**PRACTICAL 2**

**Name:** Smit M Khobragade

**Sec:** A

**Roll no.:** 64

**Aim:** Create an Employee Attendance Management System (EMS).   
A.     Design a Class Time with data members as hours, minutes and seconds. This class provides the functionality to Add and Subtract two time objects. The result will be returned in a new time object.  
B.     Create a class to store Attendance. The attendance will have Time\_IN , Time\_OUT along with date information.   
C.      Create a class Employee with employee name,  id, name, age, designation, salary, Attendance[].    
a. Provide the functionality to count the number of hours worked in a month.   
b. Display the number of working hours of an employee for a given date.  
Write appropriate constructors and display function where required.

**Code & Output:**

Time.java

// package prac2;

public class Time {

  int h,m,s;

  Time(int *hr*,int *ms*,int *sc*){

    h = hr;

    m = ms;

    s = sc;

  }

  Time Add(Time *A*,Time *B*){

    int sec = A.s + B.s;

    int sec1 = sec%60;

    int min = A.m + B.m + (sec/60);

    int mins = min%60;

    int hs = A.h + B.h + (min/60);

    Time n = new Time(hs,mins,sec1);

    return n;

  }

  Time Sub(Time *A*,Time *B*){

    int t1 = A.h\*60\*60 + A.m\*60 + A.s;

    int t2 = B.h\*60\*60 + B.m\*60 + B.s;

    int tot = t1-t2;

    if(tot > 0)

      tot += 0;

    else

      tot \*= (-1);

    int mins = tot/60;

    int hrs = mins/60;

    Time n = new Time(hrs,mins%60,tot%60);

    return n;

  }

  void display(){

    System.out.println("Hours: "+h+" Mins: "+m+" Sec: "+s);

  }

}

Attendence.java

// package prac2;

public class Attendance {

  int dt,mn,yr;

  Time t,t1;

  Attendance(int *date*,int *month*,int *year*,Time *q*,Time *q2*){

    dt = date;

    mn = month;

    yr = year;

    t = q;

    t1 = q2;

  }

  void Display(){

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

    System.out.println("DATE : "+dt+" - "+mn+" - "+yr);

    System.out.print("TIME IN --> ");

    t.display();

    System.out.print("TIME OUT --> ");

    t1.display();

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

  }

  Time hoursworked(){

    Time q3 = t.Sub(t1, t);

    // System.out.println("Hours Worked : "+q3.h);

    return q3;

  }

}

Employee.java

// package prac2;

public class Employee {

  String nm,des;

  int id,age;

  Attendance[] a = new Attendance[3];

  Employee(String *name*,int *id1*,int *age1*,String *Designation*,Attendance[] *a1*){

    nm = name;

    id = id1;

    age = age1;

    des = Designation;

    a = a1;

  }

  void Display1(){

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

    System.out.println("Name : "+nm);

    System.out.println("ID : "+id);

    System.out.println("Age : "+age);

    System.out.println("Designation : "+des);

    for(Attendance a2:a){

      a2.Display();

    }

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

  }

  void workingHours(){

    Time t1= new Time(0,0,0);

    for(Attendance a2:a){

      Time t2 = a2.hoursworked();

      // t2.display();

      t1 = t2.Add(t1, t2);

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

      // t1.display();

    }

    System.out.println("TOTAL HOURS WORKED : "+t1.h);

  }

  void workingHours(int *dt1*,int *dt2*,int *mn1*,int *mn2*){

    Time t1= new Time(0,0,0);

    for(Attendance a2:a){

      if((a2.mn >= mn1)&&(a2.mn <= mn2)){

        if((a2.dt >= dt1 )&&(a2.dt <= dt2)){

          Time t2 = a2.hoursworked();

          t1 = t2.Add(t1, t2);

        }

      }

    }

    System.out.println("TOTAL HOURS WORKED : "+t1.h);

  }

  void workingHours(int *mn1*){

    workingHours(1, 30, mn1, mn1);

  }

}

Main.java

// package prac2;

public class Main {

  public static void main(String[] *args*) {

    Time s1 = new Time(3,59,0);

    s1.display();

    Time s2 = new Time(1,58,1);

    Time s3 = new Time(10,0,1);

    s2.display();

    Time s = s1.Add(s1, s2);

    s.display();

    Time sa = s1.Sub(s1, s2);

    sa.display();

    Attendance[] a = new Attendance[8];

    a[1] = new Attendance(4, 2, 2023, s1,s2);

    a[0] = new Attendance(1, 2, 2023, s1,s2);

    a[2] = new Attendance(6, 2, 2023, s1,s3);

    a[3] = new Attendance(10, 2, 2023, s1,s3);

    a[4] = new Attendance(15, 2, 2023, s2,s3);

    a[5] = new Attendance(20, 2, 2023, s2,s3);

    a[6] = new Attendance(2, 3, 2023, s2,s3);

    a[7] = new Attendance(4, 3, 2023, s2,s3);

    a[0].Display();

    Employee e1 = new Employee("Shreyash", 62, 20, "Student", a);

    e1.Display1();

    e1.workingHours();

// if not parameter passed it gives all hours worked in whole working span

    e1.workingHours(2);

// if only one parameter it takes as a month and gives working hours of month

    e1.workingHours(1, 15, 2, 2);

//4 parameters ==> date/month 1 and date/month2 it gives all working between these two dates

  }

}

Output:



