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CSCI 1300 - HW 1
Recitation Section 301
Lecture Section 300

Problem 1:

START

Declare Current US Population = 328,441,687

Declare Births per second = 8

Declare Deaths per second = 12

Declare immigrants per second = 27

Calculate Year in Seconds = 365days * 24 hours * 60 minutes * 60 seconds = 31536000

Calculate Population Changes in a year

Births = 31536000 / 8

Deaths = 31536000 / 12

Immigrants = 31536000 / 27

Add population changes in a year = Births + Immigrants - Deaths

Print, "US Population in one year = ____"

END

Problem 2:

START

Declare K as given number between 0 and 1,000,000 seconds

Declare seconds in a day = 86,400

Declare seconds in an hour = 3600

Declare seconds in a minute = 60

Calculate days in seconds from K

$$\text{Days} = K / 86,400$$

$$\text{Remainder of days in seconds} = \text{rdays}$$

Calculate hours in seconds from rdays

$$\text{hours} = \text{rdays} / 3600$$

$$\text{remainder of hours in seconds} = \text{rhours}$$

Calculate minutes in seconds from rhours

$$\text{minutes} = (K - (\text{rhours} * 3600)) / 60$$

$$\text{remainder of minutes} = \text{rminutes}$$

Calculate seconds from rminutes

$$K - (\text{rhours} * 3600) - (\text{rminutes} * 60)$$

Print, "K is __ days, __ hours, __ minutes, and __ seconds"

END

Problem 3:

START

Declare Menu Options

1. Fox
2. Bunny
3. Sloth
4. Quit

While option choices < 4

Print, "Enter Menu option 1 __"

For option 1

Print, "Enter agility value __"
Print, "Enter strength value __"
Calculate Hirescore

$$\text{Hirescore} = 1.8 * (\text{agility value}) + 2.16 * (\text{strength value}) + 3.24 * (0)$$

Display, "Hirescore for option 1 is __"

For option 2

Print, "Enter agility value __"
Print, "Enter speed value __"
Calculate Hirescore
$$\text{Hirescore} = 1.8 * (\text{agility value}) + 2.16 * (0) + 3.24 * (\text{speed value})$$

Display, "Hirescore for choice 2 is __"

For option 3

Print, "Enter speed value __"
Print, "Enter strength value __"
Calculate Hirescore
$$\text{Hirescore} = 1.8 * (0) + 2.16 * (\text{strength value}) + 3.24 * (\text{speed value})$$

Display, "Hirescore for choice 2 is __"

For option 4

"Press __ to return to console or pick a different option"

END

Problem 4A:

START

Declare initial deposit = 10,000

Declare monthly interest = 0.5

Declare amount withdrawn per month = 500

While initial is greater than zero, repeat steps 1- 3

1. Subtract 500 from initial deposit
2. Multiply initial deposit by 1.005
3. Add 1 to month

Print, "it will take ____ years for balance to be \$0"

END

Problem 4B

START

Declare initial deposit = x

Declare monthly interest = y

Calculate monthly interest = $(y/100)/12$

Make sure initial deposit * monthly interest \geq expense

If yes, print, "The balance will not deplete over time"

If no,

while balance is greater than zero, repeat steps 1 - 3

4. Subtract 500 from initial deposit
5. Multiply initial deposit by 1.005
6. Add 1 to month

Print, "it will take ____ years for balance to be \$0"

END

Problem 5:

START

Declare 10 characters

Print, “Enter 10 characters”

Initialize vowel count as zero

If characters = ‘a’, or ‘e’, or ‘i’, or ‘o’, or ‘u’,
vowel count should add

Print, “number of vowels is __”

END

Problem 6:

START

Declare degrees in fahrenheit

Display, “Enter degrees in fahrenheit = x”

Calculate fahrenheit to celsius

$$\text{Celsius} = (5/9) * (x - 32)$$

Print, “conversion is __ celsius”

END

Problem 7:

The first compile time error would be that Punith misspelled “cot”, which should be “cout” instead. The second compile time error is that he forgot to put a semicolon after “endl”, which should be “endl;”. A runtime error would be that Punith wants to run a program that prints, “Hello 1300!” but his program that he has prints, “hello 1300!” which has a lower case “h”.