### Introduction

The purpose of this homework is to introduce you to the fundamental concepts of loops using the **While**, **Do-While**, and **For** statement.

### Notes
- For all programs the **header** from the template should be used.
- Attach a Word file including the "**Pseudocode**" of the algorithm, as well as screen shots for running the programs.
- Add reasonable **comments** through all the program.
- All lab and homework classes should be grouped in **one project**.
- Make sure to follow the **naming convention** for the project name.

### I. Tracing

**Notes:**
- You can increase the number of rows in the table by clicking the "**Tab**" button.
- Enter your answers in the correct position, in this **blue color**.

**a) What is the output of the following code segment?**

```java
1. int num = 0;
2. for (int j = 5; j > 1; j--)
   {
      3. num += 10 * (j + 1);
      4. System.out.print(num + " ");
   }
```

<table>
<thead>
<tr>
<th>Line</th>
<th>num</th>
<th>j</th>
<th>Condition</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

**b) What is the output of the following code segment?**

```java
1. int k = 6, i = 2, j = 5;
2. for (int c = i; c < k; ++c)
   {
      3. int a = i + j;
      4. i = j;
      5. j = a;
      6. System.out.print(j + " ");
   }
```

<table>
<thead>
<tr>
<th>Line</th>
<th>k</th>
<th>i</th>
<th>j</th>
<th>c</th>
<th>a</th>
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</table>
c) What is the output of the following code segment?

```java
1. for (int i = 1; i <= 4; ++i) {
   2.   for (int j=(i+1); j <= (i+3); ++j) {
   3.     System.out.print(j + " ");
   4.     System.out.println(i);
   }
}
```

<table>
<thead>
<tr>
<th>Line</th>
<th>i</th>
<th>j</th>
<th>Outer Loop Cond</th>
<th>Inner Loop Cond</th>
<th>Output</th>
</tr>
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d) What is the output of the following code segment?

```java
1. for (int i = 1; i < 11; i+=3) {
2.   int j = i + 2;
3.   while (j % 4 != 0) {
   4.     System.out.print((i*j) % 5);
   5.     ++j;
   }
}
```

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II. Pascal Triangle

- Use nested for loops to generate a program named “PascalTriangle” that asks for the number of rows to be displayed and then displays a simple version of what is known as the Pascal triangle.
- Note:
  - This is NOT exactly the same as the “Pascal Triangle” referenced in the literature.
  - Use printf() method to format the triangle in the given shape

Sample output

```
This program displays a version of the Pascal Triangle.
How many rows would you like to display (Must be between 3 and 10): 10
1
  1 2 1
  1 2 3 2 1
  1 2 3 4 3 2 1
  1 2 3 4 5 4 3 2 1
  1 2 3 4 5 6 5 4 3 2 1
  1 2 3 4 5 6 7 6 5 4 3 2 1
  1 2 3 4 5 6 7 8 7 6 5 4 3 2 1
  1 2 3 4 5 6 7 8 9 8 7 6 5 4 3 2 1
  1 2 3 4 5 6 7 8 9 10 9 8 7 6 5 4 3 2 1
Good Bye!
```