

## Find day of the week for a given date

Write a function that calculates the day of the week for any particular date in the past or future. A typical application is to calculate the day of the week on which someone was born or some other special event occurred.

Following is a simple C function suggested by [Sakamoto, Lachman, Keith and Craver](#) to calculate day. The following function returns 0 for Sunday, 1 for Monday, etc.

```
/* A program to find day of a given date */
#include<stdio.h>

int dayofweek(int d, int m, int y)
{
    static int t[] = { 0, 3, 2, 5, 0, 3, 5, 1, 4, 6, 2, 4 };
    y -= m < 3;
    return ( y + y/4 - y/100 + y/400 + t[m-1] + d) % 7;
}

/* Driver function to test above function */
int main()
{
    int day = dayofweek(30, 8, 2010);
    printf ("%d", day);

    return 0;
}
```

Output: 1 (Monday)

See [this](#) for explanation of the above function.

References:

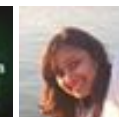
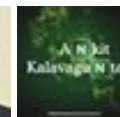
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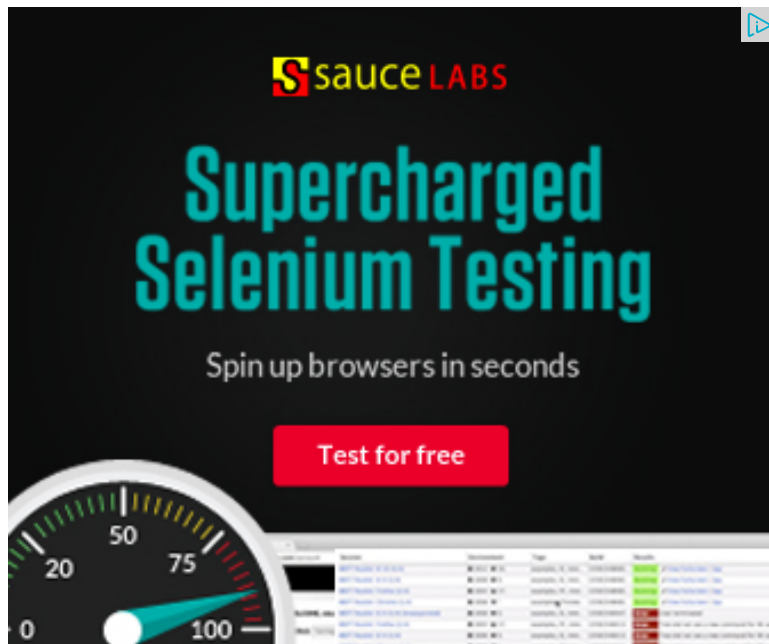
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This article is compiled by **Dheeraj Jain** and reviewed by GeeksforGeeks team. Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above



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Rustam Hussain • 9 months ago

DAY OF WEEK FOR GIVEN DATE&gt;&gt;&gt;

#include

#include

#include

using namespace std;

int main()

{

int dd,mm,yy,odd\_days=0,leap\_yr=0,ordinary\_yr=0,prev\_year=0,new\_year=0,

char \*day[]={"sun","mon","tues","wed","thu","fri","sat"};

int month[]={31,28,31,30,31,30,31,31,30,31,30,31};

cout&lt;&lt;dd&gt;&gt;mm&gt;&gt;yy;

if((yy%4==0) &amp;&amp; (yy %100!=0) || (yy%400==0))

month[1]=29;

prev\_year=yy-1;

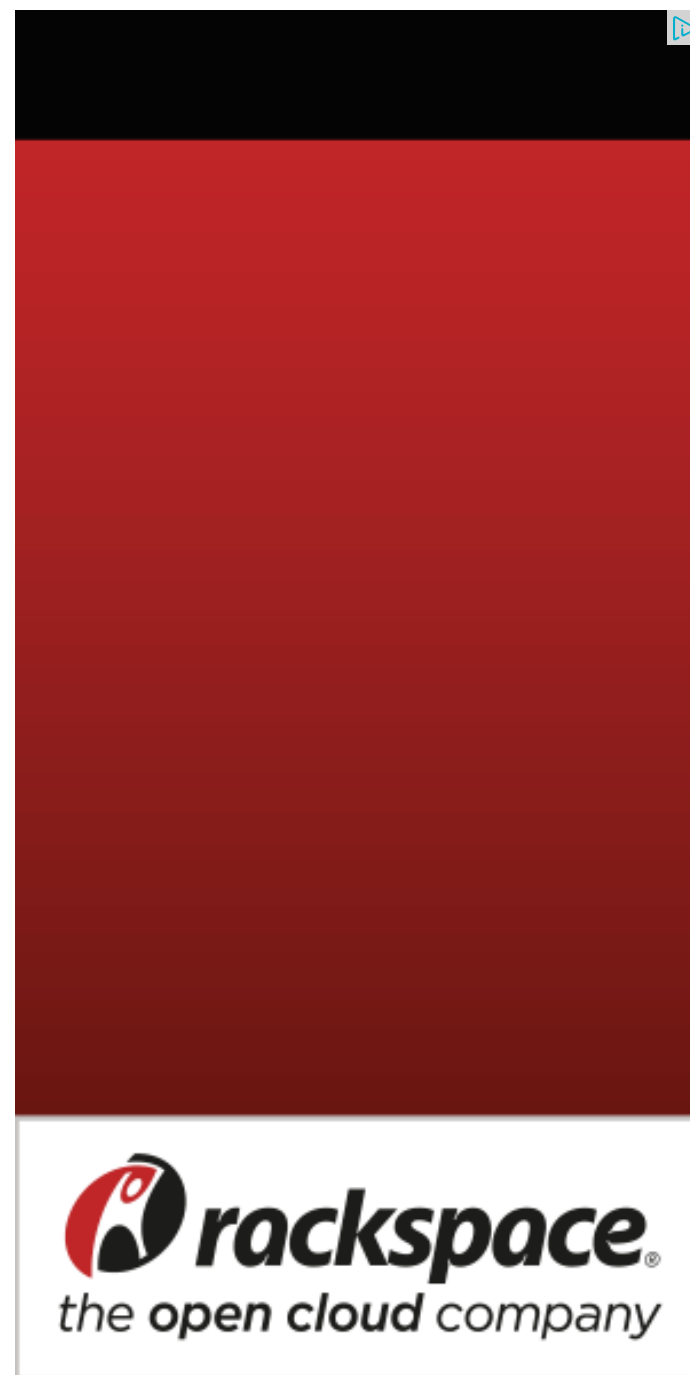
prev\_year=prev\_year%400;

[see more](#)

^ | v .



Rustam Hussain → Rustam Hussain • 9 months ago





```

int main()
{
    int dd,mm,yy,odd_days=0,leap_yr=0,ordinary_yr=0,prev_year=0,new_
    char *day[]={"sun","mon","tues","wed","thu","fri","sat"};
    int month[]={31,28,31,30,31,30,31,31,30,31,30,31};
    cout<<dd>>mm>>yy;
    if((yy%4==0) && (yy %100!=0) || (yy%400==0))
        month[1]=29;

    prev_year=yy-1;
    prev_year=prev_year%400;
    new_year=prev_year/100;
    odd_days=new_year*5;
    new_year=prev_year%100;
    leap_yr=new_year/4;
    ordinary_yr=new_year-leap_yr;
    odd_days=odd_days+(leap_yr*2)+(ordinary_yr*1);

    for(i=0;i<7)
        odd_days=odd_days%7;

    cout<<day[odd_days];
    getch();
    return 0;
}
^ | v .

```



**Yemane Teklay** · a year ago

Please can any one explain what the magic numbers in the t[] array represent day of week of each month of the year 0000 to serve as an offset for fast calcul the year 2000 considering that calender repeats every 400 years, It didn't am the one who get lost). So is there any who can shade lights to my ignorance



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^ | v .



**a\_b** · 2 years ago

how to find out the array t[]?

1 ^ | v .



**Saurabh Vats** → a\_b · 11 months ago

```
int DayOfWeek(day, month, year)
{
    var a = Math.floor((14 - month) / 12);
    var y = year - a;
    var m = month + 12 * a - 2;
    var d = ( day + y + y/4 - y/100 + y/400 + (31 * m)/12 )%7;
    return d+1;
}
```

The value of d is 0 for a Sunday, 1 for a Monday, 2 for a Tuesday, etc.

^ | v .



**Praneeth** → Saurabh Vats · 9 months ago

Hi Saurabh,

Can you please explain what is the purpose of  $(31*m)/12$

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**Saurabh Vats** → Saurabh Vats · 11 months ago

`var a = (14-month)/12; // no need of floor`

^ | v .



**kg1020** · 2 years ago

can anybody explain element of array `t[]`. what is the role of the virtual year.

^ | v .



**jack n jones** · 2 years ago

@prashanth why have u subtracted 1900, is it the base year u taking?? then w explanation pls

^ | v .



**saideep** · 2 years ago

excellent

^ | v .



**Abhinav Priyadarshi** · 2 years ago

A very nice explanation of the algorithm is given here( <http://stackoverflow.com>

^ | v .



**GeeksforGeeks** → Abhinav Priyadarshi · 2 years ago

Thanks for providing the link. We have added it to the original post.

^ | v .



**Prashant** · 2 years ago

`[sourcecode language="C#"]`

`/* Paste your code here (You may delete these lines if not writing code) */`

`using System;`

```

using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace dayOfTheWeek
{
    class Program
    {
        static void Main(string[] args)
        {
            int day, month, year, totalDays;
            Console.WriteLine("Enter the day:");
            day = Convert.ToInt32(Console.ReadLine());
            Console.WriteLine("Enter the month:");
            month = Convert.ToInt32(Console.ReadLine());

```

[see more](#)

^ | v ·



**nikoo28** · 2 years ago

please explain the concept behind this formula...

$$(y + y/4 - y/100 + y/400 + t[m-1] + d) \% 7$$

^ | v ·



**abc** → nikoo28 · 2 years ago

I can guess only following.

y/100 is subtracted and y/400 is added to handle leap years.

^ | v ·



**david** · 2 years ago

can anyone explain the above concept

```
/* Paste your code here (You may delete these lines if not writing co
```

^ | v ·



**kprocks** → david · 2 years ago

Well, you can tell just by looking at it that it is correct... Assuming that t  
verify with just 12 spot checks (one for each month using any day/year

The  $y - m < 3$  is a nice trick. It creates a "virtual year" that starts on M  
29), putting the extra day (if any) at the end of the year; or rather, at the  
example, virtual year 2011 began on Mar 1 and will end on February 29  
March 1 and end on the following February 28.

By putting the added day for leap years at the end of the virtual year, th  
simplified.

Let's look at the sum:

$$(y + y/4 - y/100 + y/400 + t[m-1] + d) \% 7$$

There are 365 days in a normal year. That is 52 weeks plus 1 day. So t  
per year, in general. That is what the y term is contributing; it adds one

But every four years is a leap year. Those contribute an extra day ever  
virtual years, we can just add  $y/4$  to the sum to count how many leap d

[see more](#)

2 ^ | v ·

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