```java
public class Course {
    private String courseID,grade;
    private int unit;

    public Course() {

    }

    public Course(String id, int u, String g) {
        this.courseID =id;
        this.unit =u;
        this.grade =g;
    }

    public String getGrade() {
        return grade;
    }

    public int getUnit() {
        return unit;
    }

    public String toString() {
        return courseID+"      "+unit+"           "+grade+"      ";
    }
}

```

```java
import java.util.ArrayList;

public class Student {
    private String name , major , StudentID;
    private ArrayList<Course> course;

    public Student(String n , String id , String m){
        this.name = name;
        this.StudentID = id;
        this.major = m;
    }

    public String toString() {
        return "ID: "+this.StudentID+" Name: "+this.name+" Major: "+this.major;
    }

    public void enroll(ArrayList<Course> course) {
        this.course = course;
    }
}
```

```java
import java.util.ArrayList;


public class GradePrediction {

    public static void main(String[] args) {
        Scanner sn = new Scanner(System.in);
        String[] c = {"SWE62-202","SWE62-205","SWE62-211","SWE62-212","SWE62-213","SWE62-231"};
        int[] u = {2,3,4,3,3,2};
        int i, n;
        System.out.println("Welcome to SWE Grade Prediction");
        System.out.println("Course list in 1/64");
        for(i= 0; i< c.length; i++)
            System.out.println((i+1)+".   "+c[i]+"   "+u[i]);
        System.out.print("Please enter number of course [1-6]: ");
        n = sn.nextInt();
        int[] nc = new int[n];
        String[] ng = new String[n];
        System.out.print("Please select "+n+" course: ");
        for(i =0; i< nc.length; i++)
            nc[i] = sn.nextInt();
        System.out.print("Please enter grade of "+n+" courses: ");
        for(i =0; i< ng.length; i++)
            ng[i] = sn.next();
        ArrayList<Course> mix = new ArrayList<Course>();
        for(i =0; i< nc.length; i++)
            mix.add(new Course(c[nc[i]-1],u[nc[i]-1],ng[i]));
        System.out.println("ID: 1112 Name: AIYA Major: SWE enrolls "+n+" courses in 1/64");
        System.out.println(" No.     ID          Unit     Grade");
        for(i= 0; i< mix.size(); i++)
            System.out.println(" "+(i+1)+"     "+mix.get(i).toString());
        System.out.printf("GPA : %.2f",calGPA(mix));
    }


    public static double calGPA(ArrayList<Course> o) {
        double gpa=0.0 ,sumG= 0.0, sumU= 0.0, unit, num;
        for(int i= 0;i< o.size();i++) {
            if (o.get(i).getGrade().equals("A"))
                num = 4;
            else if (o.get(i).getGrade().equals("B+"))
                num = 3.5;
            else if (o.get(i).getGrade().equals("B"))
                num = 3;
```

```
    public static double calGPA(ArrayList<Course> o) {
        double gpa=0.0 ,sumG= 0.0, sumU= 0.0, unit, num;
        for(int i= 0;i< o.size();i++) {
            if (o.get(i).getGrade().equals("A"))
                num = 4;
            else if (o.get(i).getGrade().equals("B+"))
                num = 3.5;
            else if (o.get(i).getGrade().equals("B"))
                num = 3;
            else if (o.get(i).getGrade().equals("C+"))
                num = 2.5;
            else if (o.get(i).getGrade().equals("C"))
                num = 2;
            else if (o.get(i).getGrade().equals("D+"))
                num = 1.5;
            else if (o.get(i).getGrade().equals("D"))
                num = 1;
            else if (o.get(i).getGrade().equals("F"))
                num = 0;
            else
                continue;
            unit =o.get(i).getUnit();
            sumG += num*unit;
            sumU += unit;
        }
        gpa = sumG/sumU;
        return gpa;


    }
}
```

Console

<terminated> GradePrediction [Java Application] C:\Users\Lenovo\Desktop\eclipse\plugins\org.e

```
Welcome to SWE Grade Prediction
Course list in 1/64
1.    SWE62-202    2
2.    SWE62-205    3
3.    SWE62-211    4
4.    SWE62-212    3
5.    SWE62-213    3
6.    SWE62-231    2
Please enter number of course [1-6]: 3
Please select 3 course: 1 2 5
Please enter grade of 3 courses: A C+ D
ID: 1112 Name: AIYA Major: SWE enrolls 3 courses in 1/64
 No.      ID              Unit      Grade
 1      SWE62-202         2           A
 2      SWE62-205         3           C+
 3      SWE62-213         3           D
GPA : 2.31
```

```java
import java.util.ArrayList;

public class Project {
    private ArrayList<Member> members;
    private int numMember, maxMember;
    private String projectName ="OS Team";

    public Project(int n , int maxNum) {
        this.numMember = n;
        this.maxMember = maxNum;
    }

    public void addMember(ArrayList<Member> member) {
        this.members = member;
    }

    public void addMember(Member member) {
        this.members.add(member);
    }

    public void deleteMember(Member member) {
        this.members.remove(member);
        this.numMember -= 1;
    }

    public void displayProject() {
        int a= 0, b= 0, c= 0, d= 0, total= 0, i;
        double age = 0;
        System.out.println("Number of members: "+this.numMember);
        for(i= 0;i< this.numMember; i++) {
            System.out.println((i+1)+". "+members.get(i).toString());
            if(members.get(i).getPosition().equals("chief"))
                a++;
            else if (members.get(i).getPosition().equals("deputy cheif"))
                b++;
            else if (members.get(i).getPosition().equals("secretary"))
                c++;
            else
                d++;
            total += members.get(i).getAge();
            age = total / this.numMember;
        }
        System.out.println("Project "+this.projectName+" have "+a+" cheif, "+b+" deputy cheif, "+c+" secretary and "+d+" member");
        System.out.print("Total age: "+total);
        System.out.println(" Average age: "+age);
    }
```

```java
public class Member {
    private String name, position;
    private int age;

    public Member(String n, String p, int a) {
        this.name = n;
        this.position = p;
        this.age = a;
    }

    public String getPosition() {
        return position;
    }

    public String getName() {
        return name;
    }

    public int getAge() {
        return age;
    }

    public void changePosition(String newPos) {
        this.position = newPos;
    }

    public String toString() {
        return name+"   "+position+" age : "+age;
    }
}
```

```java
import java.util.ArrayList;

public class ProjectOS {

    public static void main(String[] args) {
        Scanner sn = new Scanner(System.in);
        System.out.println("welcome to Project OS Team");
        String[] name = {"Attack","Beagle","Carrot","Death","Fresh"};
        String[] career = {"chief","deputy cheif","secretary","member","member"};
        int[] a = {30,29,25,22,23};
        int i, n;
        System.out.print("Number of members: ");
        n = sn.nextInt();

        ArrayList<Member> mix = new ArrayList<Member>();
        for (i= 0; i< n; i++)
            mix.add(new Member(name[i],career[i],a[i]));
        Project project = new Project(n,5);
        project.addMember(mix);
        project.displayProject();
        System.out.println();
        char ans , ch;
        String change;
        do {
            System.out.print("Please select action [C|D|A] : ");
            ans = sn.next().charAt(0);
            if (ans == 'C') {
                System.out.print("Enter name: ");
                change = sn.next();
                System.out.print("New position: ");
                String posNew = sn.next();
                for (i= 0; i< n; i++) {
                    if (mix.get(i).getName().equals(change))
                        mix.get(i).changePosition(posNew);
                }
                project.displayProject();
            }
            else if(ans == 'D'){
                System.out.print("Enter name: ");
                change = sn.next();
                n -= 1;
                for (i= 0; i< n; i++) {
                    if (mix.get(i).getName().equals(change))
                        project.deleteMember(mix.get(i));
                }
                project.displayProject();
```

```
40              else if(ans == 'D'){
41                  System.out.print("Enter name: ");
42                  change = sn.next();
43                  n -= 1;
44                  for (i= 0; i< n; i++) {
45                      if (mix.get(i).getName().equals(change))
46                          project.deleteMember(mix.get(i));
47                  }
48                  project.displayProject();
49              }
50              else {
51                  Member newbie = new Member("Eddie","deputy chief",29);
52                  project.addMember(newbie);
53                  project.displayProject();
54              }
55              System.out.print("Do you want to continue [y/n]: ");
56              ch = sn.next().charAt(0);
57          }while(ch == 'y');
58          System.out.println("Bye Bye !!!!!");
59      }
60
61  }
```

```
welcome to Project OS Team
Number of members: 5
Number of members: 5
1. Attack   chief age : 30
2. Beagle   deputy cheif age : 29
3. Carrot   secretary age : 25
4. Death   member age : 22
5. Fresh   member age : 23
Project OS Team have 1 cheif, 1 deputy cheif, 1 secretary and 2 member
Total age: 129 Average age: 25.0

Please select action [C|D|A] : D
Enter name: Death
Number of members: 4
1. Attack   chief age : 30
2. Beagle   deputy cheif age : 29
3. Carrot   secretary age : 25
4. Fresh   member age : 23
Project OS Team have 1 cheif, 1 deputy cheif, 1 secretary and 1 member
Total age: 107 Average age: 26.0
Do you want to continue [y/n]: y
Please select action [C|D|A] : C
Enter name: Fresh
New position: secretary
Number of members: 4
1. Attack   chief age : 30
2. Beagle   deputy cheif age : 29
3. Carrot   secretary age : 25
4. Fresh   secretary age : 23
Project OS Team have 1 cheif, 1 deputy cheif, 2 secretary and 0 member
Total age: 107 Average age: 26.0
Do you want to continue [y/n]: n
Bye Bye !!!!!
```

```java
public class Student2 {
    private String name;
    private String studentID;
    private String major;
    private Card c;

    public Student2(String n,String id , String m) {
        this.name = n;
        this.studentID = id;
        this.major = m;
    }

    public Card getCard() {
        return this.c;
    }

    public void setCard(Card c) {
        this.c = c;
    }

    public String toString() {
        return "ID : "+studentID+" Name : "+name+" Major : "+major;
    }
}

```

```java
public class Card {
    private String cardNo;
    private char type;
    private String pin;

    public Card() {

    }

    public Card(String no, char type, String pin) {
        this.cardNo = no;
        this.type = type;
        this.pin = pin;
    }

    public char getType() {
        return type;
    }

    public Boolean isValid(String no, String pin) {
        if(this.cardNo.equals(no) && this.pin.equals(pin))
            return true;
        else
            return false;
    }

    public void setPin(String pin) {
        this.pin = pin;
    }

    public String toString() {
        String ans;
        if (this.type == 'D')
            ans ="Debit card";
        else if(this.type == 'A')
            ans = "ATM card";
        else
            ans = "Credit Card";
        return "Card No. "+cardNo+" is "+ans+" ans pin is "+pin;
    }

}
```

```java
public class BankAccount {
    private String accountNo;
    private int balance;
    private String name;
    private Card c;

    public BankAccount(String no, int balance , String name) {
        this.accountNo = no;
        this.balance = balance;
        this.name = name;
    }

    public void deposit (int amount) {
        this.balance += amount;
    }

    public boolean withdrawn(int amount) {
        if (this.balance >= amount) {
            this.balance -= amount;
            return true;
        }
        else
            return false;
    }

    public Card getCard() {
        return this.c;
    }

    public void setCard(Card c) {
        this.c = c;
    }

    public String toString() {
        return "Account No. "+this.accountNo+" Name : "+this.name+" and Balance : "+this.balance;
    }
}
```

```java
import java.util.Scanner;
public class ATMOperation {
    public static void main(String[] args) {
        Scanner sn = new Scanner(System.in);
        String c, p;
        Student2 student = new Student2("6010000","AAA","SWE");
        Card card = new  Card("5648", 'D' ,"1234");
        BankAccount bank = new BankAccount("828 4561 256",5000,"AAA");
        System.out.println("Student, Card and Bank info");
        System.out.println(student.toString());
        System.out.println(card.toString());
        System.out.println(bank.toString());
        System.out.println();
        System.out.println("Welcome to ATM Program");
        System.out.println("Please enter card no and pin: ");
        c = sn.next();
        p = sn.next();
        char ans , ch;
        int amount = 0;
        if (card.isValid(c, p)) {
            System.out.print(bank.toString());
            do {
                System.out.print("Please select menu [D/W]: ");
                ans = sn.next().charAt(0);
                if(ans == 'W') {
                    System.out.print("Amount: ");
                    amount = sn.nextInt();
                    if(!(bank.withdrawn(amount)))
                        System.out.println("Cannot withdrawn");
                }
                else {
                    System.out.print("Amount: ");
                    amount = sn.nextInt();
                    bank.deposit(amount);
                }
            System.out.println(bank.toString());
            System.out.print("Do you want to continue [y/n]: ");
            ch = sn.next().charAt(0);
            }while(ch == 'y');
            System.out.println("Bye Bye");
        }
        else {
            System.out.println("Invalid card");
            System.out.println("Bye Bye !!!!!");
        }
    }
```

```
Student, Card and Bank info
ID : AAA Name : 6010000 Major : SWE
Card No. 5648 is Debit card ans pin is 1234
Account No. 828 4561 256 Name : AAA and Balance : 5000

Welcome to ATM Program
Please enter card no and pin:
5648 1234
Account No. 828 4561 256 Name : AAA and Balance : 5000Please select menu [D/W]: W
Amount: 7000
Cannot withdrawn
Account No. 828 4561 256 Name : AAA and Balance : 5000
Do you want to continue [y/n]: y
Please select menu [D/W]: D
Amount: 2000
Account No. 828 4561 256 Name : AAA and Balance : 7000
Do you want to continue [y/n]: y
Please select menu [D/W]: W
Amount: 6000
Account No. 828 4561 256 Name : AAA and Balance : 1000
Do you want to continue [y/n]: n
Bye Bye
```