Algorithms Level 4

PROGRAMMING ADVICES

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Mohammed Abu-Hadhoud

MBA, PMOC, PgMP®, PMP®, PMI-RMP®, CM, ITILF, MCPD, MCSD

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

struct sDate
{
    short Year;
    short Month;
    short Day;

};

bool isLeapYear(short Year)
{

  return (Year % 4 == 0 && Year % 100 != 0) || (Year % 400 == 0);
}

short NumberOfDaysInAMonth(short Month, short Year)
{

    if (Month < 1 || Month>12)
        return  0;

    int days[12] = { 31,28,31,30,31,30,31,31,30,31,30,31 };
    return (Month == 2) ? (isLeapYear(Year) ? 29 : 28) :
days[Month - 1];

}

short NumberOfDaysFromTheBeginingOfTheYear(short Day, short Month,
short Year)
{

    short TotalDays = 0;

    for (int i = 1; i <= Month - 1; i++)
    {
        TotalDays += NumberOfDaysInAMonth(i, Year);
    }

    TotalDays += Day;

    return TotalDays;
}
```

```cpp
sDate DateAddDays(short Days, sDate Date)
{

    short RemainingDays = Days +
NumberOfDaysFromTheBeginingOfTheYear(Date.Day, Date.Month,
Date.Year);
    short MonthDays = 0;

    Date.Month = 1;

    while (true)
    {
        MonthDays = NumberOfDaysInAMonth(Date.Month, Date.Year);

        if (RemainingDays > MonthDays)
        {
            RemainingDays -= MonthDays;
            Date.Month++;

            if (Date.Month > 12)
            {
                Date.Month = 1;
                Date.Year++;

            }
        }
        else
        {
            Date.Day = RemainingDays;
            break;
        }

    }

    return Date;
}

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

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

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

sDate ReadFullDate()
{
    sDate Date;

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

    return Date;
}

short ReadDaysToAdd()
{
    short Days;
    cout << "\nHow many days to add? ";
    cin >> Days;
    return Days;
}

int main()
{
    sDate Date = ReadFullDate();
    short Days = ReadDaysToAdd();

    Date = DateAddDays(Days, Date);
    cout << "\nDate after adding [" << Days << "] days is: ";
    cout << Date.Day << "/" << Date.Month << "/" << Date.Year;

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