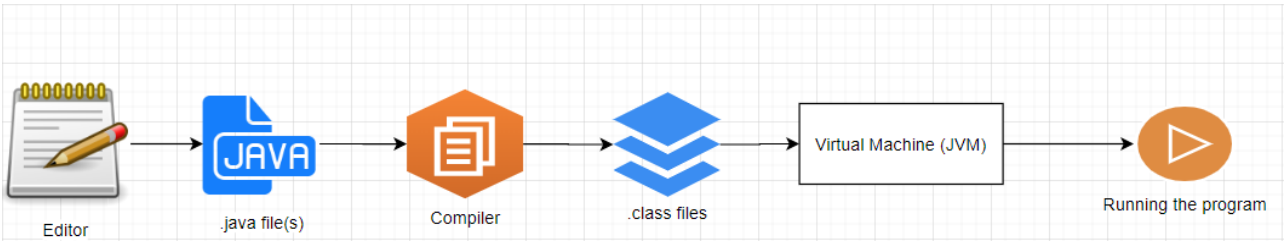
Recap First and Second sessions + exercises

Objectives

- Recap the second session
- Class exercises
- Homework Exercises

Recap the second session

- What is a class?
- What is a method?
- What is a string and how can you display it?
- What is a comment? Is it usefull?
- How many types of comments do you know?
- Before moving forwards, it makes sense to see, graphically, how does the process of creating and running an application looks like; starting with writing it and then running it on the system. Take a look at the image below:



Class Exercises

1. Write a JAVA program that displays your name inside a box on the console screen like:

```
+------+
|BOGDAN|
+------+
```

   - Solution:

```java
public class Application {

    public static void main(String[] args) {
        System.out.println("+------+");
        System.out.println("|BOGDAN|");
        System.out.println("+------+");
```

```
    }
}
```

2. Write a program that prints a face, similar to the one below:

```
   //////
 | o    o |
(|   ^    |)
 |  [__]  |
 |________|
```

- Solution:

```
public class Application {
    public static void main(String[] args) {
        System.out.println("   //////  ");
        System.out.println(" | o   o  |");
        System.out.println("(|   ^    |)");
        System.out.println(" |  [__]  |");
        System.out.println(" |________|");
    }
}
```

3. Write a JAVA application that displays the following recangle:

```
**************
*            *
*            *
**************
```

- Solution:

```
public class Application {

    public static void main(String[] args) {
        System.out.println("**************");
        System.out.println("*            *");
        System.out.println("*            *");
        System.out.println("**************");
    }
}
```

4. Write a Java program which computes the average of the following numbers: 3,6,9.
   - Solution:

```
public class Application {

    public static void main(String[] args) {
        System.out.print("The average of 3,7, and 9 is: ");
        System.out.println((3+6+9)/3);
    }
}
```

5. Write a JAVA program that displays the sum of the first 15 positive numbers:
    - Solution:

```
public class Application {

    public static void main(String[] args) {
        System.out.print("The sum of the first 15 positive numbers
 is: ");
        System.out.println((15*16)/2);
    }
}
```

6. Write a JAVA program that computes the pythagorean theorem for a right triangle having the sides equal to 3 and 4.
    - Solution

```
public class Application {

public static void main(String[] args) {
    System.out.print("The pythagorean theorem for the right triangle
with two sides equal to 3 and 4 is ");
    System.out.println(Math.sqrt(4*4+3*3));
}
}
```

Homework exercises

1. Write a JAVA program that displays your name inside a book on the console screen like:

```
********
|BOGDAN|
********
```

2. Write a JAVA program that displays the following pattern:

```
\_____/
( o ^ o)
 ------
```

3. Write a JAVA program which displays a TicTacToe board:

```
+------+------+------+
|      |      |      |
+------+------+------+
|      |      |      |
+------+------+------+
|      |      |      |
+------+------+------+
```

4. Write a JAVA program that displays the following stairs:

```
                    +------+
                    |      |
             +------+------+
             |      |      |
       +-----+------+------+
       |     |      |      |
+------+------+------+------+
|      |      |      |      |
+------+------+------+------+
```

5. Write a JAVA application that displays the following half pyramid

```
*
* *
* * *
* * * *
* * * * *
```

6. Write a JAVA program that displays the following inverted pyramid

```
* * * * *
* * * *
* * *
* *
*
```

7. Write a JAVA application that displays an inverted pyramid but now with digits:

```
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

8. Write a JAVA application which computes the average of the following numbers: 123, 213, 432.
9. Write a JAVA program which computes the average of the following numbers: 3,7 and 9. Check your result with a computer. What did you notice?
10. Write a JAVA program which computes the volume of a Cone with base equals 6 and height equals 10.

Guidelines

- Whenever you are stuck, just search on your favorith search engine (e.g google). For example, if you don't know the formula for the volume of a Cone, just search over the internet.
- As repetitive it might get, try for each exercise to create a new JAVA project. This way you will have a lot of practicing exercise