PARENT CLASS

PERSON CLASS(ABSTRACT CLASS)

ACCOMODATION

HOLIDAYS

SALARY

RESULT

CHILD CLASS CHILD CLASS

PERSON (ABSTRACT CLASS)

public abstract class Person {  
 String name;  
 int age;  
 String gender;  
 String DOB;  
 int id;  
 String Category;  
 String Address;  
 String Blood\_Group;  
  
 //CONSTRUCTOR FOR INITIALIZING THE VARIABLES IN PERSON CLASS//  
 public Person(String name,int age,String gender,String DOB,int id,String Category,String Address,String Blood\_Group){  
 this.name=name;  
 this.age=age;  
 this.gender=gender;  
 this.DOB=DOB;  
 this.id=id;  
 this.Category=Category;  
 this.Address=Address;  
 this.Blood\_Group=Blood\_Group;  
 }  
}

THE PERSON CLASS IS TAKEN ABSTRACT,

Here we have taken name,age,gender,DOB,id,Category,Address,Blood\_Group as variables that are common to both the child classes STUDENT and PROFESSOR whose values are passed from the runfile.

Constructor person is declared and defined that declares the values for these variables.

STUDENT CLASS(STUEDENT CLASS EXTENDS PERSON CLASS)

import javax.swing.\*;  
  
public class Student extends Person implements Result,Accomodation,holidays{  
 String Date\_of\_registration;  
 int year;  
 String Branch;  
 int JEE\_ADV\_Rank;  
 int Family\_income;  
 double Attendance;  
 int active\_club\_count;  
 double cgpa;  
  
 // STRING SUBJECTS STORES NAME OF ALL SUJECTS  
 static String *subjects* []= {"EO-102","CSO-102","MA-111","MA-104","MA-102"};  
  
 //ARRAY CREDITS CONTAIN THE CREDIT OF THE SUBJECTS STORED ABOVE RESPECTIVELY//  
 static int *credits*[] = {13, 11, 11,6,11};  
  
 //MARKS IS THE NUMBER WHICH YOU ACTUALLY SCORED IN EXAM //  
 public int marks[]=new int[5];  
  
 //SCORE IS THE RELATIVE GRADE YOU GOT FOR YOUR MARKS//  
 public int score[]=new int[5];  
  
 //CONSTRUCTOR FOR INITIALIZING THE VARIABLES OF STUDENT CLASS//  
 public Student(String name,int age,String gender,String DOB,int id,String Category,String Address,String Blood\_Group,String Date\_of\_Registration,int year,String Branch,int JEE\_ADV\_Rank,int Family\_income,double Attendance,int active\_club\_count){  
  
 //CALLING CONSTRUCTOR OF PERSON CLASS//  
 super(name,age,gender,DOB,id,Category,Address,Blood\_Group);  
  
 this.Attendance=Attendance;  
 this.active\_club\_count=active\_club\_count;  
 this.Branch=Branch;  
 this.year=year;  
 this.JEE\_ADV\_Rank=JEE\_ADV\_Rank;  
 this.Family\_income=Family\_income;  
 this.Date\_of\_registration=Date\_of\_Registration;  
 }  
  
 //METHOD FOR DISPLAYING THE INFORMATION OF STUDENTS//  
 public void print(){  
 System.*out*.println("Name:"+name);  
 System.*out*.println("Age:"+age);  
 System.*out*.println("Gender:"+gender);  
 System.*out*.println("DOB:"+DOB);  
 System.*out*.println("ID:"+id);  
 System.*out*.println("Category:"+Category);  
 System.*out*.println("Address:"+Address);  
 System.*out*.println("Blood Group:"+Blood\_Group);  
 System.*out*.println("Date of Registration:"+Date\_of\_registration);  
 System.*out*.println("Year:"+year);  
 System.*out*.println("Branch:"+Branch);  
 System.*out*.println("JEE ADV RANK:"+JEE\_ADV\_Rank);  
 System.*out*.println("Family Income:"+Family\_income);  
 System.*out*.println("Active Club Count:"+active\_club\_count);  
 hostel\_allotment(year);  
 fees(Family\_income);  
 leave\_structure();  
 percentage(Student.*credits*,marks,active\_club\_count);  
 }  
  
 //METHOD FOR CALCULATING THE RESULT OF STUDENTS//  
 public void percentage(int credits[],int marks[],int b){  
 for (int i=0;i<5;i++){  
 if (marks[i]>80) score[i]=10;  
 else if (marks[i]>70) score[i]=9;  
 else if(marks[i]>60) score[i]=8;  
 else if(marks[i]>50) score[i]=7;  
 else score[i]=5;  
 }  
 int sum=0;  
 for (int i=0;i<5;i++){  
 sum=sum+credits[i]\*score[i];  
 }  
 sum=sum+b\**grace\_credits*;  
 cgpa=sum/(52.0);  
 if (Attendance<75)System.*out*.println("Fakka Lag Gya!!");  
 else {  
 if (cgpa<10)System.*out*.println("Congratulations, you have passes with CGPA:"+cgpa);  
 else System.*out*.println("Congratulations, you have passes with CGPA: 10");  
 }  
 }  
  
 //METHOD FOR HOSTEL ALLOTMENT FOR STUDENTS//  
 public void hostel\_allotment(int year){  
 if(year==1) System.*out*.println("ARYABHATTA HOSTEL");  
 else if(year==2) System.*out*.println("DG-2 HOSTEL");  
 else if(year==3) System.*out*.println("RAJAPUTANA HOSTEL");  
 else System.*out*.println("LIMBDI HOSTEL");  
 }  
  
 //METHOD DECLARING THE AMOUNT OF FEES TO BE PAID BY STUDENTS//  
 public void fees(int Family\_income) {  
 int fee = 0;  
 if (Family\_income <= 100000) {  
 fee = 14020;  
 }  
 if (Family\_income > 100000 && Family\_income <= 500000) {  
 fee = 40010;  
 }  
 if (Family\_income > 500000) {  
 fee = 106000;  
 }  
 System.*out*.println("Fees to be paid is :"+ fee);  
 }  
  
 //METHOD DECLARING THE LEAVES ALLOWED TO STUDENTS//  
 public void leave\_structure() {  
 System.*out*.println("leave structure is as follows:");  
 System.*out*.println("All days declared as national holidays are holidays");  
 System.*out*.println("All Saturday and Sunday are holidays");  
 System.*out*.println("Semester and mid-semester leaves will be provided");  
 System.*out*.println("Leaves will be provided on medical emergency");  
 System.*out*.println("Attendance must be above 75%");  
 System.*out*.println("Leaves can be given on indulgement in co-curriculam activities");  
 }  
}

In the student class student’s date of registration, year of college, Branch,JEE Adv Rank, Family Income,Attendance,Active club participation and cgpa are taken as variables.

Student Constructor is made that declares the value of these variables that is passed through the runfile. Super keyword used to pass value of variables to the Parent Class i.e PERSON Class.

The methods in this class are PERCENTAGE, HOSTEL ALLOTMENT, FEE , LEAVE STRUCTURE and PRINT.

* PERCENTAGE calculates the percentage of the Student
* HOSTEL ALLOTMENT allots hostel to the Student depending on their year
* FEE calculates the fee of the student depending upon their family income
* LEAVE STRUCTURE gives minimum attendance required and other leave details.
* Print Method gives the entire details of the Student on the Console.

PROFESSOR CLASS(PROFESSOR CLASS EXTENDS PERSON CLASS)

public class Professor extends Person implements Salary,Accomodation,holidays{  
 String Marital\_Status;  
 int no\_Research\_paper;  
 int Work\_exp;  
 String Qualification;  
 String Post;  
  
 // CONSTRUCTOR FOR INITIALIZING THE VARIABLES OF PROFESSORS CLASS //  
 public Professor(String name,int age,String gender,String DOB,int id,String Category,String Address,String Blood\_Group,String Marital\_Status,int no\_Research\_paper,int Work\_exp,String Qualification,String Post){  
  
 // CALLING CONSTRUCTOR OF PERSON CLASS  
 super(name,age,gender,DOB,id,Category,Address,Blood\_Group);  
  
 this.Marital\_Status=Marital\_Status;  
 this.no\_Research\_paper=no\_Research\_paper;  
 this.Work\_exp=Work\_exp;  
 this.Qualification=Qualification;  
 this.Post=Post;  
 }  
  
 // METHOD DISPLAYING PROFESSORS INFORMATION//  
 public void printf(){  
 System.*out*.println("Name:"+name);  
 System.*out*.println("Age:"+age);  
 System.*out*.println("Gender:"+gender);  
 System.*out*.println("DOB:"+DOB);  
 System.*out*.println("id:"+id);  
 System.*out*.println("Category:"+Category);  
 System.*out*.println("Address:"+Address);  
 System.*out*.println("Blood Group:"+Blood\_Group);  
 System.*out*.println("Marital Status:"+Marital\_Status);  
 System.*out*.println("number of research paper:"+no\_Research\_paper);  
 System.*out*.println("Work Experience:"+Work\_exp);  
 System.*out*.println("Qualification:"+Qualification);  
 System.*out*.println("Post:"+Post);  
 Total\_Salary\_Calculation();  
 hostel\_allotment(Work\_exp);  
 leave\_structure();  
 }  
  
 //METHOD FOR CALCULATING INHAND SALARY OF PROFESSORS//  
 public void Total\_Salary\_Calculation()  
 {  
 int base\_salary=0;  
 if(Post=="Assisstant\_professor")  
 {  
 base\_salary=*Base\_Assisstant\_Professor\_Salary*;  
 }  
 if(Post=="Assossiate\_professor")  
 {  
 base\_salary=*Base\_Associate\_Professor\_Salary*;  
 }  
 if(Post=="Professor")  
 {  
 base\_salary=*Base\_Professor\_Salary*;  
 }  
 if(Post=="Convener")  
 {  
 base\_salary=*Base\_Convener\_Salary*;  
 }  
 if(Post=="HOD")  
 {  
 base\_salary=*Base\_HOD\_Salary*;  
 }  
 if(Post=="Dean")  
 {  
 base\_salary=*Base\_Dean\_Salary*;  
 }  
 int total\_salary=base\_salary+(no\_Research\_paper\**research\_paper\_factor*)+(Work\_exp\**work\_experience\_factor*);  
 System.*out*.println("Salary:"+total\_salary);  
 }  
  
 //METHOD FOR ALLOCATING APARTMENT TO PROFESSORS//  
 public void hostel\_allotment(int work\_exp){  
 if (work\_exp<10) System.*out*.println("THE ACCOMODATION ALLOTED TO YOU IS ON 1ST FLOOR IN PROFESSOR BUILDING");  
 else if(work\_exp<18) System.*out*.println("THE ACCOMODATION ALLOTED TO YOU IS ON 2ND FLOOR IN PROFESSOR BUILDING");  
 else if (work\_exp<25) System.*out*.println("THE ACCOMODATION ALLOTED TO YOU IS ON 3RD FLOOR IN PROFESSOR BUILDING");  
 else System.*out*.println("THE ACCOMODATION ALLOTED TO YOU IS ON 4TH FLOOR IN PROFESSOR BUILDING");  
 }  
  
 // METHOD DECLARING ALLOWED LEAVES TO THE PROFESSORS//  
 public void leave\_structure() {  
 System.*out*.println("leave structure is as follows:");  
 System.*out*.println("All days declared as national holidays are hollidays");  
 System.*out*.println("All Saturday and Sunday are hollidays");  
 System.*out*.println("Semester and mid-semester leave will be provided");  
 System.*out*.println("You can take 13 CL's");  
 System.*out*.println("You can take 5 OL's");  
 System.*out*.println("You can take 2 medical leaves");  
 }

In the Professor Class, the variables are Marital\_Status,no\_Research\_paper,Work\_exp,Qualification and post whose values are declared from the Runfile.

Constructor Professor have been made that declares the value of these variables and also Keyword Super is used to pass the values mentioned in the code to Parent Class Person.

The methods in this class are Printf, Total Salary Calculation, Hostel allotment and Leave Structure.

* Printf outputs entire details of the Student on the Console.
* TOTAL SALARY CALCULATION gives the salary of the professor depending on his post.
* HOSTEL ALLOTMENT method allots the accommodation to the professor depending on his work experience.
* LEAVE STRUCTURE gives the details of the leaves the professor can take.

INTERFACES(RESULT,SALARY,HOSTEL ALLOTMENT,HOLIDAYS)

public interface Result {  
 int *grace\_credits*=10;//GRACE CREDITS THAT GET MULTIPLIED WITH ACTIVE CLUB COUNT//  
 void percentage(int credits[],int marks[],int b);//CALCULATES THE CGPA OF A STUDENT//  
}

IN Result, some grace credits value defined which multiplied by the active club count of student adds to the total CGPA of the student.

public interface Salary {  
 int *Base\_Assisstant\_Professor\_Salary*=50000;  
 int *Base\_Associate\_Professor\_Salary*=60000;  
 int *Base\_Professor\_Salary*=70000;  
 int *Base\_Convener\_Salary*=100000;  
 int *Base\_HOD\_Salary*=130000;  
 int *Base\_Dean\_Salary*=150000;  
 int *work\_experience\_factor*=4000;  
 int *research\_paper\_factor*=5000;  
 public void Total\_Salary\_Calculation();//CALCULATES TOTAL SALARY OF A PROFESSOR//  
}

Salary interface declares the method for total Salary Calculation of the Professor depending on his Post.

public interface Accomodation {  
 void hostel\_allotment(int year);//ALLOTS HOSTEL TO STUDENT AND ACCOMODATION TO PROFESSOR//  
}

Hostel Allotment declares method for hostel allotment in the student class/ accommodation for the professor.

public interface holidays {  
 public void leave\_structure();//GIVE DETAILS OF NO OF LEAVES A PROFESSOR CAN TAKE AND MINIMUM ATTENDANCE REQUIRED BY A STUDENT//  
}

Holidays declare method leave Structure that give details of minimum attendance in the Student while leaves that can be take in Professor Class.

RUNFILE (MAIN.JAVA)

import java.util.\*;  
  
public class Main{  
 public static void main(String[] args) {  
  
 //STORING STUDENT DETAILS//  
 //active\_club\_counts means awards won by students in different co-curricular activities//  
 Student s1 = new Student("Anmol Shukla", 20, "M", "20-11-2002", 22124008, "Gen", "Aryabhatta hostel A-236", "O+", "27-10-2022", 1, "MNC", 2923, 590000, 85.12, 3);  
 Student s2 = new Student("Hardik Sharma", 19, "M", "23-12-2003", 22124018, "Gen", "Aryabhatta hostel B-102", "AB-", "27-10-2022", 2, "MNC", 1649, 800000, 80.13, 4);  
 Student s3 = new Student("Jinesh Jain", 18, "M", "2-1-2004", 22214041, "Gen", "Aryabhatta hostel B-213", "B+", "27-10-2022", 3, "CSE", 604, 695200, 90.76, 1);  
 Student s4 = new Student("Anmol Kumar Singh", 19, "M", "15-11-2003", 22454008, "Gen", "Aryabhatta hostel A-236", "A+", "27-10-2022", 5, "META", 15923, 712000, 76, 0);  
  
 //STORING PROFESSOR DETAILS//  
 Professor p1 = new Professor("Aneesh Kesarwani", 45, "M", "16-4-1977", 72124001, "Gen", "Hyderabad colony S-132", "B+", "Married", 4, 16, "Phd-Mathematics","Professor");  
 Professor p2 = new Professor("Ashish Arora",51 , "M", "1-2-1972", 72114018, "Gen", "Hyderabad colony S-111", "AB-", "Married", 7, 20, "Phd-Electronics","Convener");  
  
 //MARKS OF STUDENT IN DIFFERENT SUBJECTS//  
 s1.marks= new int[]{80, 76, 60, 75, 81};  
 s2.marks=new int[]{85,74,80,80,88};  
 s3.marks=new int[]{84,80,75,77,80};  
 s4.marks=new int[]{75,70,52,60,70};  
  
 //DISPLAYING STUDENTS INFORMATION//  
 s1.print();  
 s2.print();  
 s3.print();  
 s4.print();  
  
 //DISPLAYING PROFESSORS INFORMATION  
 p1.printf();  
 p2.printf();  
 }  
}

OUTPUT ON THE CONSOLE

//STUDENT 1 DETAILS//

Name:Anmol Shukla

Age:20

Gender:M

DOB:20-11-2002

ID:22124008

Category:Gen

Address:Aryabhatta hostel A-236

Blood Group:O+

Date of Registration:27-10-2022

Year:1

Branch:MNC

JEE ADV RANK:2923

Family Income:590000

Active Club Count:3

ARYABHATTA HOSTEL

Fees to be paid is :106000

leave structure is as follows:

All days declared as national holidays are holidays

All Saturday and Sunday are holidays

Semester and mid-semester leaves will be provided

Leaves will be provided on medical emergency

Attendance must be above 75%

Leaves can be given on indulgement in co-curriculam activities

Congratulations, you have passes with CGPA:9.365384615384615

//STUDENT 2 DETAILS//

Name:Hardik Sharma

Age:19

Gender:M

DOB:23-12-2003

ID:22124018

Category:Gen

Address:Aryabhatta hostel B-102

Blood Group:AB-

Date of Registration:27-10-2022

Year:2

Branch:MNC

JEE ADV RANK:1649

Family Income:800000

Active Club Count:4

DG-2 HOSTEL

Fees to be paid is :106000

leave structure is as follows:

All days declared as national holidays are holidays

All Saturday and Sunday are holidays

Semester and mid-semester leaves will be provided

Leaves will be provided on medical emergency

Attendance must be above 75%

Leaves can be given on indulgement in co-curriculam activities

Congratulations, you have passes with CGPA: 10

//STUDENT 3 DETAILS//

Name:Jinesh Jain

Age:18

Gender:M

DOB:2-1-2004

ID:22214041

Category:Gen

Address:Aryabhatta hostel B-213

Blood Group:B+

Date of Registration:27-10-2022

Year:3

Branch:CSE

JEE ADV RANK:604

Family Income:695200

Active Club Count:1

RAJAPUTANA HOSTEL

Fees to be paid is :106000

leave structure is as follows:

All days declared as national holidays are holidays

All Saturday and Sunday are holidays

Semester and mid-semester leaves will be provided

Leaves will be provided on medical emergency

Attendance must be above 75%

Leaves can be given on indulgement in co-curriculam activities

Congratulations, you have passes with CGPA:9.442307692307692

//STUDENT 4 DETAILS//

Name:Anmol Kumar Singh

Age:19

Gender:M

DOB:15-11-2003

ID:22454008

Category:Gen

Address:Aryabhatta hostel A-236

Blood Group:A+

Date of Registration:27-10-2022

Year:5

Branch:META

JEE ADV RANK:15923

Family Income:712000

Active Club Count:0

LIMBDI HOSTEL

Fees to be paid is :106000

leave structure is as follows:

All days declared as national holidays are holidays

All Saturday and Sunday are holidays

Semester and mid-semester leaves will be provided

Leaves will be provided on medical emergency

Attendance must be above 75%

Leaves can be given on indulgement in co-curriculam activities

Congratulations, you have passes with CGPA:7.923076923076923

//PROFESSOR 1 DETAILS//

Name:Aneesh Kesarwani

Age:45

Gender:M

DOB:16-4-1977

id:72124001

Category:Gen

Address:Hyderabad colony S-132

Blood Group:B+

Marital Status:Married

number of research paper:4

Work Experience:16

Qualification:Phd-Mathematics

Post:Professor

Salary:154000

THE ACCOMODATION ALLOTED TO YOU IS ON 2ND FLOOR IN PROFESSOR BUILDING

leave structure is as follows:

All days declared as national holidays are hollidays

All Saturday and Sunday are hollidays

Semester and mid-semester leave will be provided

You can take 13 CL's

You can take 5 OL's

You can take 2 medical leaves

//PROFESSOR 2 DETAILS//

Name:Ashish Arora

Age:51

Gender:M

DOB:1-2-1972

id:72114018

Category:Gen

Address:Hyderabad colony S-111

Blood Group:AB-

Marital Status:Married

number of research paper:7

Work Experience:20

Qualification:Phd-Electronics

Post:Convener

Salary:215000

THE ACCOMODATION ALLOTED TO YOU IS ON 3RD FLOOR IN PROFESSOR BUILDING

leave structure is as follows:

All days declared as national holidays are hollidays

All Saturday and Sunday are hollidays

Semester and mid-semester leave will be provided

You can take 13 CL's

You can take 5 OL's

You can take 2 medical leaves

Process finished with exit code 0

PROJECT SUBMITTED BY :

* HARDIK SHARMA (ROLL NO 22124018)
* ANMOL SHUKLA (ROLL NO 22124008)