

1. Mini project report (Object oriented programming Principle).

On

Student Management System

SUBJECT: JAVA

CLASS: SY IT

Division: A

Batch: A1

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PREFACE

This project “**Student Information Management System**” provides us a simple interface for maintenance of student information. It can be used by educational institutes or colleges to maintain the records of students easily. Achieving this objective is difficult using a manual system as the information is scattered, can be redundant and collecting relevant information may be very time consuming. All these problems are solved using this project.

Throughout the project the focus has been on presenting information in an easy and intelligible manner. The project is very useful for those who want to know about Student Information Management Systems and want to develop software's/websites based on the same concept.

ABOUT THE PROJECT:

Student Information Management System can be used by education institutes to maintain the records of students easily. Achieving this objective is difficult using a manual system as the information is scattered, can be redundant and collecting relevant information may be very time consuming. All these problems are solved using this project.

Features:

1. Adding profile
2. Enrolling course
3. Online course payment system
4. Pay later system
5. Bill generation

Code:

```
import java.math.RoundingMode;
import java.util.LinkedList;
import java.util.List;
import java.util.Random;
import java.util.Scanner;
import java.math.BigDecimal;

public class Student {
    private String firstName;
```

```

private String lastName;
private String id;
private List<String> courses;
private BigDecimal tuition;
private Scanner keyboard = new Scanner(System.in);
private Student(String fName, String lastName) {
    this.firstName = fName;
    this.lastName = lastName;
}

private Student() {

}

//Getters and Setters
private BigDecimal getTuition() { return tuition; }

private void setTuition(BigDecimal money) {
    this.tuition = money;
}

private String getName() { return firstName + " " + lastName; }

private void setFirstName(String firstName) { this.firstName = firstName; }

private void setLastName(String lastName) { this.lastName = lastName; }

private String getId() { return id; }

private void setId(String id) { this.id = id; }
//this Constructor

private List<String> getCourses() { return courses; }

private void setCourses(List<String> courses) { this.courses = courses; }

/**
 * Creates a id using a number from 1 - 4 given by the user and a random string
of length 4.
 */
private void makeID()
{
    String grade;
    boolean checked = false;

    while (!checked)
    {
        System.out.println("Enter your school year 1. UG, 2. PG, 3.Sciencetist
and 4. Ph D/Other ");
        grade = keyboard.nextLine();
        if (grade.length() == 1 && Integer.parseInt(grade) > 0 &&
Integer.parseInt(grade) < 5)
        {
            setId(grade.concat(randomString()));

```

```

        checked = true;
    } else {
        System.out.println("The input you enter is incorrect please try
again");
    }
}

}

/**
 * Returns a randomly generated 4 character string that will combined with a
number entered by the user to make the student id.
 *
 * @return The four character random string
 */
private String randomString()
{
    String AB = "0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz";
    Random random = new Random();
    int great = AB.length();
    int temp;
    String codeword = "";
    for (int i = 0; i < 4; i++)
    {
        temp = (int) (random.nextFloat() * great);
        codeword = codeword.concat(Character.toString(AB.charAt(temp)));
    }
    return codeword;
}

/**
 * A payment system that allows the user to make multiple payments on their
tuition
 */
private void payForCourses()
{
    String answer;
    BigDecimal payment;
    BigDecimal moneyLeftOver;

    while (getTuition().compareTo(BigDecimal.ZERO) > 0)
    {
        System.out.println("Your current balance is $" + getTuition());
        System.out.println("Do you want pay off you balance right now");

        answer = keyboard.nextLine();

        if (answer.toLowerCase().equals("yes"))
        {
            System.out.println("How much would you like to pay right now");

            if (keyboard.hasNextBigDecimal())
            {
                payment = keyboard.nextBigDecimal();
                payment = payment.setScale(2, RoundingMode.HALF_UP);
            }
        }
    }
}

```

```

        keyboard.nextLine();
        if ((payment.compareTo(BigDecimal.ZERO) > 0) &&
payment.compareTo(getTuition()) <= 0)
        {
            moneyLeftOver = getTuition().subtract(payment);
            setTuition(moneyLeftOver);
        } else if (payment.compareTo(getTuition()) > 0) {
            System.out.println("The value you have given is greater than
your tuition");
        } else if (payment.compareTo(BigDecimal.ZERO) < 0) {
            System.out.println("You gave an negative number as a payment
value. Please enter a positive value next time");
        }

        } else {
            keyboard.nextLine();
            System.out.println("You entered the wrong input so please input a
number next time.");
        }

        } else if (answer.toLowerCase().equals("no")) {
            break;
        } else {
            System.out.println("You gave the wrong input either enter yes or
no");
        }
    }
}

/**
 * Gives the student the class they entered the corresponding number for a class
 *
 */
private void chooseCourses(List<String> classes, int courseNumber)
{
    switch (courseNumber)
    {
        case 1:
            if (checkDups(classes, "Python 101"))
                classes.add("Python 101");
            break;
        case 2:
            if (checkDups(classes, "Data Science 101"))
                classes.add("Data Science 101");
            break;
        case 3:
            if (checkDups(classes, "Maths 101"))
                classes.add("Maths 101");
            break;
        case 4:
            if (checkDups(classes, "CCNA 101"))
                classes.add("CCNA 101");
            break;
        case 5:
            if (checkDups(classes, "Computer Science 101"))

```

```

        classes.add("Computer Science 101");
        break;
    default:
        System.out.println("You gave the wrong input");
        break;
    }
}

/**
 * Allows the user to add classes keeping track of classes they already added and
 * setting the new tuition the user has.
 */
private void addCourses()
{
    List<String> classes = new LinkedList<>();
    setCourses(classes);

    String answer;
    int nextCourse;
    BigDecimal size;
    BigDecimal cost;

    System.out.println("Do you want to add any courses? yes or no");
    answer = keyboard.nextLine();
    while (!answer.toLowerCase().equals("no"))
    {
        if (answer.toLowerCase().equals("yes"))
        {
            System.out.println("Which classes would you like to add now? Please
choose from the following selection. " +
                "Choose the number for the courses");
            System.out.println("1. Python 101");
            System.out.println("2. Data Science 101");
            System.out.println("3. Maths 101");
            System.out.println("4. CCNA 101");
            System.out.println("5. Computer Science 101");

            if (keyboard.hasNextInt())
            {
                nextCourse = keyboard.nextInt();
                keyboard.nextLine();
                chooseCourses(classes, nextCourse);

            } else {
                System.out.println("You put in the wrong input: Enter a number 1
- 5 for each class");
                keyboard.nextLine();
            }

        } else {
            System.out.println("You put in the wrong input: Enter either yes or
no next time");
        }

        System.out.println("Do you want to add any more courses?");
    }
}

```



```

        answer = keyboard.nextLine();
    }
    size = new BigDecimal(classes.size());
    cost = new BigDecimal(600);

    cost = cost.multiply(size);
    setTuition(cost);
}

/**
 * Make sure every class in a given list is unique.
 */
private boolean checkDups(List<String> list, String word)
{
    for (String temp : list)
    {
        if (word.equals(temp))
        {
            System.out.println("You are already enrolled in that course");
            return false;
        }
    }
    return true;
}

/**
 * Prints out each student's name, id, courses, and the current balance for
 * tuition
 *
 * All the students enrolled and in the list
 */
private void displayInfo(Student[] studentList)
{
    for (Student student : studentList)
    {
        System.out.println("Student Name: " + getName());
        System.out.println("Student ID: " + student.getId());

        if (student.getCourses().size() > 0) {
            System.out.println("Student's Current Courses:" +
student.getCourses());
        } else {
            System.out.println("Student's Current Courses: The student isn't
enrolled in any courses");
        }
        System.out.println("Student's Current Balance: $" +
student.getTuition());
        System.out.println("-----");
    }
}

public static void main(String[] args) {

```

```

try {
    int size;
    Scanner keyboard = new Scanner(System.in);
    System.out.println("Please enter the number of students you wish to add
to the system");
    size = keyboard.nextInt();
    keyboard.nextLine();

    Student[] students = new Student[size];
    Student student;
    String firstName = "";
    String lastName = "";

    for (int i = 0; i < size; i++)
    {
        student = new Student(firstName, lastName);
        students[i] = student;

        System.out.println("Please enter your first name for Student ");
        firstName = keyboard.nextLine();
        student.setFirstName(firstName);

        System.out.println("Please enter your last name");
        lastName = keyboard.nextLine();
        student.setLastName(lastName);

        student.makeID();
        student.addCourses();
        student.payForCourses();

        if (i == size - 1)
            student.displayInfo(students);
    }
} catch (NegativeArraySizeException e) {
    System.out.println("You can't use a negative number for size");
}
}
}

```

Output:

Please enter the number of students you wish to add to the system

3

Please enter your first name for Student

shreedhar

Please enter your last name

bhutada

Enter your school year 1. UG, 2. PG, 3.Sciencetist and 4. Ph D/Other

1

Do you want to add any courses? yes or no

n

You put in the wrong input: Enter either yes or no next time

Do you want to add any more courses?

no

Please enter your first name for Student

chaitanya

Please enter your last name

bambal

Enter your school year 1. UG, 2. PG, 3.Sciencetist and 4. Ph D/Other

1

Do you want to add any courses? yes or no

yes

Which classes would you like to add now? Please choose from the following selection.

Choose the number for the courses

1. Python 101

2. Data Science 101

3. Maths 101

4. CCNA 101

5. Computer Science 101

5

Do you want to add any more courses?

no

Your current balance is \$600

Do you want pay off you balance right now

yes

How much would you like to pay right now

600

Please enter your first name for Student

Daman

Please enter your last name

shinde

Enter your school year 1. UG, 2. PG, 3.Sciencetist and 4. Ph D/Other

1

Do you want to add any courses? yes or no

yes

Which classes would you like to add now? Please choose from the following selection.

Choose the number for the courses

1. Python 101

2. Data Science 101

3. Maths 101

4. CCNA 101

5. Computer Science 101

1

Do you want to add any more courses?

yes

Which classes would you like to add now? Please choose from the following selection.
Choose the number for the courses

1. Python 101
2. Data Science 101
3. Maths 101
4. CCNA 101
5. Computer Science 101

2

Do you want to add any more courses?

yes

Which classes would you like to add now? Please choose from the following selection.
Choose the number for the courses

1. Python 101
2. Data Science 101
3. Maths 101
4. CCNA 101
5. Computer Science 101

5

Do you want to add any more courses?

no

Your current balance is \$1800

Do you want pay off you balance right now

yes

How much would you like to pay right now

1700

Your current balance is \$100.00

Do you want pay off you balance right now

No

Student Name: shreedhar bhutada

Student ID: 1GFqU

Student's Current Courses: The student isn't enrolled in any courses

Student's Current Balance: \$0

Student Name: Chaitanya bambal

Student ID: 1NlR1

Student's Current Courses:[Computer Science 101]

Student's Current Balance: \$0.00

Student Name: Daman shinde

Student ID: 1IeQC

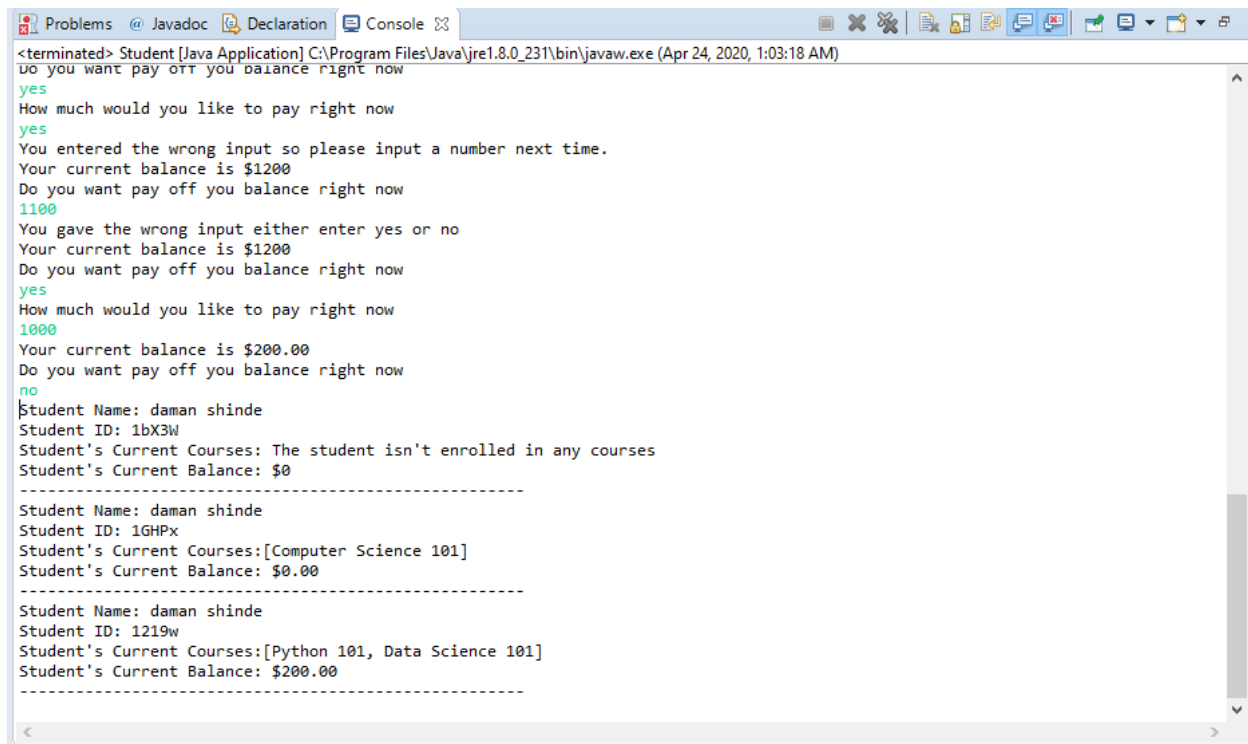
Student's Current Courses:[Python 101, Data Science 101, Computer Science 101]

Student's Current Balance: \$100.00

OUTPUT SCREEN:

```
Problems @ Javadoc Declaration Console
<terminated> Student [Java Application] C:\Program Files\Java\jre1.8.0_231\bin\javaw.exe (Apr 24, 2020, 1:03:18 AM)
Please enter the number of students you wish to add to the system
3
Please enter your first name for Student
shreedhar
Please enter your last name
bhutada
Enter your school year 1. UG, 2. PG, 3.Sciencetist and 4. Ph D/Other
1
Do you want to add any courses? yes or no
n
You put in the wrong input: Enter either yes or no next time
Do you want to add any more courses?
no
Please enter your first name for Student
chaitanya
Please enter your last name
bambal
Enter your school year 1. UG, 2. PG, 3.Sciencetist and 4. Ph D/Other
1
Do you want to add any courses? yes or no
yes
Which classes would you like to add now? Please choose from the following selection. Choose the number for the courses
1. Python 101
2. Data Science 101
3. Maths 101
4. CCNA 101
5. Computer Science 101
5
Do you want to add any more courses?
no
Your current balance is $600
Do you want pay off you balance right now
yes
<
```

```
Problems @ Javadoc Declaration Console
<terminated> Student [Java Application] C:\Program Files\Java\jre1.8.0_231\bin\javaw.exe (Apr 24, 2020, 1:03:18 AM)
no
Please enter your first name for Student
chaitanya
Please enter your last name
bambal
Enter your school year 1. UG, 2. PG, 3.Sciencetist and 4. Ph D/Other
1
Do you want to add any courses? yes or no
yes
Which classes would you like to add now? Please choose from the following selection. Choose the number for the courses
1. Python 101
2. Data Science 101
3. Maths 101
4. CCNA 101
5. Computer Science 101
5
Do you want to add any more courses?
no
Your current balance is $600
Do you want pay off you balance right now
yes
How much would you like to pay right now
600
Please enter your first name for Student
daman
Please enter your last name
shinde
Enter your school year 1. UG, 2. PG, 3.Sciencetist and 4. Ph D/Other
1
Do you want to add any courses? yes or no
n
You put in the wrong input: Enter either yes or no next time
Do you want to add any more courses?
<
```



```
<terminated> Student [Java Application] C:\Program Files\Java\jre1.8.0_231\bin\javaw.exe (Apr 24, 2020, 1:03:18 AM)
do you want pay off your balance right now
yes
How much would you like to pay right now
yes
You entered the wrong input so please input a number next time.
Your current balance is $1200
Do you want pay off your balance right now
1100
You gave the wrong input either enter yes or no
Your current balance is $1200
Do you want pay off your balance right now
yes
How much would you like to pay right now
1000
Your current balance is $200.00
Do you want pay off your balance right now
no
Student Name: daman shinde
Student ID: 1bX3W
Student's Current Courses: The student isn't enrolled in any courses
Student's Current Balance: $0
-----
Student Name: daman shinde
Student ID: 1GHPx
Student's Current Courses:[Computer Science 101]
Student's Current Balance: $0.00
-----
Student Name: daman shinde
Student ID: 1219w
Student's Current Courses:[Python 101, Data Science 101]
Student's Current Balance: $200.00
-----
```

Conclusion:

From this project we have learned about the basic concepts of OOP in java like Data abstraction, implement and implemented it practically In this project.

Bibliography:

www.wikipedia.com

www.w3school.com

www.greeksforgreeks.com