**CSC 300 Data Structures in Java I  
Homework #1  
Due: January 16 (Fri) 11:59 pm**

Do both of the following two problems.

1. Write a program which computes the expected cost of an item in a specified number of years.  The program asks for the cost of the item, the number of years from now that the item will be purchased, and the rate of inflation.  The program then outputs the estimated cost of the item after the specified period.

Here is an example interaction with the user.  Parts in bold indicate the user's input.  Make your output as closely similar to this as possible.

|  |  |
| --- | --- |
| Enter the cost, number of years and inflation rate: **100.00 6 20.0**  Year 0 ==> $100.00  Year 1 ==> $120.00  Year 2 ==> $144.00  Year 3 ==> $172.80  Year 4 ==> $207.36  Year 5 ==> $248.83  ==== Final Result ===  This item of $100.00 will cost $298.60 after 6 years. | Enter the cost, number of years and inflation rate: **100000.0 8 4.5**  Year 0 ==> $100000.00  Year 1 ==> $104500.00  Year 2 ==> $109202.50  Year 3 ==> $114116.61  Year 4 ==> $119251.86  Year 5 ==> $124618.19  Year 6 ==> $130226.01  Year 7 ==> $136086.18  ==== Final Result ===  This item of $100000.00 will cost $142210.06 after 8 years. |

Program Specifications:

* + Name the program "**Inflation**" (thus the filename has to be "**Inflation.java**").
  + Have the user enter the three information (cost, years, inflation rate) in THAT order.  Also assume the inflation rate as a percentage, such as 5.6 (percent).
  + The calculation for each year must be done by using a **loop**(any of while/do-while/for).  Also you must display the year and amount for each year (as in the examples above).
  + All dollar amount in the output must have a preceding '$' and with exactly two decimal digits.  Here is one way you can do so, by using **printf**:
  + double amount;
  + //.. assume amount is assigned with a value (e.g. 13.28)
  + System.out.**printf**("The amount is **$%.2f.%n**", amount); // prints "The amount is $13.28." in one line

// critical things are **printf** and **$%.2f.%n**

* + You do not have to repeat the session.

Code Requirement:

Write your name, description of the program etc. at the top of the file.  Below is the example.

// File name: Inflation.java

// Author: (your name here)

// CSC 300 Homework # 1

// Description: (briefly describe what the program does)

import java.util.Scanner;

public class Inflation

{

public static void main(String[] args)

{

Scanner in = new Scanner(System.in);

// CONTINUE YOUR CODE BELOW

1. Write a program which converts inches to feet and inches by using **loops** (any of while/do-while/for).

Here is an example interaction with the user.  Parts in bold indicate the user's input.  Make your output as closely similar to this as possible.

----- Welcome to the Feet-Inch Converter !! -----

Enter the original inches: **71**

\*\* Equivalent feet/inches: 5 feet, 11 inches \*\*

Do you want to continue (y/n)? y

Enter the original inches: **8**

\*\* Equivalent feet/inches: 0 feet, 8 inches \*\*

Do you want to continue (y/n)? n

----- THANK YOU. GOOD BYE! -----

Program Specifications:

* + Name the program "**FeetInchLoop**" (thus the filename has to be **"FeetInchLoop.java"**).
  + **Do NOT do the division (/) or mod (%) operations** to obtain the answer. Instead you obtain the answer by a **repeated subtraction**.  You will receive 0 points if you use a / or a % operator.
  + Receive user's input (original inches) from **System.in** (which is connected to a Scanner object).
  + Data type for the input original inches as well as the answer feet and remaining inches must be int (i.e., **integers**).  Do not use double (or decimal numbers).
  + You may assume that the input original inches is >= 0 (thus you don't need to validate the input value).
  + **Repeat the session** until the user signals with a "y" or "Y" at the prompt (and all other characters/strings are treated as no).  As a hint, to repeat the session, you will have to (re-)initialize some variables (for the next session).

**Submission**

* For each Java program, WRITE YOUR NAME at the top of the file in a comment section. <== IMPORTANT.
* Submit the two source files (Inflation.java and FeetInchLoop.java) in the HW#1 bin on D2L.