Safauldeen, Raghad 1001417235

Part 1:

1.a) Please see code in Lab5Part1Spr1.java

1.b) Please see code in Lab5Part1Spr1.java

1.c) We have two dates and want to find the difference between them. The expire date is yyyy1 for year, MM1 for month, dd1 for day, hh1 for hours, and mm1 for minutes.

The second date is the current date, yyyy2 for year, MM2 for month, dd2 for day, hh2 for hours, and mm2 for minutes.

Subtract yyyy1 – yyyy2 = diffOfYears (the difference between the two dates in year.)

To find (the number of days in diffOfYears): Multiply diffOfYears \* 365 (the number of days in each years) = diffOfYearsInDays

Now find how many days from the beginning of the yyyy2 until the exact time in the date2 then subtract it from the diffOfYearsInDays.

First, in a loop we have to find how many months between MM2 and December and add the number of each month and take into consideration the leap years.

The loop will start from MM2 until December

There are conditions to find the number of days for each month and add the number days of each month. Assign the result to totalMonth2Days

Convert hours' unit to days' unit by (hh2 / 24hour) = hh2ToDay, and Convert minutes' unit to days' unit by (mm2/ (60\*24) = mm2ToDay)

Subtract 365 – (totalMonth2Days – dd2 – hh2ToDay – mm2ToDay) = fromyyyy2ToCurrentDate

diffOfYearsInDays - fromyyyy2ToCurrentDate = daysFromCurrentDateToExpYear

Now calculating the time in days after the yyyy1 until the expire date

Make a loop start from first month of the year (January) until MM1which is the expire month

In this loop will increment the number of days in each months. Assign the result in MM1Days

Out of the loop convert hours' unit to days' unit by (hh1 / 24hour) = hh1ToDay, and Convert minutes' unit to days' unit by (mm1/ (60\*24) = mm1ToDay)

Add the MM1Days + dd1 + hh1ToDay + mm1ToDay = daysFromExpYearToExpDate

Finally the difference between the expire date and the current date is:

diffBtwnDates = daysFromCurrentDateToExpYear + daysFromExpYearToExpDate

1.d) Please see code in Lab5Part1Spr1.java

1.e) To correct the date just like Gregorian Calendar we have to do the following steps:

Check the second, if it is more than 59 second then the result will be added to the minutes and the remainder will be seconds.

If second > 59 ; then second = second %59; m = second /59

minute = minute + m

else second < 0 invalid second

Now check for the minutes,

if minute > 59; then minute = minute %59; h = minute /59

hour = hour + h

else minute < 0 invalid minute

Check for the hours

if hour >23 then hour = hour % 23; d = hour /23

day = day + d

else hour < 0 invalid hour

Check for the days

If (month = =1or 3 or 5 or 7 or 8 or 10 or 12) and (day >31) then

day= day % 31; M = day / 31

month = month + M

Else if (month = = 4 or 6 or 9 or 11) and (day > 30) then

day = day % 30; M = day / 30

month = month + M

Else if (month = = 2) and (leap year) and (day > 29)

day = day % 29 ; M = day / 29

month = month + M

Else day < 1 invalid day

Else if (month = = 2) and (not leap year) and (day > 28)

day = day % 28 ; M = day / 28

month = month + M

Else day < 1 invalid day

Now check for months:

If month > 11 then month = month % 11 y = month / 11

year = year + y

else if month < 0 invalid month

check for year

if year < 1 invalid year

1.f) Please see code in Lab5Part1Spr1.java, and "Output1f**"**

1.g) Please see code in Lab5Part1Spr1.java, and "Output1g"

1.h) Please see code in Lab5Part1Spr1.java, and "Output1h"