1. (a) Consider the valid expression below. Circle what best describes the value of the expression.
   i. \( i \times i \geq i \) where \( i \) is a variable of type int
      true \hspace{1cm} false \hspace{1cm} depends
   ii. \( p || !p \) where \( p \) is a boolean variable
       true \hspace{1cm} false \hspace{1cm} depends

   (b) What is the value of variable \( s \) shown below:
       String \( s \);

   (c) When an object is created, it is stored in which section of the computer’s memory?

   (d) What is the outcome when the following code is executed?

   ```java
   int val = 5;
   for(int i = val; i > 0; i--){
       System.out.print(i);
   }
   System.out.println();
   ```

   (e) The goal is to reverse the contents of the array. E.g. If the array contents are 1,2,3,4 then the
   reversed array is 4,3,2,1. The method below is written to reverse the original array. State whether
   the method is successful in delivering the end outcome. If not, how would you fix the code.

   ```java
   public static void reverse(int [ ] data){
       for(int i = 0; i < data.length; i++){
           int temp = data[i];
           data[i] = data[data.length - 1 - i];
           data[data.length - i - 1] = temp;
       }
   }
   ```
Arrays

2. See Reference Sheet - I for this question

A common task in information processing is to count the number of like items in a collection of items. For example, given a poll where people answer a question by indicating a number between 0 and 4 inclusive and an array which contains all the answers, we want to count the number of 0’s, the number of 1’s and so on. We can store the results in a results array with indices 0 through 4, where results[0] holds the number of people who answered 0, results[1] holds the number of people who answered 1, and so on.

Write a static method called \texttt{stats} in the Poll class that would perform the above described task. It should accept as input an array of integers and assume that its length is positive and all of its elements are greater than or equal to 0 (i.e. no need for error checking). It should return an array which contains a count of each integer entry in the range represented in the input array with no additional entries.

//Method stats
Has-A Relationship

3. Consider the Point and Circle class interactions provided on Reference Sheet II.

(a) Write method called move( ) in the Point class that will move the point by dx in the x direction
    and dy in the y direction.

(b) Write method called move( ) in Circle class that moves the Circle’s center.

(c) Write another constructor in the Circle class that takes in three parameters as shown.

(d) Write method liesWithin( ) in the Circle class that will return true if the input Point lies within
    or on the circle, otherwise returns false. Hint: Distance between Circle’s center and input Point
    can be determined by Pythagorean theorem.