CS420 Visual C++ (Really its C#)
Program I
Date Due: February 8, 2010

As a staff member of Frostbite Falls Bank your mission; should you decide to accept it is to create a console application that will allow the user to enter a date in mm, dd, yyyy form and determine the Julian Date? The Julian date represents the day of the year and takes the form YYddd. For example the Julian data for August 31, 2010 if 10000 + 212 + 31 = 10243 = Year + Number of days + Day of the Month

Julian Date Conversion			
Regular Year		Leap Year	
Month	Days	Month	Days
1	0	1	0
2	31	2	31
3	59	3	60
4	90	4	91
5	120	5	121
6	151	6	152
7	181	7	182
8	212	8	213
9	243	9	244
10	273	10	274
11	304	11	305
12	334	12	335

A customer has acquired a loan that changes 6.8% interest a year that is compounded monthly. Write a C# program that will accept the date the loan was issued and the length of the loan (term). Your program should then determine the date the loan is due, the amount of each payment, the date of the last payment, and the total amount of interest paid. This information should be displayed on the console to the user.

Loan Amortization:

$$\text{Payment} = \frac{P}{\left[\frac{1-(1+i)^{-n}}{i}\right]}$$

You borrow $15,000 for 5 years to buy a new car at 9% interest. Your payment would be

P = The Principal that your borrowing – 15,000
I = The periodic interest rate which is compounded – 9%/12 = 0.0075
n = The number of months or term of the loan – 12 * 5 = 60

The periodic interest rate would be 0.09/12 = 0.0075
The number of periods would be 12 * 5 = 60

$$\frac{15{,}000}{\frac{1-(1+(\frac{0.09}{12}))^{-(12*5)}}{0.09/12}} = \frac{15{,}000}{\frac{1-(1+0.0075)^{-60}}{0.0075}} = \frac{15{,}000}{48.17337} = 311.38$$

The total interest paid would be (311.38 * 60) – 15,000 = 3682. 80