Project Assignment

Module: Math

Title: Loan Calculator

Description:

Some things cost a lot of money - houses, vehicles, educations, etc. - but banks are happy to loan you money for these things. A loan is usually repaid by a series of equal payments, spaced at equal intervals of time. For example, a mortgage may be repaid by a series of equal monthly payments, over a period of 30 years, for a total of 360 payments. A payment must be large enough to cover the interest that accumulates on a loan, as well as pay down the principal value over time.

The formulas to calculate periodic loan payments (such as a mortgage) have been known for centuries:

$$payment = \frac{P \times \left(\frac{r}{n}\right)}{1 - \left(1 + \frac{r}{n}\right)^{-(t \times n)}}$$

Where:

P = principal amount (dollars)

r = interest rate per unit of time (usually expressed as a yearly percentage of the principal)

n = payments per unit of time (usually 12 - once per month in a year)

t = term of the loan, in units of time (Usually between 10 and 30 years, for a mortgage)

Instructions:

Write a program that asks the user to enter the principal, interest rate, and term of a loan. Calculate their periodic payment and print it out using appropriate precision.

Before you start, talk with the other members of your group to consider:

- The format of input and output numbers
- The appropriate standard libraries to use
- The data types you should use to perform the calculation