

## Algorithms Level 4



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## Problem # 60/4 Solution Using C++

```
#include <iostream>
using namespace std;

struct stDate
{
    short Year;
    short Month;
    short Day;
};

struct stPeriod
{
    stDate StartDate;
    stDate EndDate;
};

bool IsDate1BeforeDate2(stDate Date1, stDate Date2)
{
    return (Date1.Year < Date2.Year) ? true : ((Date1.Year ==
Date2.Year) ? (Date1.Month < Date2.Month ? true : (Date1.Month ==
Date2.Month ? Date1.Day < Date2.Day : false)) : false);
}

bool IsDate1EqualDate2(stDate Date1, stDate Date2)
{
    return (Date1.Year == Date2.Year) ? ((Date1.Month ==
Date2.Month) ? ((Date1.Day == Date2.Day) ? true : false) : false)
: false;
}

bool IsDate1AfterDate2(stDate Date1, stDate Date2)
{
    return (!IsDate1BeforeDate2(Date1, Date2) &&
!IsDate1EqualDate2(Date1, Date2));
}
```



## Problem # 60/4 Solution Using C++

```
enum enDateCompare { Before = -1, Equal = 0, After = 1 };

enDateCompare CompareDates(stDate Date1, stDate Date2)
{
    if (IsDate1BeforeDate2(Date1, Date2))
        return enDateCompare::Before;

    if (IsDate1EqualDate2(Date1, Date2))
        return enDateCompare::Equal;

    /* if (IsDate1AfterDate2(Date1, Date2))
        return enDateCompare::After; */

    //this is faster
    return enDateCompare::After;
}

bool isDateInPeriod(stDate Date, stPeriod Period)
{
    return !(CompareDates(Date, Period.StartDate) ==
enDateCompare::Before

        ||
        CompareDates(Date, Period.EndDate) ==
enDateCompare::After);
}

short ReadDay()
{
    short Day;
    cout << "\nPlease enter a Day? ";
    cin >> Day;
    return Day;
}

short ReadMonth()
{
    short Month;
    cout << "Please enter a Month? ";
    cin >> Month;
    return Month;
}
```



## Problem # 60/4 Solution Using C++

```
short ReadYear()
{
    short Year;
    cout << "Please enter a Year? ";
    cin >> Year;
    return Year;
}

stDate ReadFullDate()
{
    stDate Date;

    Date.Day = ReadDay();
    Date.Month = ReadMonth();
    Date.Year = ReadYear();

    return Date;
}

stPeriod ReadPeriod()
{
    stPeriod Period;
    cout << "\nEnter Start Date:\n";
    Period.StartDate = ReadFullDate();
    cout << "\nEnter End Date:\n";
    Period.EndDate = ReadFullDate();
    return Period;
}

int main()
{
    cout << "\nEnter Period :";
    stPeriod Period = ReadPeriod();

    cout << "\nEnter Date to check:\n";
    stDate Date = ReadFullDate();

    if (isDateInPeriod(Date, Period))
        cout << "\nYes, Date is within period\n";
    else
        cout << "\nNo, Date is NOT within period\n";

    system("pause>0");
    return 0;
}
```