GitHub/CSCI155W1H1/HW1P1_Code.java

```java
/*
Name: Hunter Poole
Date: 1/29/25
Homework #: 1
Problem #: 1
Source File: HW1P1_Code
Action: Takes user input for two angles of a triangle, and provides the third.
*/

import java.util.Scanner;

public class HW1P1_Code {
    public static void main(String[] args) throws Exception {

        Scanner A1_input = new Scanner(System.in);
        System.out.print("Please provide your first angle: ");
        float A1 = A1_input.nextFloat();

        while (A1 <= 0 || A1 >= 180) {
            System.out.println("ERROR: PLease ensure your first angle is a positive number, and is less than 180 degrees.");
            System.out.print("Please provide your first angle: ");
            A1 = A1_input.nextFloat();
        }

        Scanner A2_input = new Scanner(System.in);
        System.out.print("Please provide your second angle: ");
        float A2 = A2_input.nextFloat();

        while (A2 <= 0 || A2 >= 180) {
            System.out.println("ERROR: Please ensure your second angle is a positive number, and is less than 180 degrees.");
            System.out.print("Please provide your second angle: ");
            A2 = A2_input.nextFloat();
        }

        while (A1 + A2 >= 180) {
            System.out.println("ERROR: Please ensure your first two angles do not add up to 180 degrees or more.");
            System.out.print("Please provide your second angle: ");
            A2 = A2_input.nextFloat();
        }

        A1_input.close();
        A2_input.close();

        double A3 = 180 - (A1 + A2);
```

```
45          System.out.println("The third angle is " + A3 + " degrees.");
46
47      }
48  }
49
50  /* I am using VSCode, output below is the full terminal output */
51
52  /*
53  hunterpoole@Megs-MacBook-Pro Documents %  /usr/bin/env /Library/Java/
    JavaVirtualMachines/temurin-21.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExc↩
    eptio
54  nMessages -cp /Users/hunterpoole/Library/Application\ Support/Code/User/
    workspaceStorage/aa4af2d5ea8777f0c20fee4aa25f3c30/redhat.java/jdt_ws/Documents_5c3529
55  dc/bin HW1P1_Code
56
57  Please provide your first angle: 50
58  Please provide your second angle: 70
59  The third angle is 60.0 degrees.
60
61  hunterpoole@Megs-MacBook-Pro Documents %
62  */
```

GitHub/CSCI155W1H1/HW1P2_Code.java

```java
/*
Name: Hunter Poole
Date: 1/29/25
Homework #: 1
Problem #: 2
Source File: HW1P2_Code
Action: Given the radius of a circle, calculates and then prints the volume and surface area of the sphere for that circle.
*/

import java.util.Scanner;

public class HW1P2_Code {
    public static void main(String[] args) throws Exception {

        Scanner Radius_Input = new Scanner(System.in);
        System.out.print("Enter the radius of the circle: ");
        float Radius = Radius_Input.nextFloat();

        while (Radius <=0) {
            System.out.print("Please enter a positive number: ");
            Radius = Radius_Input.nextFloat();
        }

        Radius_Input.close();

        // Volume = 4/3pir^3
        // Surface Area = 4pir^2
        double Volume = Radius * Radius * Radius * 3.1415926 * 4 / 3;
        double Surface_Area = Radius * Radius * 3.1415926 * 4;

        System.out.println("The volume of the sphere is: " + Volume + "^3");
        System.out.println("The surface area of the sphere is: " + Surface_Area + "^2");

    }
}

/* I am using VSCode, output below is the full terminal output */

/*
hunterpoole@Megs-MacBook-Pro Documents %  /usr/bin/env /Library/Java/JavaVirtualMachines/temurin-21.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptio
nMessages -cp /Users/hunterpoole/Library/Application\ Support/Code/User/workspaceStorage/aa4af2d5ea8777f0c20fee4aa25f3c30/redhat.java/jdt_ws/Documents_5c3529dc/bin HW1P2_Code
```

```
43
44 Enter the radius of the circle: 6
45 The volume of the sphere is: 904.7786688^3
46 The surface area of the sphere is: 452.3893344^2
47
48 hunterpoole@Megs-MacBook-Pro Documents %
49 */
```

GitHub/CSCI155W1H1/HW1P3_Code.java

```java
/*
Name: Hunter Poole
Date: 1/29/25
Homework #: 1
Problem #: 3
Source File: HW1P3_Code
Action: Divides a given number of seconds into days, hours, minutes, and seconds
*/

import java.util.Scanner;

public class HW1P3_Code {
    public static void main(String[] args) throws Exception {

        Scanner Seconds_Input = new Scanner(System.in);
        System.out.print("Enter the number of seconds: ");
        int Seconds = Seconds_Input.nextInt();

        while (Seconds <= 0) {
            System.out.println("Please enter a positive number of seconds: ");
            Seconds = Seconds_Input.nextInt();
        }

        Seconds_Input.close();

        int Days_Result = Seconds / 86400;
        System.out.println("Days: " + Days_Result);

        int Days_Remainder = Seconds % 86400;
        int Hours_Result = Days_Remainder / 3600;
        System.out.println("Hours: " + Hours_Result);

        int Hours_Remainder = Days_Remainder % 3600;
        int Minutes_Result = Hours_Remainder / 60;
        System.out.println("Minutes: " + Minutes_Result);

        int Minutes_Remainder = Hours_Remainder % 60;
        int Seconds_Result = Minutes_Remainder;
        System.out.println("Seconds: " + Seconds_Result);
    }
}

/* I am using VSCode, output below is the full terminal output */

/*
hunterpoole@Megs-MacBook-Pro Documents %  /usr/bin/env /Library/Java/
JavaVirtualMachines/t
```

```
emurin-21.jdk/Contents/Home/bin/java -XX:+ShowCodeDetailsInExceptionMessages -cp /Users/hu
nterpoole/Library/Application\ Support/Code/User/workspaceStorage/aa4af2d5ea8777f0c20fee4a
a25f3c30/redhat.java/jdt_ws/Documents_5c3529dc/bin HW1P3_Code

Enter the number of seconds: 912418
Days: 10
Hours: 13
Minutes: 26
Seconds: 58

hunterpoole@Megs-MacBook-Pro Documents %
*/

```

Hunter Poole
CSCI 155 HW2, Problem 4

1. Workers at a company have won a 7.6% annual pay increase, which will be retroactive for six months. Write an algorithm, then a program, that takes an employee's previous annual salary as input, and outputs the amount of retroactive pay due to the employee, the new annual salary, and the new monthly salary. Test program with the following three salaries of $35,000, $46,500, and $52,450. Output from program should look close to following and should have $ sign as well:

```
Please enter employee's salary --> 35000
Retroactive Pay --> $1330.0
New Annual Salary --> $37660.0
New Monthly Salary --> $3138.3333
```

Three Step Analysis:

A. Take a salary input and compute the following: Retroactive pay (previous six months pay * 1.076 - previous six months pay), new annual salary (current salary * 1.076), and new monthly salary (new annual salary / 12). Print the result of each on its own line with the proper unit ($)

B.

INPUT	OUTPUT	EQUATIONS
35000	Retroactive pay --> $1330.0 New Annual Salary --> $37660.0 New Monthly Salary --> $3138.33	Adjusted_Annual_Salary = (Base_Annual_Salary * 1.076)
46500	Retroactive pay --> $1767.0 New Annual Salary --> $50034.0 New Monthly Salary --> $4169.5	Adjusted_Monthly_Salary = (Adjusted_Annual_Salary / 12)
52450	Retroactive pay --> $2000.0 New Annual Salary --> $56436.2 New Monthly Salary --> $4703.0166	Retroactive_Pay = ((Base_Annual_Salary / 2) * 1.076) - (Base_Annual_Salary / 2)

C. Limits / Constraints:
   a. Output must match provided format
   b. Output must be in dollars ($)

Algorithm on next page

Hunter Poole
CSCI 155 HW2, Problem 4

write “Please enter employee’s salary --> “
read Base_Annual_Salary

Retroactive_Pay = ((Base_Annual_Salary /2) * 1.076) - (Base_Annual_Salary / 2)
write “Retroactive Pay --> $” + Retroactive_Pay

Adjusted_Annual_Salary = Base_Annual_Salary * 1.076
write “New Annual Salary --> $” + Adjusted_Annual_Salary

Adjusted_Monthly_Salary = Adjusted_Annual_Salary / 12
write “New Monthly Salary --> $” + Adjusted_Monthly_Salary

Hunter Poole
CSCI 155 HW2, Problem 5

1. All years that are evenly divisible by 400 are always a leap year. They are also a leap year if they are evenly divisible by 4 AND are not evenly divisible by 100. For example, 1600 was a leap year because it is evenly divisible by 400. Likewise 1988 was a leap year because it was evenly divisible by 4 AND not evenly divisible by 100. Write an algorithm to solve this problem for entering any year, providing a positive integer.

Three Step Analysis:

A. Given a positive (A.D.) year, determine if it is a leap year or not.
    a. Evenly divisible by 400 guarantees a leap year. No need to continue.
    b. Evenly divisible by 4 AND NOT evenly divisible by 100 is a leap year.
    c. All others are not leap years.

INPUT	**OUTPUT**	**EQUATIONS**
(such as:) 1988, 2000, 2004, 2008, 2012, 2016, 2020, 2024, 2028, 2032, 2036	“Year” is a leap year.	if (Year % 400 == 0)
(such as:) 1989, 2001, 2005, 2009, 2015, 2021, 2029, 2033, 2039	“Year” is not a leap year	else if (Year % 100 != 0 && Year % 4 == 0)
		while (Year <= 0)

B. Limits / Constraints:
    a. Year inputs must be positive integers.

Algorithm on next page

Hunter Poole
CSCI 155 HW2, Problem 5

```
write “Please enter a year: “
read Year

while (Year <= 0)
        write “Please provide a year in A.D.: “
        read Year
end while

if (Year % 400 == 0)
        write Year + “ is a leap year.”
else if (Year % 100 != 0 && Year % 4 == 0)
        write Year + “ is a leap year.”
else
        write Year + “ is not a leap year”
end if
```

Hunter Poole
CSCI 155 HW2, Problem 6

1. A problem that has a user enter positive numbers and keeps record of how many even numbers are entered. When the user enters 0, the problem stops and then displays the number of even numbers entered. For example, if a user enters 3, 56, 4, 13, 779, 46 and 0, then the problem would display something like “User entered 3 even numbers”. You need to use a loop structure for this one.

Three Step Analysis:

A. User will enter a string of numbers. Program will count each even number. User will enter 0 to exit the program. On exit, the program will return the count of even numbers the user entered.
    a. Receive input
    b. Create a variable equal to zero. Increment it for each even number provided.
    c. Return variable value on program exit

INPUT	**OUTPUT**	**EQUATIONS**
(Series of numbers, such as:) 3, 56, 4, 13, 779, 46, 0	"You have entered " + Even_Count + " even numbers."	while (Provided_Number != 0)
		if (Provided_Number != 0 && Provided_Number % 2 == 0) Even_Count++
		if (Provided_Number == 0) write "You have entered " + Even_Count + " even numbers."

B. Limits / Constraints:
    a. Program must continue to operate until the user enters 0

Algorithm on next page

Hunter Poole
CSCI 155 HW2, Problem 6

```
write "Please provide your numbers one at a time. Enter 0 to exit: "
read Provided_Number

while (Provided_Number != 0);
        if (Provided_Number != 0 && Provided_Number % 2 == 0)
                Even_Count++
        end if
        write "Next number. Enter 0 to exit: "
        read Provided_Number
end while

if (Provided_Number == 0)
        write "You have entered " + Even_Count + " even numbers."
```

src\Problem_4.java

```java
/*
Name: Hunter Poole
Date: 1/30/25
Homework #: 2
Problem #: 4
Source File: Problem_4.java
Action: Given a base salary, computes and outputs the retroactive pay increase for the previous six months, the new annual salary, and the new monthly salary.
*/

import java.util.Scanner;

public class Problem_4 {
    public static void main(String[] args) {

        Scanner Input = new Scanner(System.in);
        System.out.print("Please enter employee's salary --> ");
        float Base_Annual_Salary = Input.nextFloat();

        float Retroactive_Pay = ((Base_Annual_Salary / 2) * 1.076f) - (Base_Annual_Salary / 2);
        System.out.println("Retroactive Pay --> $" + Retroactive_Pay);

        float Adjusted_Annual_Salary = Base_Annual_Salary * 1.076f;
        System.out.println("New Annual Salary --> $" + Adjusted_Annual_Salary);

        float Adjusted_Monthly_Salary = Adjusted_Annual_Salary / 12;
        System.out.println("New Monthly Salary --> $" + Adjusted_Monthly_Salary);
    }
}

/*
PS C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2>  & 'C:\Program Files\Java\jdk-23\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2\bin' 'Problem_4'

Please enter employee's salary --> 35000
Retroactive Pay --> $1330.0
New Annual Salary --> $37660.0
New Monthly Salary --> $3138.3333

PS C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2> ^C
PS C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2>
PS C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2>  c:; cd 'c:\Users\hunte\Documents\GitHub\155-W2-H2\HW2'; & 'C:\Program Files\Java\jdk-23\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2\bin' 'Problem_4'

```

```
Please enter employee's salary --> 46500
Retroactive Pay --> $1767.0
New Annual Salary --> $50034.0
New Monthly Salary --> $4169.5

PS C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2> ^C
PS C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2>
PS C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2>  c:; cd 'c:
\Users\hunte\Documents\GitHub\155-W2-H2\HW2'; & 'C:\Program Files\Java\jdk-23\bin\java.exe'
'--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:
\Users\hunte\Documents\GitHub\155-W2-H2\HW2\bin' 'Problem_4'

Please enter employee's salary --> 52450
Retroactive Pay --> $1993.0996
New Annual Salary --> $56436.2
New Monthly Salary --> $4703.0166

PS C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2> ^C
PS C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2>
PS C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2>  c:; cd 'c:
\Users\hunte\Documents\GitHub\155-W2-H2\HW2'; & 'C:\Program Files\Java\jdk-23\bin\java.exe'
'--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:
\Users\hunte\Documents\GitHub\155-W2-H2\HW2\bin' 'Problem_4'

Please enter employee's salary --> 78450
Retroactive Pay --> $2981.0977
New Annual Salary --> $84412.195
New Monthly Salary --> $7034.3496

PS C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2> ^C
PS C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2>
PS C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2>  c:; cd 'c:
\Users\hunte\Documents\GitHub\155-W2-H2\HW2'; & 'C:\Program Files\Java\jdk-23\bin\java.exe'
'--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:
\Users\hunte\Documents\GitHub\155-W2-H2\HW2\bin' 'Problem_4'

Please enter employee's salary --> 112000
Retroactive Pay --> $4256.0
New Annual Salary --> $120512.0
New Monthly Salary --> $10042.667

PS C:\Users\hunte\Documents\GitHub\155-W2-H2\HW2>
*/
```