

## CSCI 1301 – Lab #9

### Exercise

The purpose of this exercise is to apply your knowledge about assignments statements, arithmetic expressions and conditional statements discussed during the lectures.

Write a java program that contains a class called *ValidateDate* with a *main* method that prompts the user to enter a year, a month and a day. If the year entered by the user is not between 1200 and 2050 or the month entered by the user is not valid, the program will display an error message and terminate. If both the year and the month are valid, the program should determine whether the day entered by the user is also valid. If the day entered by the user is between one and the number of days in the specified month then the program will indicate that the date is valid. Otherwise, the program will indicate that the date is not valid.

Take note that your program should check if the year is a leap year to determine correctly the number of days in the month of February. A year is a leap year if it is not a century and is divisible by 4, or a century divisible by 400. For example, 1988, and 2000 are leap years, 1900 and 1990 are not leap years.

### Example #1

```
Please enter a year between 1200 and 2050: 870
Please enter a month: 2
Please enter a day: 10
The date 2/10/870 is not a valid date.
```

### Example #2

```
Please enter a year between 1200 and 2050: 2012
Please enter a month: 15
Please enter a day: 5
The date 15/5/2012 is not valid date.
```

### Example #3

```
Please enter a year between 1200 and 2050: 2010
Please enter a month: 5
Please enter a day: 32
5/32/2009 is not a valid date.
```

### Example #4

```
Please enter a year between 1200 and 2050: 2010
Please enter a month: 2
Please enter a day: 29
2/29/2010 is not valid a date.
```

Note: 2010 is not a leap year, therefore February has 28 days.

## Example #5

```
Please enter a year between 1200 and 2050: 2012
Please enter a month: 2
Please enter a day: 29
2/29/2012 is a valid date.
```

Note: 2012 is a leap year, therefore February has 29 days.

## Example #6

```
Please enter a year between 1200 and 2050: 2010
Please enter a month: 6
Please enter a day: 15
6/15/2010 is a valid date.
```

## Example #7

```
Please enter a year between 1200 and 2050: 2015
Please enter a month: 6
Please enter a day: 31
6/31/2015 is not valid a date.
```

### Hints:

- You should use decision statements to validate the user's input.
- You may use the `exit` method to terminate the execution of the program whenever the year or the month is not valid.
- Determine which months have 30 days and write a Boolean expression. Use this Boolean expression in the multibranch statement below.
- If you need it, write a Boolean expression to determine which months have 31 days.
- **Use a multibranch decision statement** to determine the number of days in a month, store that value in a variable. The multibranch statement must have at most two conditions and an else clause.
- Use an if-else statement to determine the number of days in February depending on whether the year is a leap year. Embed this if-else statement properly within the multibranch statement to compute the number of days in February for the given year properly.
- After the number of days in the month has been calculated, use a decision statement to display whether the date is or not valid.

Compile and run your program. Check your program with the following input before you submit it:

After you have completed this exercise, demonstrate it to your lab instructor.

## WebCT Submission

After you have completed both exercises in this lab, upload the file *ValidateDate.java* in WebCT and submit it to receive credit.