UUM

Universiti Utara Malaysia

STIA1113

PROGRAMMING-1 (I)

INDIVIDUAL

ASSIGNTMENT-2

Prepared By : ANDYDERIS P.A.S

Prepared For : Dr. Baharudin Bin Osman

Date : 7 of Januari 2024

1. INPUT/PROGRAM CODE

```
import java.util.InputMismatchException;
import java.util.Scanner;

public class App {
    private static Scanner scanner = new Scanner(System.in);
    // Set the maximum size for arrays storing student data
    private static int maxSize = 100;
    // Declare arrays to store student data: names, matric numbers, carry marks, and final exam marks
    private static String[] names = new String[maxSize];
    private static int[] matrics = new int[maxSize];
    private static double[] carryMarks = new double[maxSize];
    private static double[] finalExamMarks = new double[maxSize];
    // Initialize a variable to keep track of the number of students
    private static int count = 0;

    public static void main(String[] args) {
        // Initialize test data
        initializeTestData();

        boolean exit = false;

        while (!exit) {
            // Display the main menu
            System.out.println("\n--- STUDENT MANAGEMENT SYSTEM ---\n");
            System.out.println("0. Exit");
            System.out.println("1. Input Student Data");
            System.out.println("2. View Student Data");
            System.out.println("3. Edit Marks");

            int choice = getUserChoice();

            // Switch for menu choice
            switch (choice) {
                case 0:
                    exitProgram(); // Call method to exit the program
                    exit = true;
                    break;

                case 1:
                    System.out.println("\n--- INPUT STUDENT DATA ---\n");
```

```
                inputStudentData(); // Call method to input student data
                break;

            case 2:
                viewAllNamesAndMatrics(names, matrics, count);
                viewStudentData(); // Call method to view student data
                break;

            case 3:
                System.out.println("\n--- EDIT MARKS ---\n");
                editMarks(); // Call method to edit marks
                break;

            default:
                invalidChoice(); // Call method for invalid choice
                break;
        }
    }

    // Close the scanner
    scanner.close();
}

// Method to initialize test data
private static void initializeTestData() {
    names[0] = "ANDYDERIS P.A.S";
    matrics[0] = 296530;
    carryMarks[0] = 50.0;
    finalExamMarks[0] = 50.0;
    count = 1;
}

// Method for invalid choice
private static void invalidChoice() {
    System.out.println("\nInvalid choice!!! Please enter a valid choice from menu list given.");
    System.out.println("Press Enter to try again...");
    scanner.nextLine();
    scanner.nextLine();
}

// Method for invalid input not integer
private static int getUserChoice() {
    while (true) {
        System.out.print("Enter your choice: ");
```

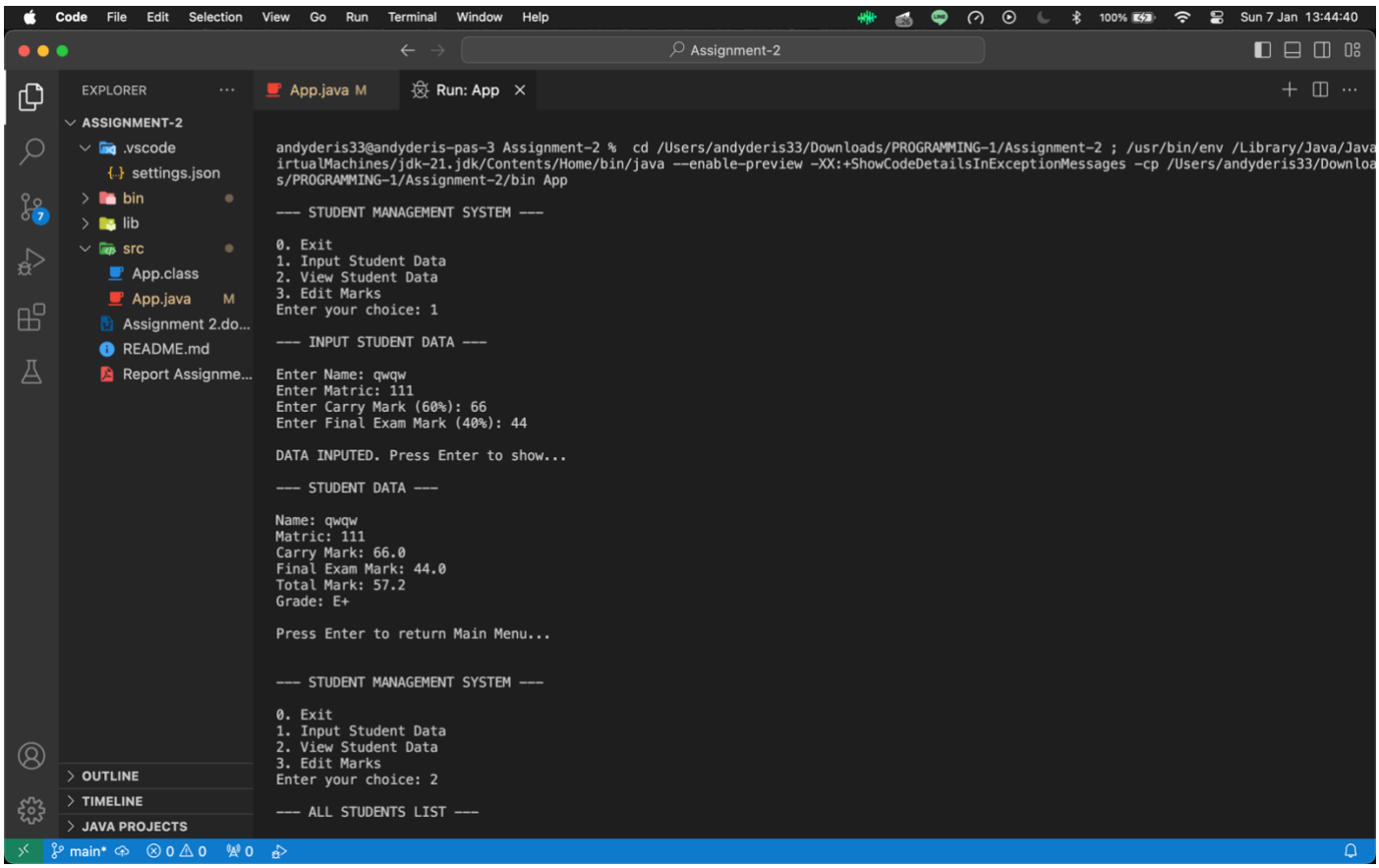
```
        try {
            return scanner.nextInt();
        } catch (InputMismatchException e) {
            System.out.println("\nInvalid input!!! Please enter integer/number");
            System.out.println("Press Enter to try again...");
            scanner.nextLine(); // Consume the newline character
            scanner.nextLine();
        }
    }
}

// Method to input student data
private static void inputStudentData() {
    if (count < maxSize) {

        System.out.print("Enter Name: ");
        scanner.nextLine(); // Consume the newline character left by previous nextInt
        names[count] = scanner.nextLine();

        System.out.print("Enter Matric: ");
        matrics[count] = scanner.nextInt();

        System.out.print("Enter Carry Mark (60%): ");
        carryMarks[count] = scanner.nextDouble();

        System.out.print("Enter Final Exam Mark (40%): ");
        finalExamMarks[count] = scanner.nextDouble();

        System.out.println("\nDATA INPUTED. Press Enter to show...");
        scanner.nextLine(); // Consume the newline character
        scanner.nextLine(); // Wait for the user to press Enter

        // Displaying student data
        double totalMark = calculateTotalMark(carryMarks[count], finalExamMarks[count]);
        String grade = calculateGrade(totalMark);
        System.out.println("--- STUDENT DATA ---\n");
        System.out.println("Name: " + names[count]);
        System.out.println("Matric: " + matrics[count]);
        System.out.println("Carry Mark: " + carryMarks[count]);
        System.out.println("Final Exam Mark: " + finalExamMarks[count]);
        System.out.println("Total Mark: " + totalMark);
        System.out.println("Grade: " + grade);

        System.out.println("\nPress Enter to return Main Menu...");
```

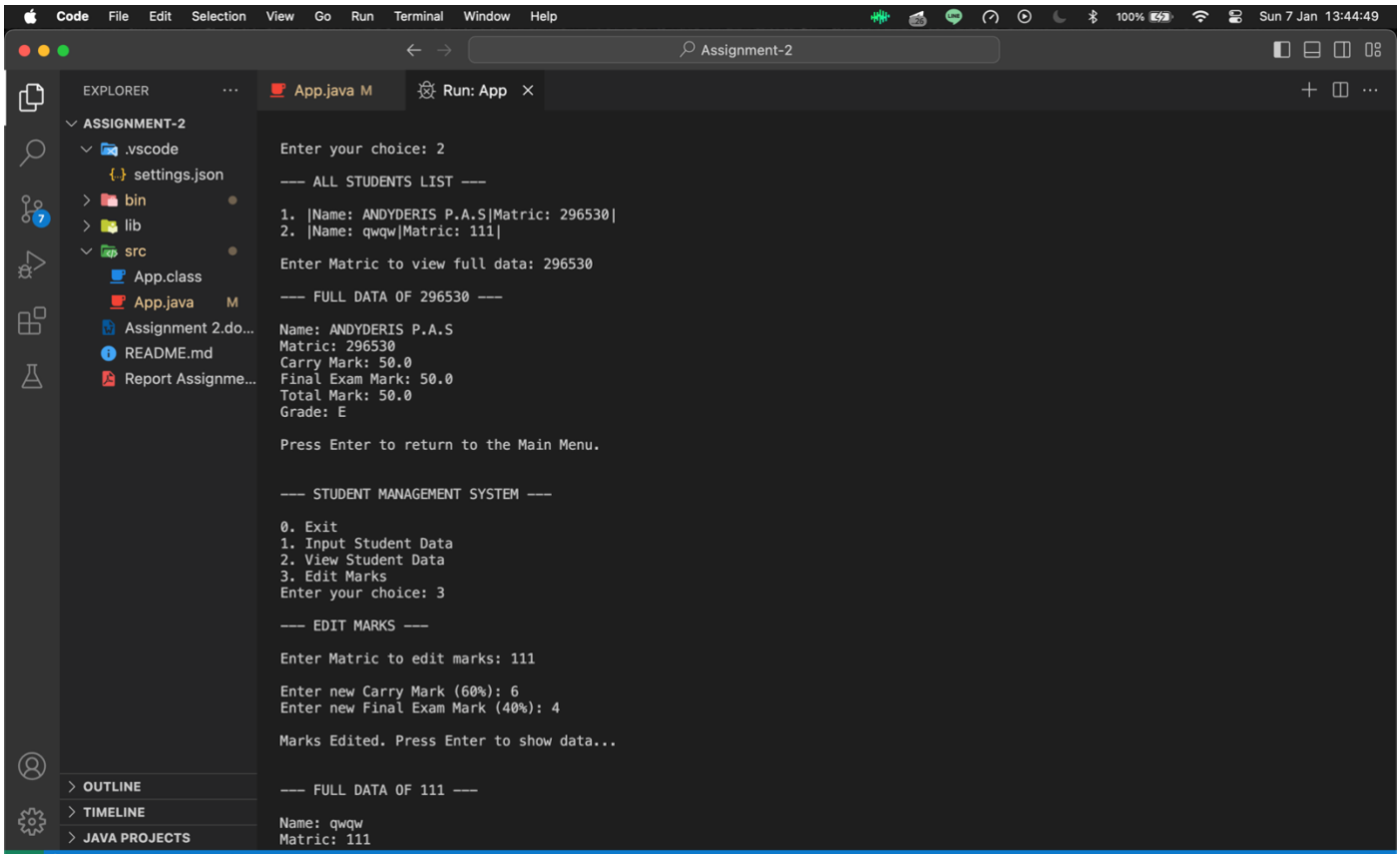
```
            scanner.nextLine(); // Wait for the user to press Enter

            count++;
        } else {
            System.out.println("Array is full. Cannot add more students.");
        }
    }

    // Method to view student data
    private static void viewStudentData() {
        System.out.print("\nEnter Matric to view full data: ");
        int matricToView = scanner.nextInt();
        int index = findStudentIndex(matricToView, matrics, count);

        if (index != -1) {
            viewFullData(names[index], matrics[index], carryMarks[index], finalExamMarks[index]);
        } else {
            System.out.println("\nSTUDENT NOT FOUND!!!");
            viewStudentData();
        }

        System.out.print("\nPress Enter to return to the Main Menu.\n");
        scanner.nextLine(); // Consume the newline character
        scanner.nextLine(); // Consume the newline character
    }

    // Method to edit marks
    private static void editMarks() {

        System.out.print("Enter Matric to edit marks: ");
        int matricToEdit = scanner.nextInt();
        int index = findStudentIndex(matricToEdit, matrics, count);

        if (index != -1) {
            System.out.print("\nEnter new Carry Mark (60%): ");
            carryMarks[index] = scanner.nextDouble();
            System.out.print("Enter new Final Exam Mark (40%): ");
            finalExamMarks[index] = scanner.nextDouble();
            System.out.println("\nMarks Edited. Press Enter to show data...");
            scanner.nextLine();
            scanner.nextLine();
            viewFullData(names[index], matrics[index], carryMarks[index], finalExamMarks[index]);
            System.out.println("\nPress Enter to return Main Menu...");
            scanner.nextLine();
```

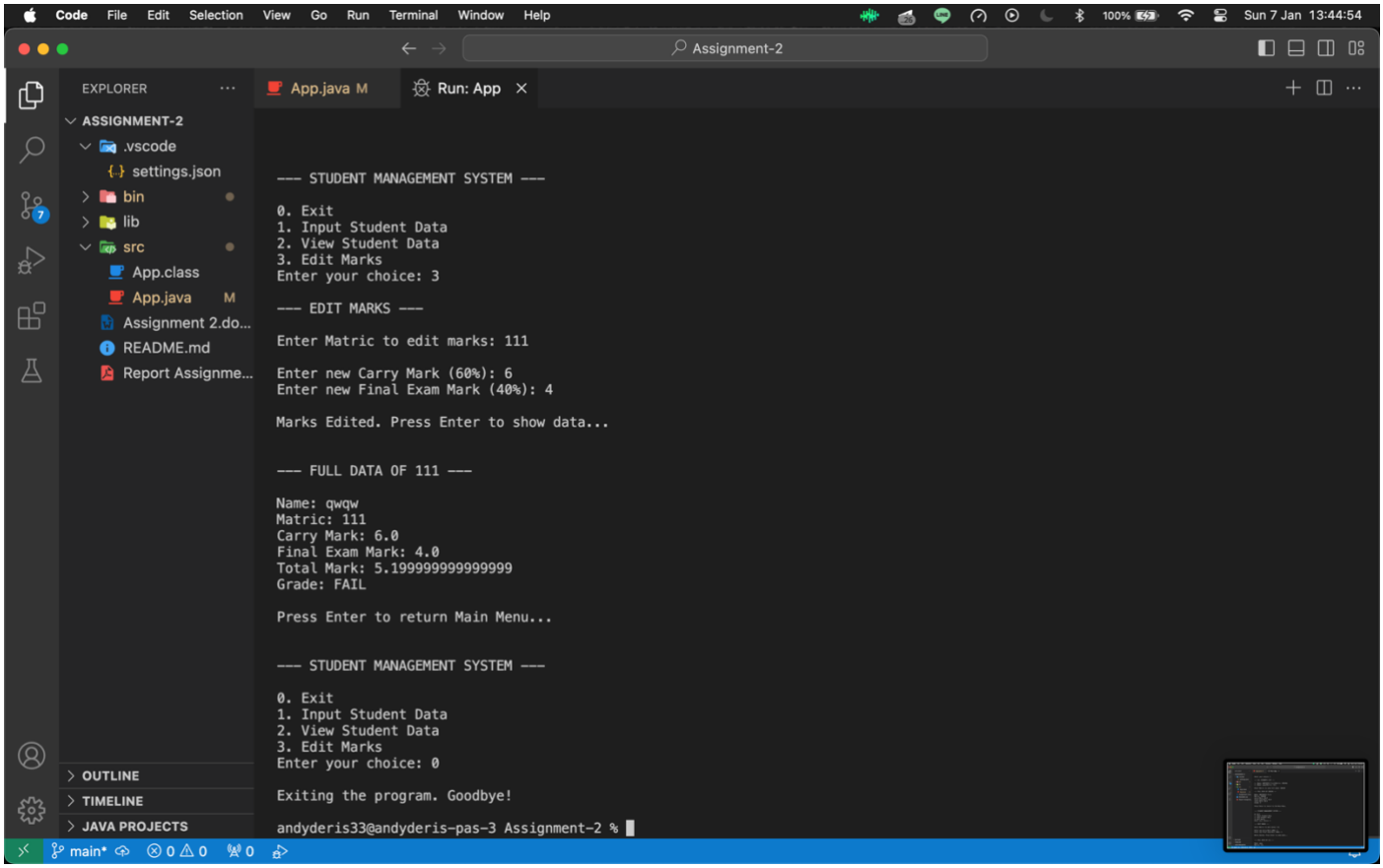
```
        } else {
            System.out.println("\nStudent not found!!! Try to input listed Student...\n");
            editMarks();
        }
    }

    // Method to exit the program
    private static void exitProgram() {
        System.out.println("\nExiting the program. Goodbye!\n");
    }

    // Method to view all names and matrics
    private static void viewAllNamesAndMatrics(String[] names, int[] matrics, int count) {
        System.out.println("\n--- ALL STUDENTS LIST ---\n");
        for (int i = 0; i < count; i++) {
            System.out.println((i + 1) + ". |Name: " + names[i] + "|Matric: " + matrics[i] + "|");
        }
    }

    // Method to view full student data with grade
    private static void viewFullData(String name, int matric, double carryMark, double finalExamMark) {
        double totalMark = calculateTotalMark(carryMark, finalExamMark);
        String grade = calculateGrade(totalMark);

        System.out.println("\n--- FULL DATA OF " + matric + " ---\n");
        System.out.println("Name: " + name);
        System.out.println("Matric: " + matric);
        System.out.println("Carry Mark: " + carryMark);
        System.out.println("Final Exam Mark: " + finalExamMark);
        System.out.println("Total Mark: " + totalMark);
        System.out.println("Grade: " + grade);
    }

    // Method to calculate total mark
    private static double calculateTotalMark(double carryMark, double finalExamMark) {
        return 0.6 * carryMark + 0.4 * finalExamMark;
    }

   // Method to calculate grade based on total mark
  private static String calculateGrade(double totalMark) {
    if (totalMark > 100) {
        return "S+++";
    } else if (totalMark >= 95) {
        return "A+";
```

```
    } else if (totalMark >= 90) {
        return "A";
    } else if (totalMark >= 85) {
        return "B+";
    } else if (totalMark >= 80) {
        return "B";
    } else if (totalMark >= 75) {
        return "C+";
    } else if (totalMark >= 70) {
        return "C";
    } else if (totalMark >= 65) {
        return "D+";
    } else if (totalMark >= 60) {
        return "D";
    } else if (totalMark >= 55) {
        return "E+";
    } else if (totalMark >= 50) {
        return "E";
    } else {
        return "FAIL";
    }
}


    // Method to find the index of a student based on matric number
    private static int findStudentIndex(int matric, int[] matrics, int count) {
        for (int i = 0; i < count; i++) {
            if (matrics[i] == matric) {
                return i;
            }
        }
        return -1;
    }
}
```

2.OUTPUT


Code File Edit Selection View Go Run Terminal Window Help
Sun 7 Jan 13:44:40
Assignment-2
EXPLORER
App.java M
Run: App
ASSIGNMENT-2
.vscode
settings.json
bin
lib
src
App.class
App.java M
Assignment 2.do...
README.md
Report Assignme...
andyderis33@andyderis-pas-3 Assignment-2 % cd /Users/andyderis33/Downloads/PROGRAMMING-1/Assignment-2 ; /usr/bin/env /Library/Java/JavaVirtualMachines/jdk-21.jdk/Contents/Home/bin/java --enable-preview -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/andyderis33/Downloads/PROGRAMMING-1/Assignment-2/bin App
--- STUDENT MANAGEMENT SYSTEM ---
0. Exit
1. Input Student Data
2. View Student Data
3. Edit Marks
Enter your choice: 1
--- INPUT STUDENT DATA ---
Enter Name: qwqw
Enter Matric: 111
Enter Carry Mark (60%): 66
Enter Final Exam Mark (40%): 44
DATA INPUTED. Press Enter to show...
--- STUDENT DATA ---
Name: qwqw
Matric: 111
Carry Mark: 66.0
Final Exam Mark: 44.0
Total Mark: 57.2
Grade: E+
Press Enter to return Main Menu...
--- STUDENT MANAGEMENT SYSTEM ---
0. Exit
1. Input Student Data
2. View Student Data
3. Edit Marks
Enter your choice: 2
--- ALL STUDENTS LIST ---
OUTLINE
TIMELINE
JAVA PROJECTS
main*


Code File Edit Selection View Go Run Terminal Window Help
Sun 7 Jan 13:44:49
Assignment-2
EXPLORER
App.java M
Run: App
ASSIGNMENT-2
.vscode
settings.json
bin
lib
src
App.class
App.java M
Assignment 2.do...
README.md
Report Assignme...
Enter your choice: 2
--- ALL STUDENTS LIST ---
1. |Name: ANDYDERIS P.A.S|Matric: 296530|
2. |Name: qwqw|Matric: 111|
Enter Matric to view full data: 296530
--- FULL DATA OF 296530 ---
Name: ANDYDERIS P.A.S
Matric: 296530
Carry Mark: 50.0
Final Exam Mark: 50.0
Total Mark: 50.0
Grade: E
Press Enter to return to the Main Menu.
--- STUDENT MANAGEMENT SYSTEM ---
0. Exit
1. Input Student Data
2. View Student Data
3. Edit Marks
Enter your choice: 3
--- EDIT MARKS ---
Enter Matric to edit marks: 111
Enter new Carry Mark (60%): 6
Enter new Final Exam Mark (40%): 4
Marks Edited. Press Enter to show data...
--- FULL DATA OF 111 ---
Name: qwqw
Matric: 111
OUTLINE
TIMELINE
JAVA PROJECTS


Code File Edit Selection View Go Run Terminal Window Help
Sun 7 Jan 13:44:54
Assignment-2
EXPLORER
ASSIGNMENT-2
.vscode
settings.json
bin
lib
src
App.class
App.java M
Assignment 2.do...
README.md
Report Assignme...
App.java M
Run: App
--- STUDENT MANAGEMENT SYSTEM ---
0. Exit
1. Input Student Data
2. View Student Data
3. Edit Marks
Enter your choice: 3
--- EDIT MARKS ---
Enter Matric to edit marks: 111
Enter new Carry Mark (60%): 6
Enter new Final Exam Mark (40%): 4
Marks Edited. Press Enter to show data...
--- FULL DATA OF 111 ---
Name: qwqw
Matric: 111
Carry Mark: 6.0
Final Exam Mark: 4.0
Total Mark: 5.199999999999999
Grade: FAIL
Press Enter to return Main Menu...
--- STUDENT MANAGEMENT SYSTEM ---
0. Exit
1. Input Student Data
2. View Student Data
3. Edit Marks
Enter your choice: 0
Exiting the program. Goodbye!
andyderis33@andyderis-pas-3 Assignment-2 %
OUTLINE
TIMELINE
JAVA PROJECTS
main*
0 0
0