King Saud University College of Computer & Information Science CSC111 – Lab Project

Instructions

Write your name as a comment in the beginning of each class.

(6 marks):

As the following UML diagram, create a class called Date that includes three pieces of information as private instance variables: day, month, year as integer data type. Your class should have the following:

- Provide a set and a get method for each instance variable.
- Provide a Constructor with no arguments to set the default date (1/1/2001).
- Provide a method named **increment** that adds one to the day, it should maintain month and year if needed like this example: when the date is 31/12/2011 if incremented the new date must be 1/1/2012.
- Provide a method named **decrement** that subtract one from the day, it should maintain month and year if needed like this example: when the date is 1/1/2011 if decremented the new date must be 31/12/2010. Note that year cannot be negative: if date is 1/1/0 and decrement is called you should print "ERROR: year cannot be negative" and make the date as it is 1/1/0.

• Provide a method named **getMaxDay** that receives month as integer and return the max days of that month. Consider the following table to determine the length of each month (28,30, or 31)

Month Number	Month	Days in Month
1	January	31
2	February	28
3	March	31
4	April	30
5	May	31
6	June	30
7	July	31
8	August	31
9	September	30
10	October	31
11	November	30
12	December	31

- Provide a method **Read**() to read the values of all data members from the user. You should check if the input is valid. For example: if the user enters 30 as day and 2 as month and 2000 as year you should not accept this input and display an error message that says "ERROR: month 2 cannot be 30 days" (hint: use method getMaxDays). Also, you should check that months cannot be less than 1 or greater than 12 and days cannot be less than 1.
- Provide a method **Display()** to show the date. If the day=1, month =2, and year=2020 you should print 1/2/2020.

Write another class named **TestDate** with main to do the following:

- 1. Create a new object of type Date.
- 2. Display menu that show the following options.
 - Display the date.
 - o Change the date.
 - o Increment the date.
 - o Decrement the date.
 - o Exit.

Date - day: int - month: int - year: int +Date() + setDay (day: int) + setMonth (month: int) + setYear(year: int) + getDay (): int + getMonth (): int + getYear (): int + increment(); + decrement + getMaxDay (month: int) : int + Display() + Read()

TestDate
<u>+ main()</u>

Here is a sample run:

	T		
	Diagonal and form the following autions.		
Please choose from the following options:	Please choose from the following options:		
1- Display the date	1- Display the date		
2- Change the date	2- Change the date		
3- Increment the date	3- Increment the date		
4- Decrement the date	4- Decrement the date		
5- Exit	5- Exit		
Enter your option: 1	Enter your option: 1		
Date:1/1/2001	Date:1/3/2020		
Diagraph against the fellowing entions:	Diagraph against the fellowing entires		
Please choose from the following options:	Please choose from the following options: 1- Display the date		
1- Display the date 2- Change the date	2- Change the date		
3-Increment the date	3- Increment the date		
	4- Decrement the date		
4- Decrement the date			
5- Exit	5- Exit		
Enter your option: 4	Enter your option: 4		
Please choose from the following options:	Please choose from the following options:		
1- Display the date	1- Display the date		
2- Change the date	2- Change the date		
3- Increment the date	3- Increment the date		
4- Decrement the date	4- Decrement the date		
5- Exit	5- Exit		
Enter your option: 1	Enter your option: 1		
Date:31/12/2000	Date:28/2/2020		
Please choose from the following options:	Please choose from the following options:		
1- Display the date	1- Display the date		
2- Change the date	2- Change the date		
3- Increment the date	3- Increment the date		
4- Decrement the date	4- Decrement the date		
5- Exit	5- Exit		
Enter your option: 3	Enter your option: 3		
Please choose from the following options:	Please choose from the following options:		
1- Display the date	1- Display the date		
2- Change the date	2- Change the date		
3- Increment the date	3- Increment the date		
4- Decrement the date	4- Decrement the date		
5- Exit	5- Exit		
Enter your option: 1	Enter your option: 1		
Date:1/1/2001	Date:1/3/2020		
Please choose from the following options:	Please choose from the following options:		
1- Display the date	1- Display the date		
2- Change the date	2- Change the date		
3- Increment the date	3- Increment the date		
4- Decrement the date	4- Decrement the date		
5- Exit	5- Exit		
Enter your ention: 2	Enter your ention: E		
Enter your option: 2 Enter day, month, year	Enter your option: 5		
1 3 2020	Thanks Goodbye!:		
1 3 2020	1		

Another sample run

Please choose from the following options: Please choose from the following options: 1- Display the date 1- Display the date 2- Change the date 2- Change the date 3- Increment the date 3-Increment the date 4- Decrement the date 4- Decrement the date 5- Fxit 5- Fxit Enter your option: 1 Enter your option: 1 Date:1/1/2001 Date:1/1/0 Please choose from the following options: Please choose from the following options: 1- Display the date 1- Display the date 2- Change the date 2- Change the date 3-Increment the date 3- Increment the date 4- Decrement the date 4- Decrement the date 5- Exit 5- Exit Enter your option:: 2 Enter your option: 2 Enter day, month, year Enter day, month, year 30 2 2020 0 2 2020 ERROR: month 2 cannot be 30 days ERROR: Day cannot be less than 1 Please choose from the following options: Please choose from the following options: 1- Display the date 1- Display the date 2- Change the date 2- Change the date 3- Increment the date 3- Increment the date 4- Decrement the date 4- Decrement the date 5- Exit 5- Exit Enter your option: 1 Enter your option: 2 Date:1/1/2001 Enter day, month, year 0 0 2020 Please choose from the following options: ERROR: Day cannot be less than 1 1- Display the date 2- Change the date Please choose from the following options: 3- Increment the date 1- Display the date 4- Decrement the date 2- Change the date 5- Exit 3- Increment the date 4- Decrement the date Enter your option: 2 5- Exit Enter day, month, year 110 Enter your option: 2 Enter day, month, year Please choose from the following options: 102020 1- Display the date ERROR: Month cannot be less than 1 2- Change the date 3-Increment the date Please choose from the following options: 4- Decrement the date 1- Display the date 2- Change the date 5- Exit 3- Increment the date Enter your option: 1 4- Decrement the date Date:1/1/0 5- Exit Please choose from the following options: Enter your option: 2 1- Display the date Enter day, month, year 2- Change the date 1 13 2020 3-Increment the date ERROR: Month cannot be greater than 12 4- Decrement the date 5- Fxit Enter your option: 4 ERROR: year cannot be negative