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**CSE 1310-005**

**Answers for Part 1**

**1.a)** Please see code

**1.b)** Please see code

**1.c)** // Variables

double days;

double expDays;

double currentDays;

int expFullMonthDays = 0;

int currentFullMonthDays = 0;

int expYear = expDate.getYear();

int expMonth = expDate.getMonth() + 1;

int expDay = expDate.getDayOfMonth();

double expHour = expDate.getHourInMil();

double expMinute = expDate.getMinute();

int currentYear = myTime.getYear();

int currentMonth = myTime.getMonth() + 1;

int currentDay = myTime.getDayOfMonth();

double currentHour = myTime.getHourInMil();

double currentMinute = myTime.getMinute();

int expLeapDays = expYear / 4;

int currentLeapDays = currentYear / 4;

double expMinutes = (expHour \* 60) + expMinute;

double currentMinutes = (currentHour \* 60) + currentMinute;

double expAmountOfDay = expMinutes / 1440.0;

double currentAmountOfDay = currentMinutes / 1440.0;

// Find Exp Full Month Days

if(expMonth != 1)

{

switch(expMonth)

{

case 2:

expFullMonthDays = 31;

break;

case 3:

if(expYear % 4 == 0)

expFullMonthDays = 60;

else

expFullMonthDays = 59;

break;

case 4:

if(expYear % 4 == 0)

expFullMonthDays = 91;

else

expFullMonthDays = 90;

break;

case 5:

if(expYear % 4 == 0)

expFullMonthDays = 121;

else

expFullMonthDays = 120;

break;

case 6:

if(expYear % 4 == 0)

expFullMonthDays = 152;

else

expFullMonthDays = 151;

break;

case 7:

if(expYear % 4 == 0)

expFullMonthDays = 182;

else

expFullMonthDays = 181;

break;

case 8:

if(expYear % 4 == 0)

expFullMonthDays = 213;

else

expFullMonthDays = 212;

break;

case 9:

if(expYear % 4 == 0)

expFullMonthDays = 244;

else

expFullMonthDays = 243;

break;

case 10:

if(expYear % 4 == 0)

expFullMonthDays = 274;

else

expFullMonthDays = 273;

break;

case 11:

if(expYear % 4 == 0)

expFullMonthDays = 305;

else

expFullMonthDays = 304;

break;

case 12:

if(expYear % 4 == 0)

expFullMonthDays = 335;

else

expFullMonthDays = 334;

break;

default:

expFullMonthDays = -999999;

}

}

// Find Current Full Month Days

if(currentMonth != 1)

{

switch(currentMonth)

{

case 2:

currentFullMonthDays = 31;

break;

case 3:

if(expYear % 4 == 0)

currentFullMonthDays = 60;

else

currentFullMonthDays = 59;

break;

case 4:

if(expYear % 4 == 0)

currentFullMonthDays = 91;

else

currentFullMonthDays = 90;

break;

case 5:

if(expYear % 4 == 0)

currentFullMonthDays = 121;

else

currentFullMonthDays = 120;

break;

case 6:

if(expYear % 4 == 0)

currentFullMonthDays = 152;

else

currentFullMonthDays = 151;

break;

case 7:

if(expYear % 4 == 0)

currentFullMonthDays = 182;

else

currentFullMonthDays = 181;

break;

case 8:

if(expYear % 4 == 0)

currentFullMonthDays = 213;

else

currentFullMonthDays = 212;

break;

case 9:

if(expYear % 4 == 0)

currentFullMonthDays = 244;

else

currentFullMonthDays = 243;

break;

case 10:

if(expYear % 4 == 0)

currentFullMonthDays = 274;

else

currentFullMonthDays = 273;

break;

case 11:

if(expYear % 4 == 0)

currentFullMonthDays = 305;

else

currentFullMonthDays = 304;

break;

case 12:

if(expYear % 4 == 0)

currentFullMonthDays = 335;

else

currentFullMonthDays = 334;

break;

default:

currentFullMonthDays = -999999;

}

}

// Total Exp Days

expDays = ((expYear \* 365) + expLeapDays) + expFullMonthDays + expDay + expAmountOfDay;

// Total Current Days

currentDays = ((currentYear \* 365) + currentLeapDays) + currentFullMonthDays + currentDay + currentAmountOfDay;

// Days Between

days = expDays - currentDays;

return days;

**1.d)** Please see code

**1.e)** // Variables

boolean notFound = true;

int days = 0;

// Date Resolution Algorithm

if(minute > 59)

{

hour += minute / 60;

minute %= 60;

}

if(minute < 0)

{

if(minute >= -60)

{

hour -= 1;

minute %= -60;

}

else

hour -= minute / -60;

minute %= -60;

}

if(hour > 23)

{

day += hour / 24;

hour %= 24;

}

if(hour < 0)

{

if(hour >= -24)

{

day -= 1;

hour %= -24;

}

else

day -= hour / -24;

hour %= - 24;

}

if(day < 1)

day = 1;

while(notFound)

{

if(month == 2 && year % 4 == 0)

days = 29;

else if(month == 2 && year % 4 != 0)

days = 28;

else if(month == 4 || month == 6 || month == 9 || month == 11)

days = 30;

else

days = 31;

if(day <= days)

notFound = false;

else

{

day -= days;

if(month == 12)

{

month = 1;

year++;

}

else

month++;

}

}

if(month < 0)

{

if(month >= -12)

{

year -= 1;

month %= -12;

}

else

year -= month / -12;

month %= -12;

}

if(month > 12)

{

year += month / 12;

month %= 12;

}

if(year < 1970)

year = 1970;

if(year > 2020)

year = 2020;

JCMTtime validation = new JCMTtime(year, month - 1, day, hour, minute);

return validation;

**1.f)** Please see code

**1.g)** Please see code

**1.h)** Please see code