Practical # 4: Iterative Structures

Tasks Sheet

1. Develop java code that prints following using for loops.

   i.
   ```
   *
   **
   ***
   ****
   *****
   ```

   iii.
   ```
       *
     * * *
   * * * * *
   * * * * * * *
   * * * * * * * * *
   ```

   ii.
   ```
   *****
   ****
   ***
   **
   *
   ```

2. Write a java program that takes the table, starting and ending point of the table and prints the output in the following way:
   ```
   5x5 = 25
   5x6 = 30
   5x7 = 35
   5x8 = 40
   5x9 = 45
   5x10 = 50
   ```
3. Write a program that reads an **integer N** and calculates the **sum of all integers 1..N.**

Hint: for the following programs 3-6, use if, for/while and arrays

4. Write a java program that calculates the sum of two 2-dimensional arrays(Matrix) and saves the result in the third array and prints the result along with the positions of each element.

5. Write a java program that find the largest element in the array.

6. Write java code that takes a value at runtime and searches it in the array. If the value appears in the array then it prints the position of the value or else prints a message that value is not found.

7. Code the following algorithm for bubble sort.

Algorithm 4.4: (Bubble Sort) BUBBLE(DATA, N)
Here DATA is an array with N elements. This algorithm sorts the elements in DATA.

1. Repeat Steps 2 and 3 for K = 1 to N − 1.
2. Set PTR := 1. [Initializes pass pointer PTR.]
3. Repeat while PTR ≤ N − K: [Executes pass.]
   (*a*) If DATA[PTR] > DATA[PTR + 1], then:
   Interchange DATA[PTR] and DATA[PTR + 1].
   [End of If structure.]
   (*b*) Set PTR := PTR + 1.
   [End of inner loop.]
   [End of Step 1 outer loop.]
4. Exit.