JR - Basic Java Review Assignment

For your submission: Complete all parts below. Place each project folder into a single folder named based on your last name concatenated with the letters JR. Zip and submit this folder to the ELC assignment page. For example, if your name were Paul Atreides, you'd call your final zipped file AtreidesJR.zip.

The exercises in the three parts below represent a progression that is designed to help you appreciate the object orientation of Java and how various classes (objects) work together. They all present the same program implemented in three different ways:

You should have a separate Eclipse project and compressed folder for each of the three parts.

JR Assignment - Part 1

Simple Loan Payment Calculator in main method

Learning Goals:

- Learn how Java projects begin with a main method
- Practice review concepts: variables, arrays, flow of control, mathematical expressions

Objective:

Create a simple program that will calculate the monthly interest rate, number of months, monthly payment for a home loan with compound interest.

Required Components:

A single Java class with a main method created using the Eclipse IDE

Scenario/Information:

For most home loans, there are three main values that represent the state of the: the principal (total amount loaned), interest rate (usually stored as annual rate), and total term (in years) that the homeowner has until the loan should be fully repaid. If these three values are known, then other characteristics about the loan can be calculated. For example:

- Monthly Rate = Annual Rate/12
- Total Months = Total Term * 12
- Monthly Payment = Principal * Monthly Rate / (1 - (1 + Monthly Rate)$^{\text{-Total Months}}$))

What to do:

Write a simple Java program with Eclipse using only a main method that will take some initial loan

values and calculate the monthly rate, total months, and monthly payment. You should output the results to the Eclipse console window. Be sure to run, test and debug your program before submission.

What to turn in:

Name the project using the concatenation of your last name and JR1. For instance, if your name is Doofenshmirtz, then your project name would be DoofenshmirtzJR1. Zip the Eclipse project file and post it to the file archive page of this site.

JR Assignment Part 2

Simple Loan Payment Calculator in main method enhanced with methods

Learning Goals:

- Learn how program logic can be created as methods
- Practice review concepts: methods, parameters/arguments

Objective:

Create a simple program that will calculate the monthly interest rate, number of months, monthly payment for a home loan with compound interest.

Required Components:

A single Java class with a main method and multiple other methods. Use the Eclipse IDE.

Scenario/Information:

For most home loans, there are three main values that represent the state of the: the principal (total amount loaned), interest rate (usually stored as annual rate), and total term (in years) that the homeowner has until the loan should be fully repaid. If these three values are known, then other characteristics about the loan can be calculated. For example:

- Monthly Rate = Annual Rate/12
- Total Months = Total Term * 12
- Monthly Payment = Principal * Monthly Rate / (1 - (1 + Monthly Rate)$^{\text{-Total Months}}$))

What to do:

Write a new simple Java program with Eclipse using a main method and several other methods that will take some initial loan values and calculate the monthly rate, total months, and monthly payment. Your main method can initialize basic loan values, but it must call a different method for each calculation and a separate method to output results to the console. You should output the results to the Eclipse console window. Be sure to run, test and debug your program before submission.

What to turn in:

Name the project using the concatenation of your last name and JR2. For instance, if your name is FitzChivalry Farseer, then your project name would be FarseerJR2.Zip the Eclipse project file and post it to the file archive page of this site.

JR Assignment Part 3

Simple Loan Payment Calculator with controller and Loan class

Learning Goals:

- Learn how program logic can be created as methods
- Practice declaring and using Java objects

Objective:

Create a simple program that will calculate the monthly interest rate, number of months, monthly payment for a home loan with compound interest.

Required Components:

A Java class with a main method. A second Java class that represents a Loan. Use the Eclipse IDE.

Scenario/Information:

For most home loans, there are three main values that represent the state of the: the principal (total amount loaned), interest rate (usually stored as annual rate), and total term (in years) that the homeowner has until the loan should be fully repaid. If these three values are known, then other characteristics about the loan can be calculated. For example:

- Monthly Rate = Annual Rate/12
- Total Months = Total Term * 12
- Monthly Payment = Principal * Monthly Rate / (1 - (1 + Monthly Rate)$^{-\text{Total Months}}$))

What to do:

Write a new simple Java program with Eclipse using a main method. The main method should simply declare a loan object and pass the loan object initial values for the principal, rate (APR) and term (years). It should also call a method of the Loan class to get and print the monthly payment to the console.

The Loan class should include field variables for each of the basic loan values (principal, rate - APR, and term in years), two constructors (a default no-parameter constructor and a second constructor which allows all three values to be passed in to the object), getters and setters for each field variable, and a method that calculates and returns the monthly payment. Also include methods that will return the total months and monthly rate.

What to turn in:

Name the project using the concatenation of your last name and JR3. For instance, if your name is Hiro

Protagonist, then your project name would be ProtagonistJR3.Zip the Eclipse project file and post it to the file archive page of this site.