

ICA#2: Operator Overloading and Static Member Variables

Github: <https://github.com/excisionhd/CS256/blob/master/DayOfYear.cpp>

Output:

Demonstrating #2 Constructor

Enter a day (0-365):

350

December 16

Demonstrating #3 Constructor and Operator Overload

Enter month (string) and day (int) separated by a space:

May 30

May 30

Calling Overloaded ++ Prefix: May 31

Calling Overloaded ++ Postfix: June 1

Calling Overloaded -- Prefix : May 31

Calling Overloaded -- Postfix : May 30

Press any key to **continue** . . .

Demonstrating #2 Constructor

Enter a day (0-365):

340

December 6

Demonstrating #3 Constructor and Operator Overload

Enter month (string) and day (int) separated by a space:

February 30

Invalid number of a days!!

February only has 28 days.

Press any key to **continue** . . .

See next page for source code...

```

/*****
* FILENAME : DayOfYear.cpp
*
* DESCRIPTION : In Class Activity Assignment dealing with
* operator overloading and static member variables.
*
* AUTHOR : Amir Sotoodeh
* START DATE : 5/1/18
*
*****/

```

```

#include <stdafx.h>
#include <iostream>
#include <string>
#include <windows.h>

```

```

using namespace std;
static string date;

```

```

class DayOfYear
{
private:
    int Day;
    int countDay = 0;
    static string Month[];
    int MonthDayCounts[12] = { 31, 28, 31, 30, 31, 30, 31, 31, 30, 31,
30, 31 };
public:
    DayOfYear(int enteredDay) {
        if (enteredDay > 0 || enteredDay <= 365) {
            Day = enteredDay;
        }
        else {
            exit(0);
        }
    }
    DayOfYear(string monthName, int day) {
        int index = 0;
        int position = -1;
        bool found = false;

```

```

while (index < 12 && !found)
{
    if (Month[index] == monthName)
    {
        found = true;
        position = index;
    }
    index++;
}
if (found == false)
{
    cout << "Please enter a valid month.\n";
    exit(0);
}

if (day > MonthDayCounts[position] || day < 0)
{
    cout << "Invalid number of a days!!\n"
        << monthName << " only has " <<
MonthDayCounts[position] << " days." << endl;
    exit(0);
}
else
{
    for (int i = 0; i < position; i++)
    {
        countDay += MonthDayCounts[i];
    }

    Day = countDay + day;
}
}
void print();

DayOfYear operator ++ (); //PREFIX PROTOTYPE
DayOfYear operator ++ (int); //POSTFIX PROTOTYPE
DayOfYear operator -- (); //PREFIX PROTOTYPE
DayOfYear operator -- (int); //POSTFIX PROTOTYPE

};

```

```
DayOfYear DayOfYear::operator++() //OVERLOAD PREFIX (DEFINITION)
```

```
{  
    if (Day == 365)  
        Day = 1;  
    else  
        Day++;  
    return *this;  
}
```

```
DayOfYear DayOfYear::operator++(int) //OVERLOAD POSTFIX (DEFINITION)
```

```
{  
    if (Day == 365)  
        Day = 1;  
    else  
        Day++;  
    return *this;  
}
```

```
DayOfYear DayOfYear::operator--() //OVERLOAD PREFIX (DEFINITION)
```

```
{  
    if (Day == 1)  
        Day = 365;  
    else  
        Day--;  
    return *this;  
}
```

```
DayOfYear DayOfYear::operator--(int) //OVERLOAD POSTFIX (DEFINITION)
```

```
{  
    if (Day == 1)  
        Day = 365;  
    else  
        Day--;  
    return *this;  
}
```

```
void DayOfYear::print()
```

```
{  
    int Months[12] = { 31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31
```

```

};

int start = 0, month, day;

//arithmetic logic found online
for (int i = 0; i < 12; i++)
{
    if (Day < (start + (Months[i] + 1)))
    {
        month = i;
        day = Day - start;
        break;
    }

    start += Months[i];
}

cout << Month[month] << " " << day << endl;
}

//Must define static variables outside of constructor.
string DayOfYear::Month[] = { "January", "February", "March", "April",
"May", "June", "July",
"August", "September", "October", "November", "December" };

int main()
{
    HANDLE hConsole = GetStdHandle(STD_OUTPUT_HANDLE);
    SetConsoleTextAttribute(hConsole, 13);

    string monthName;
    int userDay;

    cout << "Demonstrating #2 Constructor" << endl;
    cout << "Enter a day (0-365): " << endl;
    cin >> userDay;

    DayOfYear Day(userDay);
    Day.print();

    cout << endl << "Demonstrating #3 Constructor and Operator

```

```

OverLoad" << endl;
    cout << "Enter month (string) and day (int) separated by a space:
" << endl;
    cin >> monthName;
    cin >> userDay;

    DayOfYear Day2(monthName, userDay);

    Day2.print();

    cout << "Calling Overloaded ++ Prefix: ";
    ++Day2;
    Day2.print();

    cout << "Calling Overloaded ++ Postfix: ";
    Day2++;
    Day2.print();

    cout << "Calling Overloaded -- Prefix : ";
    --Day2;
    Day2.print();

    cout << "Calling Overloaded -- Postfix : ";
    Day2--;
    Day2.print();

    return 0;
}

```