

Assignment 6: (for Submission) (15% marks)

In this program we will find the day of the week from a date and will also prepare a calendar on a monthly basis.

(Science: day of the week).

July 20, 1973 is a FRIDAY. There is a formula to find day of the week for a particular date. Zeller's congruence is an algorithm developed by Christian Zeller to calculate the day of the week. The formula is as follows:

$$h = \left(q + \left\lfloor \frac{26(m+1)}{10} \right\rfloor + y + \left\lfloor \frac{y}{4} \right\rfloor + 6 * \left\lfloor \frac{y}{100} \right\rfloor + \left\lfloor \frac{y}{400} \right\rfloor \right) \% 7$$

Where,

■ h is the day of the week (0: Saturday, 1: Sunday, 2: Monday, 3: Tuesday, 4: Wednesday, 5: Thursday, 6: Friday).

■ q is the day of the month.

■ m is the month (3: March, 4: April, 12: December). January and February are counted as months 13 and 14 of the previous year.

■ y is the year.

NOTE: In this algorithm January and February are counted as months 13 and 14 of the previous year. E.g. if it is February 2, 2010, the algorithm counts the date as the second day of the fourteenth month of 2009 (02/14/2009 in DD/MM/YYYY format). Consequently, for January and February, the year y should be replaced by $y - 1$.

(1) Write down a function that takes year, month and day of the month as parameters and returns the day of the week. **(10)**

(2) Write down a program that prompts the user to enter a year, month, and day of the month, and using the above function to display the name of the day of the week. Here are some sample runs: **(10)**

Sample Input/Output:

```
Enter year: 2005
Enter month (1-12): 1
Enter day: 21

January 21, 2005 is SUNDAY
```

HINT: January and February are counted as 13 and 14 in the formula. So you need to convert the user input 1 to 13 and 2 to 14 for the month and change the year to the previous year.)

- (3) **(Displaying calendars)** Write a program that prompts the user to enter the year and a month of the year and displays the calendar table for the month of that year on the console. For example, if the user entered the year 2005, and month 1, your program should display the calendar for the January 2005, as follows: **(10)**

Sample Input/Output:

```
Enter Month: (1-12): 1
Enter Year: 2005

Calendar for:

JANUARY 2005

SAT SUN MON TUE WED THU FRI
1    2    3    4    5    6    7
8    9   10   11   12   13   14
15   16   17   18   19   20   21
22   23   24   25   26   27   28
29   30   31
```