15 Points) What is the output of the following:

```
int i = 0;
int j = i + 3;
do {
      if (i <= j) {
            System.out.print("i = " + i + " : ");
            i = i + 2;
      } else {
            System.out.println("j = " + j);
            j = j + 3;
      }
} while (i <= 15);
System.out.println();
System.out.println("No More!");
```

2. (15 Points) What is the output of the following:

```
for (int i = 0 ; i <= 12 ; i += 4) {
      for (int j = 0 ; j <= 12 ; j += 4) {
            if (i == j) {
                  break;
            } else if (i < j) {
                  continue;
            }
            System.out.println("i = " + i + " : " + "j = " + j);
      }
}
```

3. (15 Points) What is the output of the following:

```
for (int i = 5; i >= 0; i--) {
      switch (i) {
            case 0:
                  System.out.println(i + ":" + i*2);
            case 1:
                  System.out.println(i + ":" + i*4);
            case 2:
                  System.out.println(i + ":" + i*6);
                  break;
            case 3:
                  System.out.println(i + ":" + i*7);
                  break;
            case 4:
                  System.out.println(i + ":" + i*8);
            default:
                  System.out.println(i + ":" + i*9);
                  break;
      }
}
```

4. (15 Points) Write Java code (not the entire program) that asks the user for a time in `days` and `hours` in order to compute the total number of `minutes` that have passed since the start of the month.

   For example, for `days` = 18, and `hours` = 10, the
   output will be `minutes` = 26,520

   Useful conversion formulas are: 1 day = 24 hr and 1 hr = 60 m

5. (15 Points) Write Java code (not the entire program) that asks the user for a `String` and then alters the given `String` by swapping consecutive pairs of characters. You can assume that the given `String` has an even number of characters.

   For example, for an input `String` = "fakhouri"
   The output `String` = "afhkuoir"

6. (35 Points) Write a complete Java class named `Exam` that has the following `private` attributes:

   a. question1, a `float` representing the grade of the first question.
   b. question2 a `float` representing the grade of the second question.
   c. question3, a `float` representing the grade of the third question.
   d. question4, a `float` representing the grade of the fourth question.
   e. curve, a `float` representing the curve percentage.

   And the following methods:

   a. `public` Exam() – Constructor that sets all attributes to zero.
   b. `public` Exam(`float` curve) – Constructor that initializes the curve rate and sets all other attributes to zero.
   c. `public` Exam(`float` question1, `float` question2, `float` question3, `float` question4) – Constructor that initializes the specified attributes to the given values.
   d. `public float` getTotal() – Computes and returns the total for the exam, if and only if the curve has been initialized. Returns -1.0 otherwise. The total is the sum of all the questions + the additional curve.
   e. `Public boolean` equals(`Exam` otherExam) – Compares the two objects and returns `true` if they are equal, and `false` otherwise. The two objects are considered equal if and only if all their attributes are equal.
   f. get and set methods for all the attributes.

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110 Points

Version 4

1. (15 Points) What is the output of the following:

```
int i = 0;
int j = i + 4;
do {
      if (i <= j) {
            System.out.print("i = " + i + " : ");
            i = i + 3;
      } else {
            System.out.println("j = " + j);
            j = j + 4;
      }
} while (i <= 19);
System.out.println();
System.out.println("No More!");
```

2. (15 Points) What is the output of the following:

```
for (int i = 0 ; i <= 18 ; i += 5) {
      for (int j = 0 ; j <= 18 ; j += 5) {
            if (i == j) {
                  break;
            } else if (i < j) {
                  continue;
            }
            System.out.println("i = " + i + " : " + "j = " + j);
      }
}
```

3. (15 Points) What is the output of the following:

```
for (int i = 5; i >= 0; i--) {
      switch (i) {
            case 0:
                  System.out.println(i + ":" + i);
            case 1:
                  System.out.println(i + ":" + i*3);
            case 2:
                  System.out.println(i + ":" + i*4);
                  break;
            case 3:
                  System.out.println(i + ":" + i*9);
            case 4:
                  System.out.println(i + ":" + i*6);
            default:
                  System.out.println(i + ":" + i*5);
                  break;
      }
}
```

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110 Points

Version 4

4. (15 Points) Write Java code (not the entire program) that asks the user for a time in `days` and `hours` in order to compute the total number of `seconds` that have passed since the start of the month.

   For example, for `days` = 18, and `hours` = 10, the
   output will be `seconds` = 1,591,200

   Useful conversion formulas are: 1 day = 24 hr and 1 hr = 3600 s

5. (15 Points) Write Java code (not the entire program) that asks the user for a `String` and then alters the given `String` by reversing it.

   For example, for an input `String` = "fakhouri"
   The output `String` = "iruohkaf"

6. (35 Points) Write a complete Java class named `Trip` that has the following `private` attributes:

   a. travel, a `float` representing the travel cost.
   b. hotel a `float` representing the cost of the hotel.
   c. meals, a `float` representing the cost of the meals.
   d. entertainment, a `float` representing the cost of the entertainment.
   e. tax, a `float` representing the tax percentage.

   And the following methods:

   a. `public` Trip() – Constructor that sets all attributes to zero.
   b. `public` Trip(`float` tax) – Constructor that initializes the tax rate and sets all other attributes to zero.
   c. `public` Trip(`float` travel, `float` hotel, `float` meals, `float` entertainment) – Constructor that initializes the specified attributes to the given values.
   d. `public float` getTotal() – Computes and returns the total for the trip, if and only if the tax has been initialized. Returns -1.0 otherwise. The total is the sum of all the expenses + the additional tax.
   e. `Public boolean` equals(`Trip` otherTrip) – Compares the two objects and returns `true` if they are equal, and `false` otherwise. The two objects are considered equal if and only if all their attributes are equal.
   f. get and set methods for all the attributes.