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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 T_c and T_H and store them to variables called “cold” and “hot” respectively

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