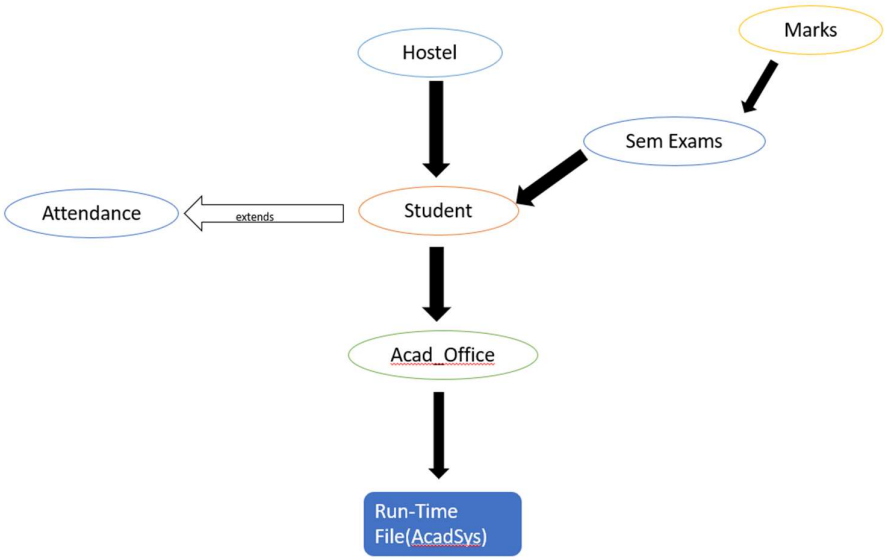
Academic Management System

Problem Statement

In this Project, I created a Management system for Academics that can make admissions to the college using the details provided. It will also allot the hostel by the student's roll number (I was taken the scenario of this college). I have designed a menu card for which they can make the admissions and display the details of the required student by the roll number. It will accept the marks from the user which undergoes the calculations to set the grade for that subject. It will also display the grade according to their marks in their subjects. After all, If we want to show the student details, we can get the Basic information of the student, hostel allotment details and Subject wise marks (End-sem, Mid-sem, Misc marks) with the grade.

Schema of the Project



Description of the Classes

1. Marks: This class contains the attributes of mid-sem marks, end-sem marks and miscellaneous marks. It contains a constructor that takes the input of three parameters and sets the values to the respective attributes according to it.

```java
package Assignment2;

2 usages
public class Marks{
    2 usages
    String subject;
    2 usages
    int mid_sem;
    2 usages
    int end_sem;
    2 usages
    int misc;
    7 usages
    double percent;
    5 usages
    Character grade;

    1 usage
    Marks(String sub,int a, int b,int c){
        this.subject=sub;
        this.mid_sem=a;
        this.end_sem=b;
        this.misc=c;
        this.percent=a+b+c;
    }
}
```

2. Sem Exams: This class contains the attribute: an Array-list of the objects of the marks class. It contains the methods 1. setmarks()- which sets the marks to the object of marks(Constructs the object of Marks and adds to the Array-List above with passing the required marks as parameters, display()- Displays the full Academic details of the respective student including the grade and a constructor which initialises the Array-list of the Marks objects.

```java
public class SemExams {
    18 usages
    ArrayList<Marks> subjects;
    1 usage
    SemExams(int n){
        subjects= new ArrayList<>();
    }
    1 usage
    void display(){
        for (int i=0;i<subjects.size();i++){
            System.out.println(subjects.get(i).subject + "Marks");
            System.out.println("MidSem Marks: " + subjects.get(i).mid_sem);
            System.out.println("Endsem Marks: " + subjects.get(i).end_sem);
            System.out.println("Miscellaneous Marks: " + subjects.get(i).misc);
            System.out.println("Percentage of this Sem: " + subjects.get(i).percent + "%");
            if(subjects.get(i).percent > 90){
                subjects.get(i).grade='A';
            }
            else if(subjects.get(i).percent <= 90 && subjects.get(i).percent>=50){
                subjects.get(i).grade='B';
            }
            else if(subjects.get(i).percent<50 && subjects.get(i).percent >= 33){
                subjects.get(i).grade='C';
            }
            else{
                subjects.get(i).grade='F';
            }
            System.out.println("The grade for this sem is: " + subjects.get(i).grade);
            System.out.println();
        }
    }
    1 usage
    void setMarks(String sub,int mid,int end,int misc) { subjects.add(new Marks(sub,mid,end,misc)); }
```

3. Hostel: This class contains the class's constructor, which takes the mess fee and the hostel name to set these details to the student object. I've made a setHostel() method in the Student class which set the details of the hostel by creating an object which intend calls the constructor of the hostel class and sets the details by it.

```java
package Assignment2;

3 usages
public class Hostel {
    2 usages
    int mess_fee;
    2 usages
    String hostelname;

    2 usages
    Hostel(int mess,String hname){
        this.mess_fee=mess;
        this.hostelname=hname;
    }
    1 usage
    void display(){
        System.out.println("Hostel Name is: " + this.hostelname);
        System.out.println("Mess Fee Balance: " + this.mess_fee);
    }
}
```

4. Attendance: This abstract class can set attendance based on the random number generated between 1-100.

```java
package Assignment2;

1 usage  1 inheritor
public abstract class Attendance {
    2 usages
    int attendance;

    1 usage  1 implementation
    abstract int getAttendance();
}
```

5. Student: This class represents the student details taken during admission. It creates the student object in the college. Its attributes are designed to set the student's hostel, marks, and basic biodata. This class contains the methods setdetails ():, which sets the basic details of the student to the object of that class, and sethostel ():, Which will allocate the hostel for the student according to the roll number provided by the student object's roll number attribute, display(): It will display all the details of the student including the hostel allotment details & the academic details with the inclusion of his bio-data which he provided to the college.

```java
public class Student extends Attendance {
    2 usages
    String name;
    4 usages
    String roll;
    4 usages
    Character gender;
    2 usages
    String email;
    2 usages
    String Phone_number;
    2 usages
    String degree;
    3 usages
    Hostel hostel;
    3 usages
    SemExams sem;

    1 usage
    Student(){
        hostel=new Hostel( mess: -1, hname: "Not Allowed");
        sem=new SemExams( n: 6);
    }
    1 usage
    void setDetails(String n, String r,String e,String d,String p,Character g){
        this.name=n;
        this.roll=r;
        this.email=e;
        this.degree=d;
        this.Phone_number=p;
        this.gender=Character.toUpperCase(g);
        this.attendance=getAttendance();
    }
```

```
1 usage
int getAttendance(){
    Random r=new Random();
    return r.nextInt( bound: 101);
}

6 usages
void setHostel(int mess,String hname){
    hostel = new Hostel(mess,hname);
}
3 usages
void display(){
    System.out.println("Name: " + this.name);
    System.out.println("Roll Number: " + this.roll);
    System.out.println("Email: " + this.email);
    System.out.println("Phone Number: " +
    System.out.println("Degree: " + this.d
    System.out.println("Attendance Percent
    System.out.println();
    System.out.println("Hostel Details");
    hostel.display();
    System.out.println();
    System.out.println("Academic Details");
    sem.display();
    System.out.println();
}
```


6. Acad-Office: It contains the Arraylist of student objects, which stores the data of numerous students like the office system in the college. It contains methods like sethostel(): Which allocate the hostel by its roll number, and set details ():, which sets the student's details to

the temp object and adds the object to the array list.

```
usages
ublic class Acad_Office {
    3 usages
    ArrayList <Student> studentList=new ArrayList<>();

    1 usage
    void nstudents(int n){
        while(n-- > 0){
            hostelAllot(studentAdmission());
        }

    }

    1 usage
    void hostelAllot(Student k){
        switch (k.roll.substring(0, 2)) {
            case "22" -> {
                if (k.gender == 'F') {
                    k.setHostel( mess: 12000,  hname: "GSMC-Extension");
                    System.out.println("Hostel: GSMC-Extension is Allotted for you");
                } else {
                    k.setHostel( mess: 12000,  hname: "Aryabhatta");
                    System.out.println("Hostel: Aryabhatta is Allotted for you");
                }
            }
            case "21" -> {
                if (k.gender == 'F') {
                    k.setHostel( mess: 15000,  hname: "Gamcha");
                    System.out.println("Hostel: Gamcha is Allotted for you");
                } else {
                    k.setHostel( mess: 15000,  hname: "DG-2");
                    System.out.println("Hostel: DG-2 is Allotted for you");
```

```
            if (k.gender == 'F') {
                k.setHostel( mess: 15000,  hname: "Gamcha");
                System.out.println("Hostel: Gamcha is Allotted for you");
            } else {
                k.setHostel( mess: 15000,  hname: "Rajputana");
                System.out.println("Hostel: Rajputana is Allotted for you");
            }
        }
        default -> System.out.println("No Hostel being allotted.");
    }
}

2 usages
Student searchStudent(String roll)
{
    for(Student s:studentList)
    {
        if(s.roll.equals(roll))
            return s;
    }
    return null;
}
```

```java
Student studentAdmission(){
    Scanner sc=new Scanner(System.in);
    System.out.print("Enter Name: ");
    String name=sc.nextLine();
    System.out.print("Enter email: ");
    String mail=sc.nextLine();
    System.out.print("Enter dept: ");
    String dept=sc.nextLine();
    System.out.print("Enter phone number: ");
    String phone=sc.nextLine();
    System.out.print("Enter roll number: ");
    String roll=sc.nextLine();
    System.out.print("Enter Gender: ");
    Character gend=sc.next().charAt(0);
    Student s=new Student();
    s.setDetails(name,roll,mail,dept,phone,gend);
    studentList.add(s);
    System.out.println("Admission is Successfull.");
    return s;
}
```

Output

```
Endsem Marks: 45
Miscellaneous Marks: 15
Percentage of this Sem: 85.0%
The grade for this sem is: B


Enter 0 to exit
Enter 1 for adding given number of students,
 2 for displaying list of all students
 3 for displaying a student of given roll number
 4 for adding marks of a student of given rollnumber
4
Enter the roll number of the student
22075134
Enter the subject name, mid-sem marks, end-sem marks and miscellaneous marks if any, else 0
MA-102
29
49
15
Marks added!
Name: Kislay
Roll Number: 22075134
Email: kuv@gmail.com
Phone Number: 9384575214
Degree: Electrical
Attendance Percentage in this Sem: 69

Hostel Details
Hostel Name is: Aryabhatta
Mess Fee Balance: 12000
```

```
Enter 0 to exit
Enter 1 for adding given number of students,
 2 for displaying list of all students
 3 for displaying a student of given roll number
 4 for adding marks of a student of given rollnumber
1
Enter number of students to be admitted
2
Enter Name: Surya Lakshman Kolli
Enter email: ksuryalakshman5@gmail.com
Enter dept: Mnc
Enter phone number: 9381322876
Enter roll number: 22124025
Enter Gender: M
Admission is Successfull.
Hostel: Aryabhatta is Allotted for you
Enter Name: Kislay
Enter email: kuv@gmail.com
Enter dept: Electrical
Enter phone number: 9384575214
Enter roll number: 22075134
Enter Gender: M
Admission is Successfull.
Hostel: Aryabhatta is Allotted for you
```

```
Academic Details

Enter 0 to exit
Enter 1 for adding given number of students,
 2 for displaying list of all students
 3 for displaying a student of given roll number
 4 for adding marks of a student of given rollnumber
4
Enter the roll number of the student
22075134
Enter the subject name, mid-sem marks, end-sem marks and miscellaneous marks if any, else 0
MA-104
25
45
15
Marks added!
Name: Kislay
Roll Number: 22075134
Email: kuv@gmail.com
Phone Number: 9384575214
Degree: Electrical
Attendance Percentage in this Sem: 69

Hostel Details
Hostel Name is: Aryabhatta
Mess Fee Balance: 12000

Academic Details
MA-104Marks
MidSem Marks: 25
```

```
Enter 0 to exit
Enter 1 for adding given number of students,
 2 for displaying list of all students
 3 for displaying a student of given roll number
 4 for adding marks of a student of given rollnumber
2
Name: Surya Lakshman Kolli
Roll Number: 22124025
Email: ksuryalakshman5@gmail.com
Phone Number: 9381322876
Degree: Mnc
Attendance Percentage in this Sem: 80

Hostel Details
Hostel Name is: Aryabhatta
Mess Fee Balance: 12000

Academic Details

Name: Kislay
Roll Number: 22075134
Email: kuv@gmail.com
Phone Number: 9384575214
Degree: Electrical
Attendance Percentage in this Sem: 69

Hostel Details
Hostel Name is: Aryabhatta
Mess Fee Balance: 12000
```

```
Academic Details
MA-104Marks
MidSem Marks: 25
Endsem Marks: 45
Miscellaneous Marks: 15
Percentage of this Sem: 85.0%
The grade for this sem is: B

MA-102Marks
MidSem Marks: 29
Endsem Marks: 49
Miscellaneous Marks: 15
Percentage of this Sem: 93.0%
The grade for this sem is: A


Enter 0 to exit
Enter 1 for adding given number of students,
 2 for displaying list of all students
 3 for displaying a student of given roll number
 4 for adding marks of a student of given rollnumber

0
Shutting down...

Process finished with exit code 0
```