**NAME : MANGESH A. GHADWAJE**

**ROLL NO:24**

**BATCH : B2**

**COURSE: OOPs PRACTICAL**

**Assginment No. 10**

**Problem Statment :** Implement Java program to implement a base class consisting of the data members such as name of the student, roll number and subject. The derived class consists of the data members subject code, internal assessment and university examination marks. The program should have the facilities. i) Build a master table ii) List a table iii) Insert a new entry iv) Delete old entry v) Edit an entry vi) Search for a record. Use virtual functions.

**CODE:**

import java.util.\*;

// Base class

class Student {

String name;

int rollNumber;

String subject;

// Constructor

public Student(String name, int rollNumber, String subject) {

this.name = name;

this.rollNumber = rollNumber;

this.subject = subject;

}

// Virtual function to display details

public void displayDetails() {

System.out.println("Name: " + name);

System.out.println("Roll Number: " + rollNumber);

System.out.println("Subject: " + subject);

}

}

// Derived class

class Marks extends Student {

String subjectCode;

int internalAssessment;

int universityExamMarks;

// Constructor

public Marks(String name, int rollNumber, String subject, String subjectCode, int internalAssessment, int universityExamMarks) {

super(name, rollNumber, subject);

this.subjectCode = subjectCode;

this.internalAssessment = internalAssessment;

this.universityExamMarks = universityExamMarks;

}

// Override displayDetails method to include marks

@Override

public void displayDetails() {

super.displayDetails();

System.out.println("Subject Code: " + subjectCode);

System.out.println("Internal Assessment Marks: " + internalAssessment);

System.out.println("University Examination Marks: " + universityExamMarks);

}

}

// Main class

public class StudentMarksSystem {

static ArrayList<Marks> masterTable = new ArrayList<Marks>();

static Scanner scanner = new Scanner(System.in);

// Function to build master table

static void buildMasterTable() {

masterTable.add(new Marks("John", 101, "Maths", "MTH101", 80, 75));

masterTable.add(new Marks("Alice", 102, "Physics", "PHY101", 85, 78));

masterTable.add(new Marks("Bob", 103, "Chemistry", "CHE101", 78, 80));

}

// Function to list table

static void listTable() {

System.out.println("Master Table:");

for (Marks marks : masterTable) {

marks.displayDetails();

System.out.println("--------------------");

}

}

// Function to insert a new entry

static void insertNewEntry() {

System.out.println("Enter Name:");

String name = scanner.nextLine();

System.out.println("Enter Roll Number:");

int rollNumber = scanner.nextInt();

scanner.nextLine(); // Consume newline character

System.out.println("Enter Subject:");

String subject = scanner.nextLine();

System.out.println("Enter Subject Code:");

String subjectCode = scanner.nextLine();

System.out.println("Enter Internal Assessment Marks:");

int internalAssessment = scanner.nextInt();

System.out.println("Enter University Examination Marks:");

int universityExamMarks = scanner.nextInt();

scanner.nextLine(); // Consume newline character

masterTable.add(new Marks(name, rollNumber, subject, subjectCode, internalAssessment, universityExamMarks));

System.out.println("New entry added successfully!");

}

// Function to delete an old entry

static void deleteOldEntry() {

System.out.println("Enter Roll Number of the student to delete:");

int rollNumber = scanner.nextInt();

scanner.nextLine(); // Consume newline character

for (int i = 0; i < masterTable.size(); i++) {

if (masterTable.get(i).rollNumber == rollNumber) {

masterTable.remove(i);

System.out.println("Entry deleted successfully!");

return;

}

}

System.out.println("Entry not found with given Roll Number.");

}

// Function to edit an entry

static void editEntry() {

System.out.println("Enter Roll Number of the student to edit:");

int rollNumber = scanner.nextInt();

scanner.nextLine(); // Consume newline character

for (Marks marks : masterTable) {

if (marks.rollNumber == rollNumber) {

System.out.println("Enter new Name:");

marks.name = scanner.nextLine();

System.out.println("Enter new Subject:");

marks.subject = scanner.nextLine();

System.out.println("Enter new Subject Code:");

marks.subjectCode = scanner.nextLine();

System.out.println("Enter new Internal Assessment Marks:");

marks.internalAssessment = scanner.nextInt();

System.out.println("Enter new University Examination Marks:");

marks.universityExamMarks = scanner.nextInt();

scanner.nextLine(); // Consume newline character

System.out.println("Entry edited successfully!");

return;

}

}

System.out.println("Entry not found with given Roll Number.");

}

// Function to search for a record

static void searchRecord() {

System.out.println("Enter Roll Number of the student to search:");

int rollNumber = scanner.nextInt();

scanner.nextLine(); // Consume newline character

for (Marks marks : masterTable) {

if (marks.rollNumber == rollNumber) {

marks.displayDetails();

return;

}

}

System.out.println("Entry not found with given Roll Number.");

}

// Main method

public static void main(String[] args) {

buildMasterTable();

while (true) {

System.out.println("\nMenu:");

System.out.println("1. List Table");

System.out.println("2. Insert New Entry");

System.out.println("3. Delete Old Entry");

System.out.println("4. Edit an Entry");

System.out.println("5. Search for a Record");

System.out.println("6. Exit");

System.out.println("Enter your choice:");

int choice = scanner.nextInt();

scanner.nextLine(); // Consume newline character

switch (choice) {

case 1:

listTable();

break;

case 2:

insertNewEntry();

break;

case 3:

deleteOldEntry();

break;

case 4:

editEntry();

break;

case 5:

searchRecord();

break;

case 6:

System.out.println("Exiting program...");

System.exit(0);

break;

default:

System.out.println("Invalid choice! Please try again.");

}

}

}

}

**OUTPUT:**

Menu:

1. List Table

2. Insert New Entry

3. Delete Old Entry

4. Edit an Entry

5. Search for a Record

6. Exit

Enter your choice: 1

Master Table:

Name: John

Roll Number: 101

Subject: Maths

Subject Code: MTH101

Internal Assessment Marks: 80

University Examination Marks: 75

--------------------

Name: Alice

Roll Number: 102

Subject: Physics

Subject Code: PHY101

Internal Assessment Marks: 85

University Examination Marks: 78

--------------------

Name: Bob

Roll Number: 103

Subject: Chemistry

Subject Code: CHE101

Internal Assessment Marks: 78

University Examination Marks: 80

1. List Table

2. Insert New Entry

3. Delete Old Entry

4. Edit an Entry

5. Search for a Record

6. Exit

Enter your choice: 2

Enter Name:

Eva

Enter Roll Number:

104

Enter Subject:

Biology

Enter Subject Code:

BIO101

Enter Internal Assessment Marks:

82

Enter University Examination Marks:

79

New entry added successfully!

1. List Table

2. Insert New Entry

3. Delete Old Entry

4. Edit an Entry

5. Search for a Record

6. Exit

Enter your choice: 1

Master Table:

Name: John

Roll Number: 101

Subject: Maths

Subject Code: MTH101

Internal Assessment Marks: 80

University Examination Marks: 75

--------------------

Name: Alice

Roll Number: 102

Subject: Physics

Subject Code: PHY101

Internal Assessment Marks: 85

University Examination Marks: 78

--------------------

Name: Bob

Roll Number: 103

Subject: Chemistry

Subject Code: CHE101

Internal Assessment Marks: 78

University Examination Marks: 80

--------------------

Name: Eva

Roll Number: 104

Subject: Biology

Subject Code: BIO101

Internal Assessment Marks: 82

University Examination Marks: 79

--------------------

1. List Table

2. Insert New Entry

3. Delete Old Entry

4. Edit an Entry

5. Search for a Record

6. Exit

Enter your choice: 3

Enter Roll Number of the student to delete:

103

Entry deleted successfully!

1. List Table

2. Insert New Entry

3. Delete Old Entry

4. Edit an Entry

5. Search for a Record

6. Exit

Enter your choice: 1

Master Table:

Name: John

Roll Number: 101

Subject: Maths

Subject Code: MTH101

Internal Assessment Marks: 80

University Examination Marks: 75

--------------------

Name: Alice

Roll Number: 102

Subject: Physics

Subject Code: PHY101

Internal Assessment Marks: 85

University Examination Marks: 78

--------------------

Name: Eva

Roll Number: 104

Subject: Biology

Subject Code: BIO101

Internal Assessment Marks: 82

University Examination Marks: 79

1. List Table

2. Insert New Entry

3. Delete Old Entry

4. Edit an Entry

5. Search for a Record

6. Exit

Enter your choice: 4

Enter Roll Number of the student to edit:

104

Enter new Name:

Evangeline

Enter new Subject:

Computer Science

Enter new Subject Code:

CSC101

Enter new Internal Assessment Marks:

88

Enter new University Examination Marks:

85

Entry edited successfully!

1. List Table

2. Insert New Entry

3. Delete Old Entry

4. Edit an Entry

5. Search for a Record

6. Exit

Enter your choice: 1

Master Table:

Name: John

Roll Number: 101

Subject: Maths

Subject Code: MTH101

Internal Assessment Marks: 80

University Examination Marks: 75

--------------------

Name: Alice

Roll Number: 102

Subject: Physics

Subject Code: PHY101

Internal Assessment Marks: 85

University Examination Marks: 78

--------------------

Name: Evangeline

Roll Number: 104

Subject: Computer Science

Subject Code: CSC101

Internal Assessment Marks: 88

University Examination Marks: 85

1. List Table

2. Insert New Entry

3. Delete Old Entry

4. Edit an Entry

5. Search for a Record

6. Exit

Enter your choice: 5

Enter Roll Number of the student to search:

102

Name: Alice

Roll Number: 102

Subject: Physics

Subject Code: PHY101

Internal Assessment Marks: 85

University Examination Marks: 78

1. List Table

2. Insert New Entry

3. Delete Old Entry

4. Edit an Entry

5. Search for a Record

6. Exit

Enter your choice: 6

Exiting program...