Determination of the Day of the Week Using the Key Value Method

Jishnu Jeevan
jishnujeevan@gmail.com

Abstract

This paper gives an idea on how to write a program in any programming language to determine the day of the week using the key value method.

1   Introduction

The program was written in C++ [1, 2] in Code Blocks 16.01. In order to find the day of the week we use a method called key value method [3]. The drawback of this method is that this method only works for Gregorian calendars [4]. I have uploaded the code on Github[1] and for those who are interested in learning C++ I have linked a couple of good sites[2, 3] on the footnotes. Also if you are interested in using Code Blocks I have linked that as well[4].

2   The Key Value Method

The Key Value method uses codes for different months and years to calculate the day of the week. It would be easier if one is able to memorize the codes which are very easy to learn.

Steps:

1. Take the last 2 digits of the year.
2. Divide it by 4 and discard any remainder.
3. Add the day of the month to the value obtained in step 2.
4. Add the month's key value, from the following table to the value obtained in step 3.

Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1	4	4	0	2	5	0	3	6	1	4	6

5. If the date is in January or February of a leap year, subtract 1 from step 4
6. Add the year (century) code from the following table.

1700s	1800s	1900s	2000s
4	2	0	6

Suppose the year is not in the above table. In this case all we have to do is add or subtract 400 until we have a year (century) that is in the table. Then get the code for the year from the

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1. Program code: https://github.com/JishnuJeevan/Day-Calculator
2.Learn C++: https://www.tutorialspoint.com/cplusplus/
3.Learn C++: https://www.w3schools.com/cpp/default.asp
4. Code Blocks download: http://www.codeblocks.org/

above table and add the value to the previous step. We do this since the Gregorian calendar repeats every 400 years.

7. Add the last two digits of the year to the value we obtained in the previous step.
8. Divide this value by 7 and take the remainder. Get the day from the following table based on the value of the remainder.

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	0

References

1. Bjarne Stroustrup. The C++ Programming Language. 1985
2. https://en.wikipedia.org/wiki/C%2B%2B
3. https://beginnersbook.com/2013/04/calculating-day-given-date/
4. https://en.wikipedia.org/wiki/Gregorian_calendar.