Assignment 5 – Programming Fundamentals

New Group 6

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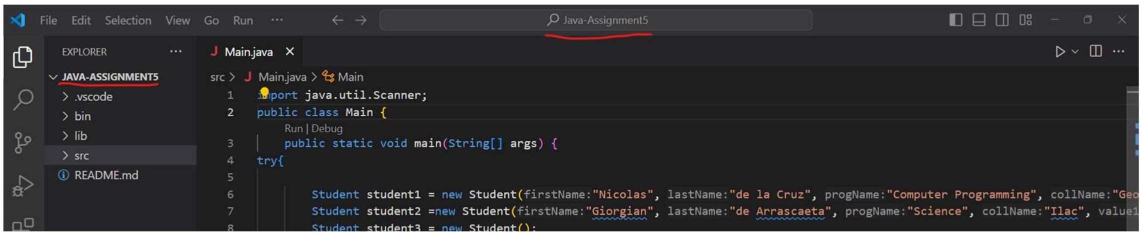
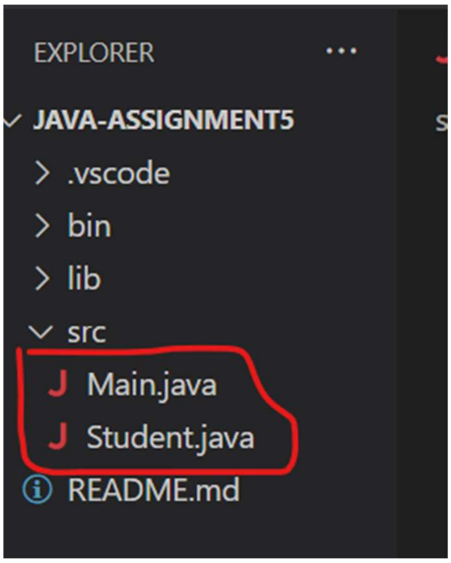
Following the instructions we created a folder called Java-Assignment5. Inside the folder is our java file as the print shows:

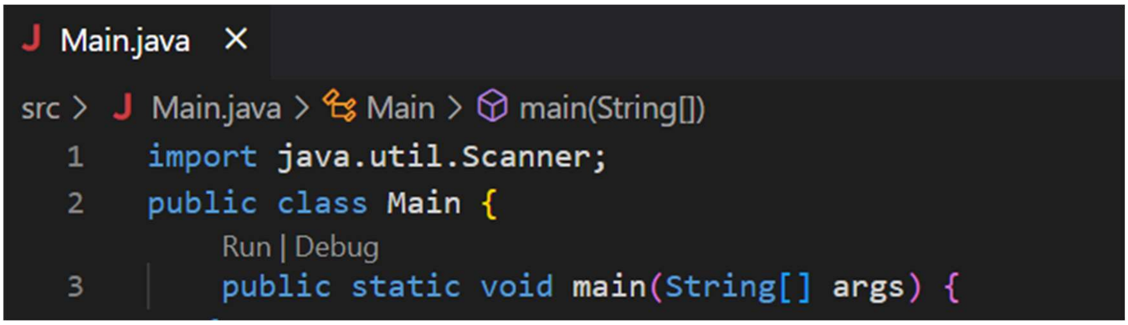


```java
import java.util.Scanner;
public class Main {
    Run | Debug
    public static void main(String[] args) {
try{

        Student student1 = new Student(firstName:"Nicolas", lastName:"de la Cruz", progName:"Computer Programming", collName:"Geo
        Student student2 =new Student(firstName:"Giorgian", lastName:"de Arrascaeta", progName:"Science", collName:"Ilac", value1
        Student student3 = new Student();
```



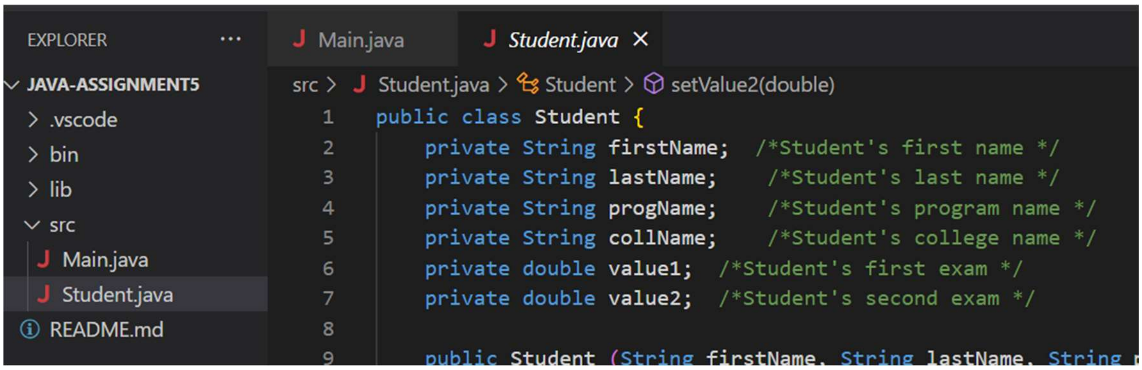
In order now, is the creation of each part of the Assignment according to Instructions (number of items expressed below), above we had item 1 and 2a

Inside the main, we created the public main (Item 2b):



```java
import java.util.Scanner;
public class Main {
    Run | Debug
    public static void main(String[] args) {
```

Item 3 requests the creation of Studemt.java which can be seen in the first print we put here, but again it is below:

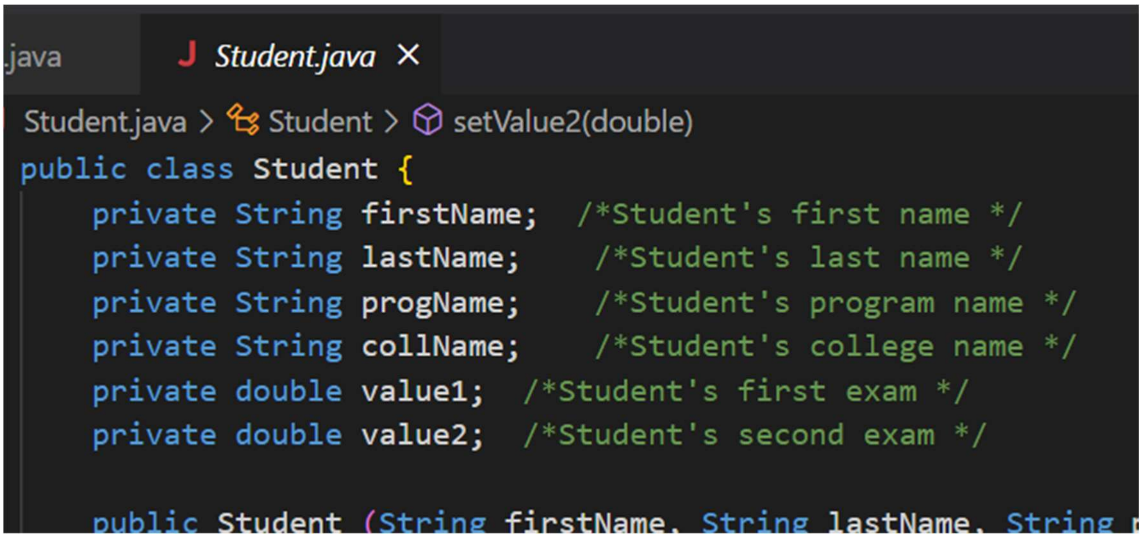


```java
public class Student {
    private String firstName;  /*Student's first name */
    private String lastName;    /*Student's last name */
    private String progName;    /*Student's program name */
    private String collName;    /*Student's college name */
    private double value1;  /*Student's first exam */
    private double value2;  /*Student's second exam */

    public Student (String firstName, String lastName, String r
```

Item 3a is the public class Student that is in the above print. We also have not created main in this one as requested in item 3b.

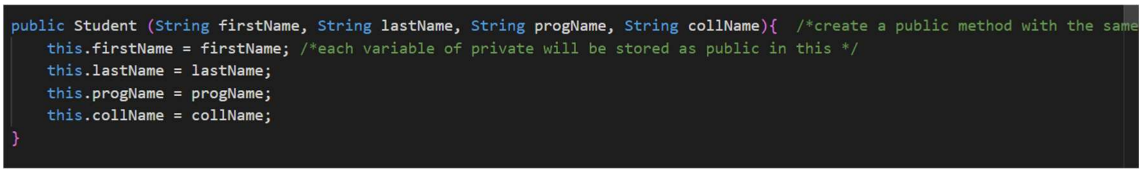
Part1: Student.java

Item 1 is creating the 6 private properties.



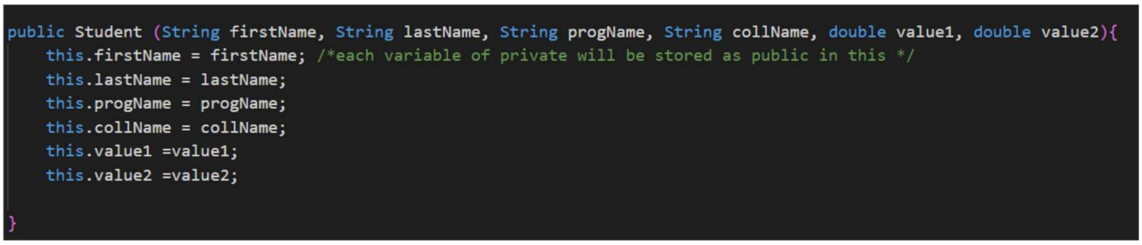
```java
public class Student {
    private String firstName;  /*Student's first name */
    private String lastName;    /*Student's last name */
    private String progName;    /*Student's program name */
    private String collName;    /*Student's college name */
    private double value1;  /*Student's first exam */
    private double value2;  /*Student's second exam */

    public Student (String firstName, String lastName, String r
```

Item 2 is creating a class with 4 parameters (letters a to d):



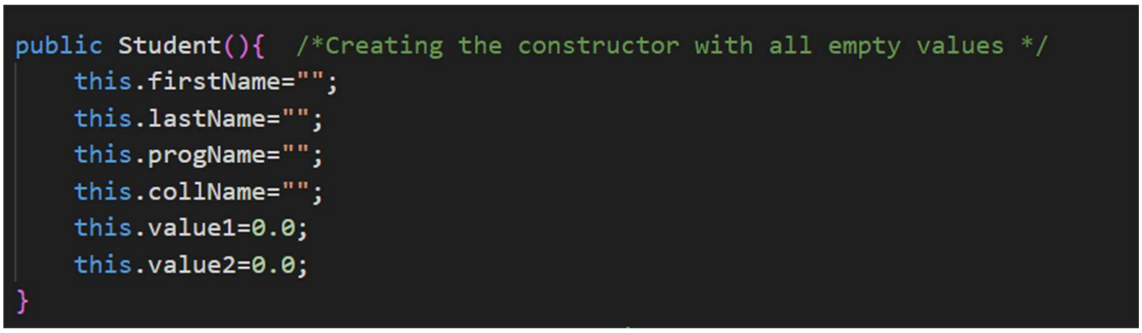
```java
public Student (String firstName, String lastName, String progName, String collName){  /*create a public method with the same
    this.firstName = firstName; /*each variable of private will be stored as public in this */
    this.lastName = lastName;
    this.progName = progName;
    this.collName = collName;
}
```

Item 3 is creating a class with 6 parameters (letters a to f):



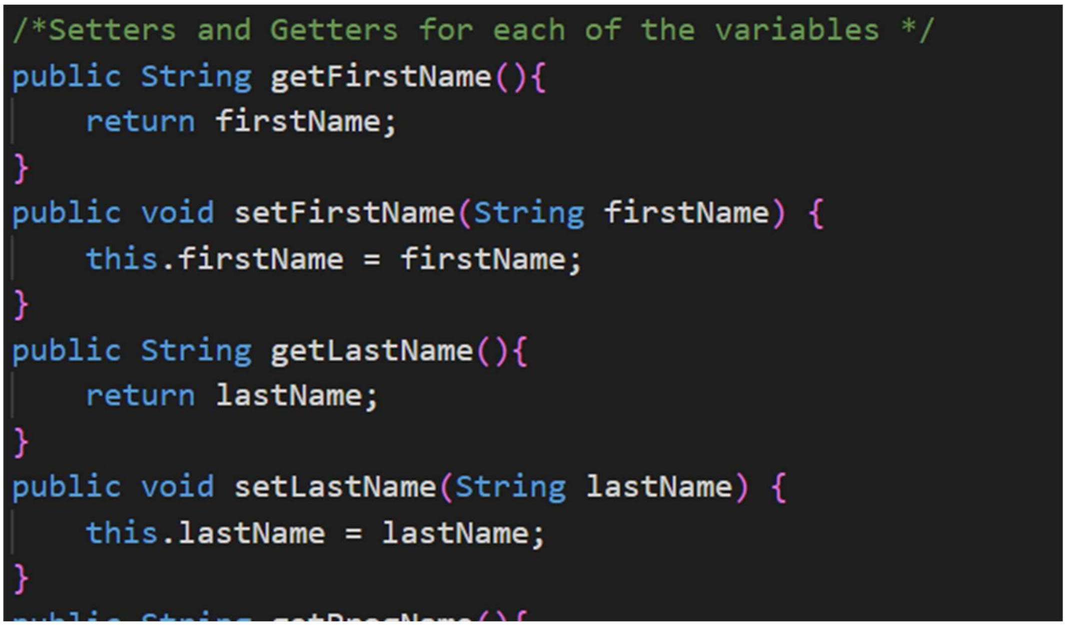
```java
public Student (String firstName, String lastName, String progName, String collName, double value1, double value2){
    this.firstName = firstName; /*each variable of private will be stored as public in this */
    this.lastName = lastName;
    this.progName = progName;
    this.collName = collName;
    this.value1 =value1;
    this.value2 =value2;

}
```

Item 4 is creating the same one but without parameters:



```
public Student(){  /*Creating the constructor with all empty values */
    this.firstName="";
    this.lastName="";
    this.progName="";
    this.collName="";
    this.value1=0.0;
    this.value2=0.0;
}
```

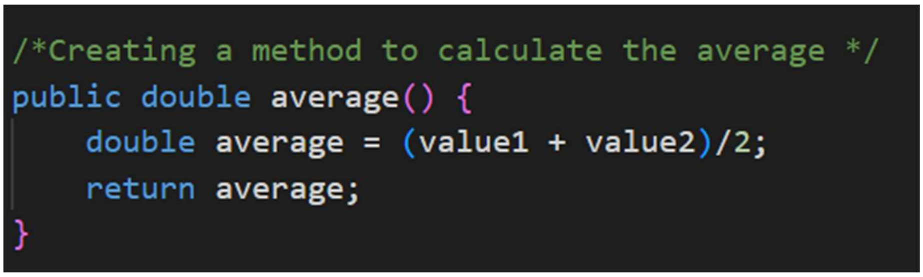
Item 5 request to create getters and setter for all the class (letters a and b):



```
/*Setters and Getters for each of the variables */
public String getFirstName(){
    return firstName;
}
public void setFirstName(String firstName) {
    this.firstName = firstName;
}
public String getLastName(){
    return lastName;
}
public void setLastName(String lastName) {
    this.lastName = lastName;
}
public String getProgName(){
```

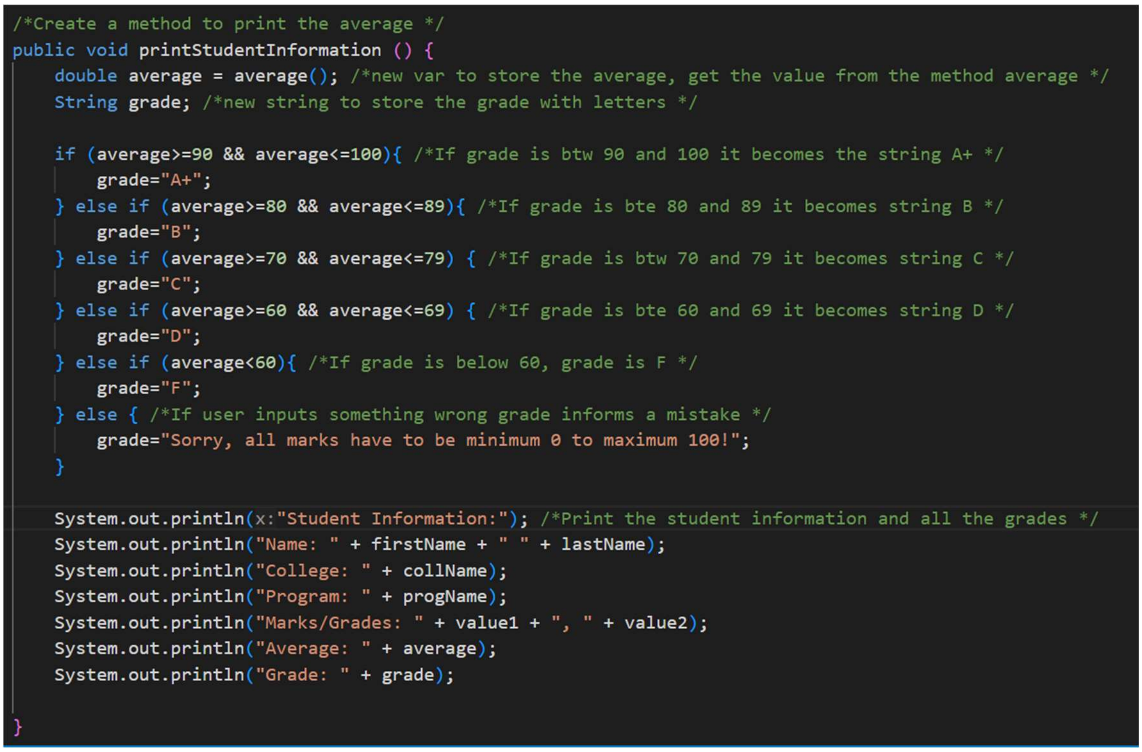
We only put the first 2 in here just to exemplify.

Item 6 requests to create a new method to calculate the average of the student:



```
/*Creating a method to calculate the average */
public double average() {
    double average = (value1 + value2)/2;
    return average;
}
```

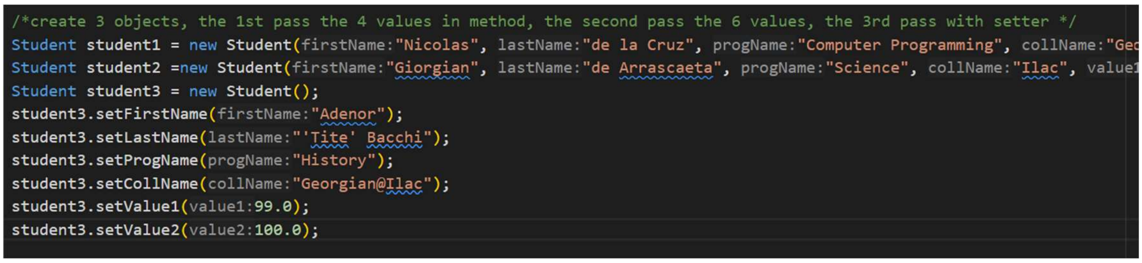
Item 7 is to create a method to print the user's grade based on grades from A to F that depend on the value they reached.



```java
/*Create a method to print the average */
public void printStudentInformation () {
    double average = average(); /*new var to store the average, get the value from the method average */
    String grade; /*new string to store the grade with letters */

    if (average>=90 && average<=100){ /*If grade is btw 90 and 100 it becomes the string A+ */
        grade="A+";
    } else if (average>=80 && average<=89){ /*If grade is bte 80 and 89 it becomes string B */
        grade="B";
    } else if (average>=70 && average<=79) { /*If grade is btw 70 and 79 it becomes string C */
        grade="C";
    } else if (average>=60 && average<=69) { /*If grade is bte 60 and 69 it becomes string D */
        grade="D";
    } else if (average<60){ /*If grade is below 60, grade is F */
        grade="F";
    } else { /*If user inputs something wrong grade informs a mistake */
        grade="Sorry, all marks have to be minimum 0 to maximum 100!";
    }

    System.out.println(x:"Student Information:"); /*Print the student information and all the grades */
    System.out.println("Name: " + firstName + " " + lastName);
    System.out.println("College: " + collName);
    System.out.println("Program: " + progName);
    System.out.println("Marks/Grades: " + value1 + ", " + value2);
    System.out.println("Average: " + average);
    System.out.println("Grade: " + grade);

}
```

Part2 – Main Java

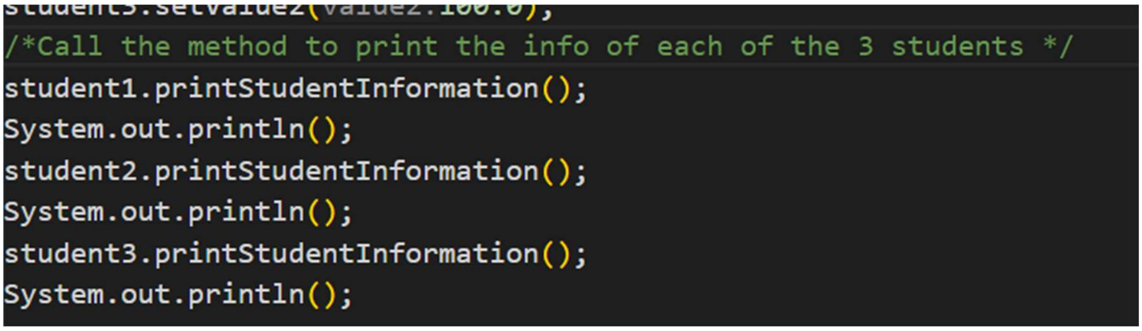
Item 1 a, b, c



```java
/*create 3 objects, the 1st pass the 4 values in method, the second pass the 6 values, the 3rd pass with setter */
Student student1 = new Student(firstName:"Nicolas", lastName:"de la Cruz", progName:"Computer Programming", collName:"Geo
Student student2 =new Student(firstName:"Giorgian", lastName:"de Arrascaeta", progName:"Science", collName:"Ilac", value1
Student student3 = new Student();
student3.setFirstName(firstName:"Adenor");
student3.setLastName(lastName:"'Tite' Bacchi");
student3.setProgName(progName:"History");
student3.setCollName(collName:"Georgian@Ilac");
student3.setValue1(value1:99.0);
student3.setValue2(value2:100.0);
```

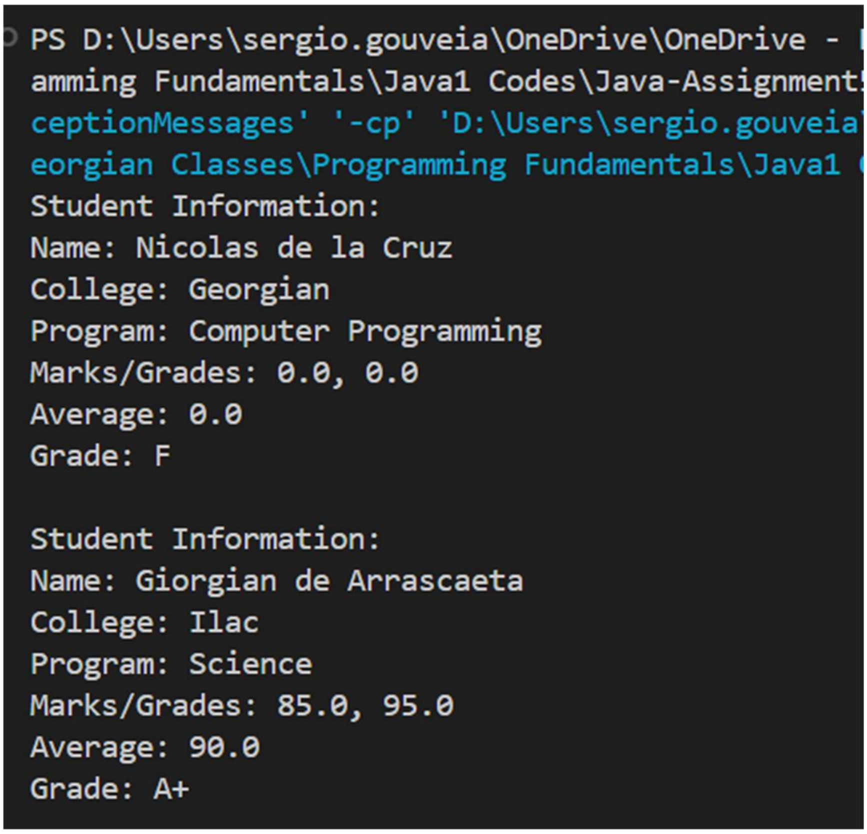
We created student 1 with the 4 values, student2 with the 6 values and student3 received each one using setter after it was started as empty.

Item 2 calling the print for each of the 3 students:



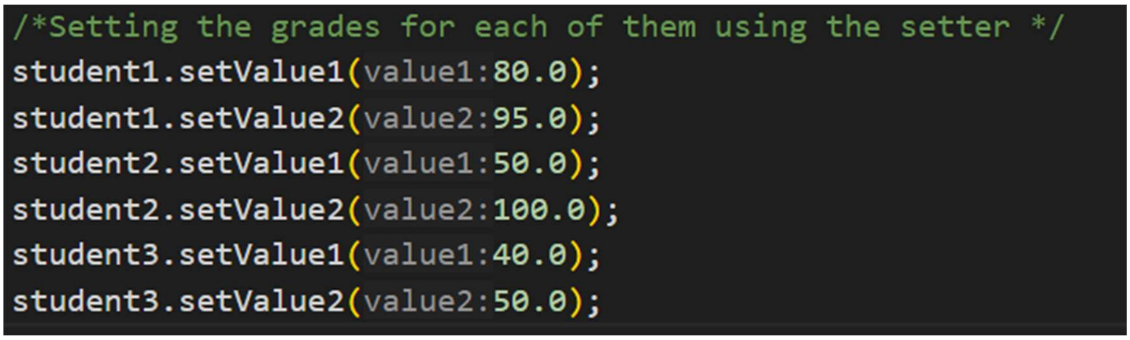
```java
student3.setValue2(value2:100.0);
/*Call the method to print the info of each of the 3 students */
student1.printStudentInformation();
System.out.println();
student2.printStudentInformation();
System.out.println();
student3.printStudentInformation();
System.out.println();
```

Below is the print of the 2 first ones



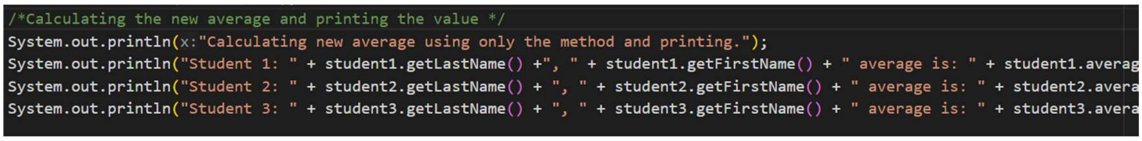
```
PS D:\Users\sergio.gouveia\OneDrive\OneDrive - 
amming Fundamentals\Java1 Codes\Java-Assignment
ceptionMessages' '-cp' 'D:\Users\sergio.gouveia
eorgian Classes\Programming Fundamentals\Java1 
Student Information:
Name: Nicolas de la Cruz
College: Georgian
Program: Computer Programming
Marks/Grades: 0.0, 0.0
Average: 0.0
Grade: F

Student Information:
Name: Giorgian de Arrascaeta
College: Ilac
Program: Science
Marks/Grades: 85.0, 95.0
Average: 90.0
Grade: A+
```

Item 3 requests to set a new value for mark1 and mark2 for each of the students:



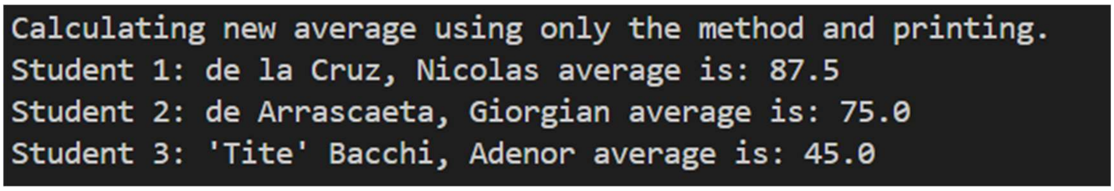
```
/*Setting the grades for each of them using the setter */
student1.setValue1(value1:80.0);
student1.setValue2(value2:95.0);
student2.setValue1(value1:50.0);
student2.setValue2(value2:100.0);
student3.setValue1(value1:40.0);
student3.setValue2(value2:50.0);
```

Item 4 is to calculate the average and find a way to print the average of the students:



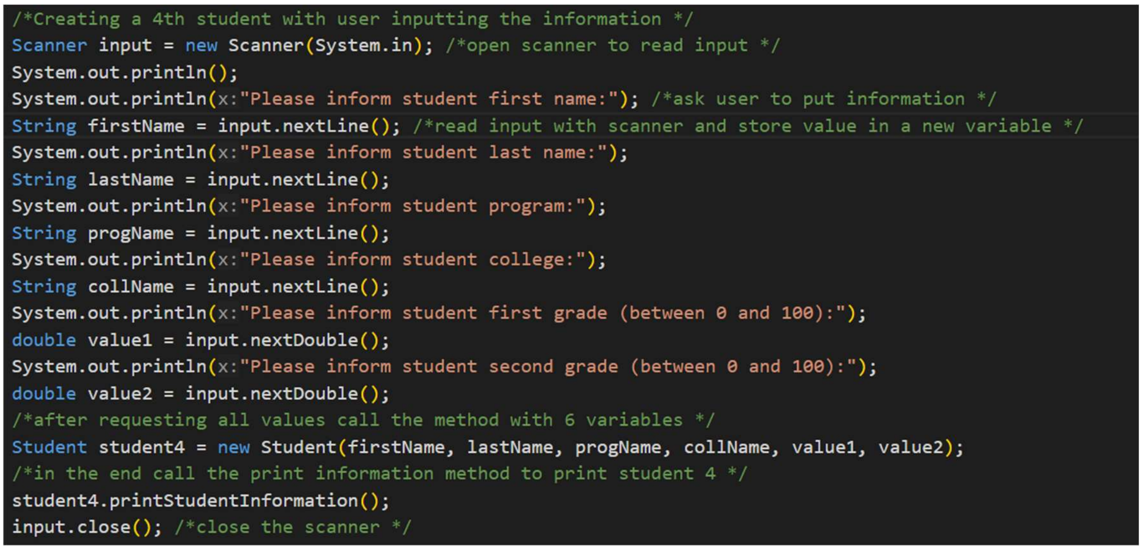
```
/*Calculating the new average and printing the value */
System.out.println(x:"Calculating new average using only the method and printing.");
System.out.println("Student 1: " + student1.getLastName() +", " + student1.getFirstName() + " average is: " + student1.averag
System.out.println("Student 2: " + student2.getLastName() + ", " + student2.getFirstName() + " average is: " + student2.avera
System.out.println("Student 3: " + student3.getLastName() + ", " + student3.getFirstName() + " average is: " + student3.avera
```

The result of each of the lines:



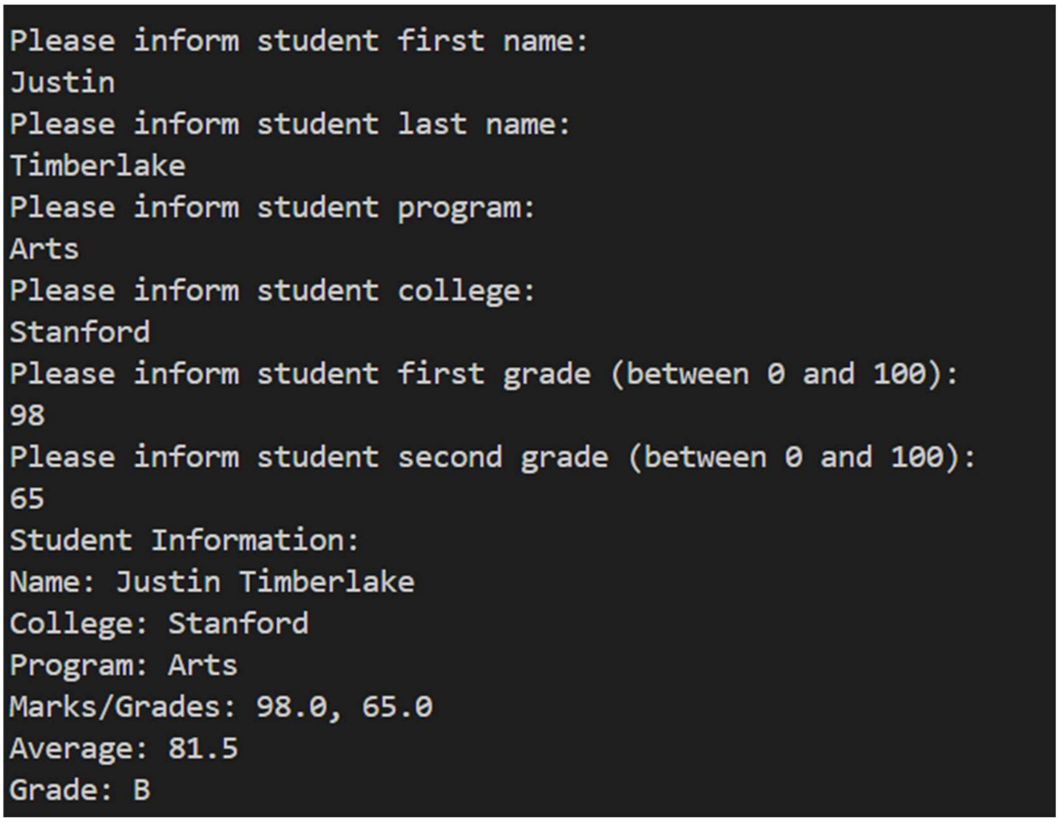
```
Calculating new average using only the method and printing.
Student 1: de la Cruz, Nicolas average is: 87.5
Student 2: de Arrascaeta, Giorgian average is: 75.0
Student 3: 'Tite' Bacchi, Adenor average is: 45.0
```

Item 5 is to create a new student and request the user to input the information and in the end calculate the average and print



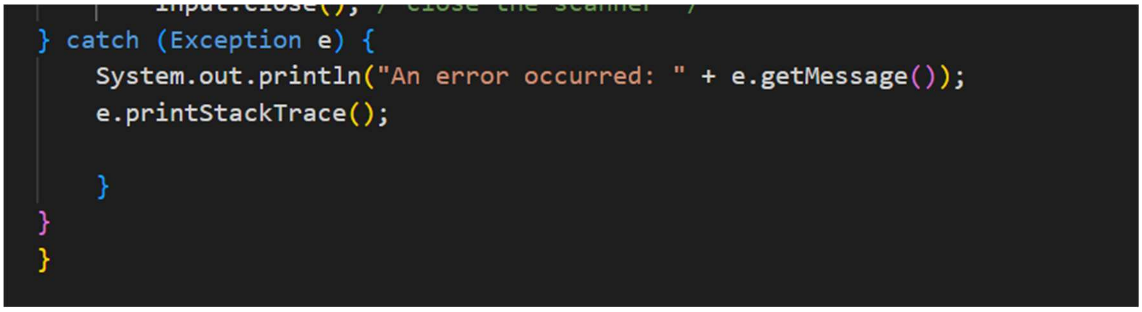
```
/*Creating a 4th student with user inputting the information */
Scanner input = new Scanner(System.in); /*open scanner to read input */
System.out.println();
System.out.println(x:"Please inform student first name:"); /*ask user to put information */
String firstName = input.nextLine(); /*read input with scanner and store value in a new variable */
System.out.println(x:"Please inform student last name:");
String lastName = input.nextLine();
System.out.println(x:"Please inform student program:");
String progName = input.nextLine();
System.out.println(x:"Please inform student college:");
String collName = input.nextLine();
System.out.println(x:"Please inform student first grade (between 0 and 100):");
double value1 = input.nextDouble();
System.out.println(x:"Please inform student second grade (between 0 and 100):");
double value2 = input.nextDouble();
/*after requesting all values call the method with 6 variables */
Student student4 = new Student(firstName, lastName, progName, collName, value1, value2);
/*in the end call the print information method to print student 4 */
student4.printStudentInformation();
input.close(); /*close the scanner */
```

And the result for a generic student:



```
Please inform student first name:
Justin
Please inform student last name:
Timberlake
Please inform student program:
Arts
Please inform student college:
Stanford
Please inform student first grade (between 0 and 100):
98
Please inform student second grade (between 0 and 100):
65
Student Information:
Name: Justin Timberlake
College: Stanford
Program: Arts
Marks/Grades: 98.0, 65.0
Average: 81.5
Grade: B
```

Item 6 requests to encapsulate the code with a try and catch which can be seen in the first print and now the closure with catch:



```
            input.close(); /* close the scanner */
    } catch (Exception e) {
        System.out.println("An error occurred: " + e.getMessage());
        e.printStackTrace();

        }
    }
    }
```