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PHYS 365 9/14/16

Assignment 3\_2

**3)**

**Script:**

% This script is designed to take a user input of temperature in the range

% of 0 to 50 C, and estimate the speed of sound in air at that temperature.

% If a temperature is given which is outside of the range, the user will be

% shown an error message.

x = input('Please enter a temperature in the range of 0 to 50 Celsius: \n');

if x>0 && x<50

v = 331 + x\*0.6;

fprintf('The speed of sound in air at %f is %f \n', x, v)

else

fprintf('You have entered a temperature outside of the required range. \n The required range is from 0 to 50 Celsius.\n')

end

**Command:**

>> sound\_speed\_in\_air

Please enter a temperature in the range of 0 to 50 Celsius:

20

The speed of sound in air at 20.000000 is 343.000000

**9)**

**Script:**

% This script reads data from the file parttolerance.dat. Then it prompts

% the user for the weight of the part. Then, it

% determines if the weight for that part number is in the tolerated range.

load parttolerance.dat;

partweight = input('Enter the weight of the part: \n');

if partweight > parttolerance(2) && partweight < parttolerance(3)

fprintf('The weight is within the tolerance.\n')

else

fprintf('The weight is outside the tolerance.\n')

end

**Command:**

>> parttolerance

Enter the weight of the part:

44.25

The weight is within the tolerance.

**22)**

**Script:**

% This script generates a force value on the Beufort Scale (randomly), and

% prints a statement based on the number generated.

ranforce = randi([0,12]);

if ranforce == 0

fprintf('There is no wind.\n')

elseif ranforce > 0 && ranforce <= 6

fprintf('There is a breeze.\n')

elseif ranforce > 6 && ranforce <= 9

fprintf('There is a gale.\n')

elseif ranforce > 9 && ranforce < 12

fprintf('It is a storm.\n')

else

fprintf('Hello, Hrricane!\n')

end

**Command: (I executed this twice to show the elseif statements are working.)**

>> Beaufort\_wind

There is a breeze.

>> Beaufort\_wind

It is a storm.

**25)**

**Script:**

% Shows the user a menu of geometric shapes of which the area can be

% calculated. THe user is propted to choose an item, and then is propted

% for the appropriate quantities of the shape. Then teh area of the shape

% is calculated and is displayed.

shape = menu('Shapes','cylinder','circle','rectangle');

if shape == 1

fprintf('You have selected a cylinder.\n');

radius = input('Please enter the radius of the cylinder: \n');

if isfloat(radius) || isinteger(radius)

height = input('Please enter the height of the cylinder: \n');

if isfloat(height) || isinteger(height)

area = height \* pi \* radius^2;

fprintf('The area of the specified cylinder is %f. \n', area)

else

fprintf('You have entered an improper choice. \n')

end

else

fprintf('You have entered an improper choice. \n')

end

elseif shape == 2

fprintf('You have selected a circle.\n');

radius = input('Please enter the radius of the circle: \n');

if isfloat(radius) || isinteger(radius)

area = pi \* radius^2;

fprintf('The area of the specified circle is %f. \n', area)

else

fprintf('You have entered an improper choice. \n')

end

elseif shape == 3

fprintf('You have selected a rectangle.\n');

width = input('Please enter the base of the rectangle: \n');

if isfloat(width) || isinteger(width)

height = input('Please enter the height of the rectangle: \n');

if isfloat(height) || isinteger(height)

area = width \* height;

fprintf('The area of the specified rectangle is %f. \n', area)

else

fprintf('You have entered an improper choice. \n')

end

else

fprintf('You have entered an improper choice. \n')

end

else

fprintf('You have entered an improper choice.\n')

end

**Command:**

>> areaMenu

You have selected a cylinder.

Please enter the radius of the cylinder:

5

Please enter the height of the cylinder:

1

The area of the specified cylinder is 78.539816.

**30)**

**Function:**

function [mat] = makemat(vec1,vec2)

% This function required two row input vectors, not necessarrily of the same

% length. Given these vectors, it will create a matrix with two rows and n

% columns, where n is the length of the longest vector given. If m is the

% length of the shorter vector, n-m zeros will be added to the end of the

% shorter vector.

len1 = length(vec1);

len2 = length(vec2);

if len1 == len2

mat = [vec1;vec2];

elseif len1 > len2

n = len1-len2;

m = zeros(1,n);

vec2 = [vec2,m];

mat = [vec1;vec2];

elseif len1 < len2

n = len2 - len1;

m = zeros(1,n);

vec1 = [vec1,m];

mat = [vec1;vec2];

end

end

**Command:**

>> makemat(1:4,1:7)

ans =

1 2 3 4 0 0 0

1 2 3 4 5 6 7