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Programming 3
Program # 1 Circle Calculations
Pseudocode

Display program purpose: This program determines the diameter, circumference, and radius with a given 'step value'.

Display results: Using userInput(), calculations(int input), diameter(int input), circumference(int input), area(int input), blankLineForLineTen(), the program will display a table of the radius, diameter, circumference and area with range of radiuses going from 0-50 (Including 0 and 50).

Main(void)

Call the function userInput() and assign it to variable input of type int;

Call function calculations(input) passing the argument input previously declared;

Function – int userInput(): Validates input user and returns validated value

Initialize variable input;

Print to the user a welcome statement explaining what this program will do;

Do

Print the user to enter an integer radius step in the range 1-9;

Scan the input of the user as an integer;

While

The input from the user is lower than the constant LOWEST_USER_INPUT (LOWEST_USER_INPUT=1) or higher than the constant HIGHER_USER_INPUT (HIGHER_USER_INPUT=9);

return input;

Function – void calculations (int input): Assigns calculations for diameter, circumference, and area.

Initialize a new variable called radius to 0 as a float;

Initialize a new variable called counter to 0 as an int;

Print(“ Radius Diameter Circumference Area”);

Print(“ _____”);

Do

Print calculations of Radius, Diameter, Circumference, and Area with 3 decimal precision and right-handed aligned;

Add input to the radius;

Execute method blankLineForLineTen(counter);

Increment counter by 1;

While
Radius is lower than the HIGHEST_RADIUS_VALUE (HIGHEST_RADIUS_VALUE=50);

Function – float calculateDiameter (float radius): Calculate diameter with provided formula on documentation.

Diameter is equal to radius times two (Review documentation to know from where this formula was obtained);

Return Diameter;

Function – float calculateCircumference (float radius): Calculate circumference with provided formula in the documentation.

Circumference is equal to two times Pi times radius (Review documentation to know from where this formula was obtained);

Return Circumference;

Function – float calculateArea (float radius): Calculate area with provided formula in documentation.

Area is equal to Pi * radius * radius (Review documentation to know from where this formula was obtained);

Return area;

Function – void blankLineForLineTen(int counter)

If the counter is not equal to the constant ITERATION_)_START_POINT and the counter is the modulus of the counter by the constant ITERATION_BLANK_LINE equal to 0 then print a blank line