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CSCI 1300

Homework 1

**1 – US Population**

Current time - Count from 1 to 31536000 (1 year in seconds)

Current Population is 328,441,687

Run the following every time that the current time gets added to.

If current time divided by 8 leaves 0 remainder,

Current Population + 1

If current time divided by 12 leaves 0 remainder,

Current Population – 1

If current time is divided by 27 leaves 0 remainder,

Current Population + 1

Once counting is complete

Output Current Population.

**2 – Seconds Converter**

Take input and divide it by 86,400 (with remainder thanks to modulo) the answer is W

Take remainder from previous function and divide it by 3,600 (with remainder again) the answer is X

Take remainder from previous function and divide it by 60 (with remainder) the answer is Y, the remainder is Z

Output W X Y Z

**3 – Game**

Prompt the three options and question and store output in variable called “selection”

0 – Fight the Villain

1 – Save the Citizen

2 – Return to secret base

If selection equals 0

Output “You Win!”

Restart program

If selection equals 1

Output “You saved the citizen”

Restart Program

If selection equals 2

Output “Who will save the world”

End program.

**4A – Bank Account**

Variable “current” starts at 10,000

Variable “months” starts at 0

If current does not equal 0

Current - 500

Current + 0.5% of current

If current is less than zero

Current = 0

Add 1 to months

Output (months/12)

**4B – Changes to 4A**

Variable “rate”

Variable “expenses”

Variable “current”

Prompt user to enter rate, expenses, and principal (current)

Variable “months” starts at 0

If current does not equal 0

Current - expenses

Current +(rate) of current

If current is less than zero

Current = 0

Add 1 to months

Output (months/12)

Note - Already avoided the infinite loop in the original by checking if current = 0 or is less than 0

**5 – Vowel Count**

Prompt the user to enter 10 characters

Variable “vowels”

Loop that selects 1 character, then moves to the next, until all characters have been done

If character is “a”

vowel + 1

move on to next character

If character is “e”

vowel + 1

move on to next character

If character is “i”

vowel + 1

move on to next character

If character is “o”

vowel + 1

move on to next character

If character is “u”

vowel + 1

move on to next character

else move on to next character

output vowels

**6 – Carnot Efficiency**

Prompt user for Tc and TH and store them to variables called “cold” and “hot” respectively

Output “the efficiency is (1 – (cold/hot))”