CSE 114 STRUCTURED PROGRAMMING LANGUAGE LAB

LAB 1

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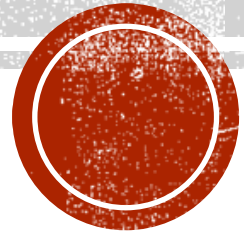
NEUB



OBJECTIVE

- To be familiar with syntax and structure of C-programming.
- To learn problem solving techniques using C

PROBLEM STATEMENT

Write a Program to calculate and display the volume of a CUBE having its height (h=10cm), width (w=12cm) and depth (8cm).

PROBLEM ANALYSIS

The problem is to calculate the volume of a CUBE having its inputs parameters identified as: *height* (integer type), *width* (integer type) and *depth* (integer type).

The output of the program is to display the volume; hence the output parameter is identified as *vol* (integer type). During the processing or calculation phase, we don't need any extra parameters (variables) for this problem.

Mathematical formula to calculate volume is:

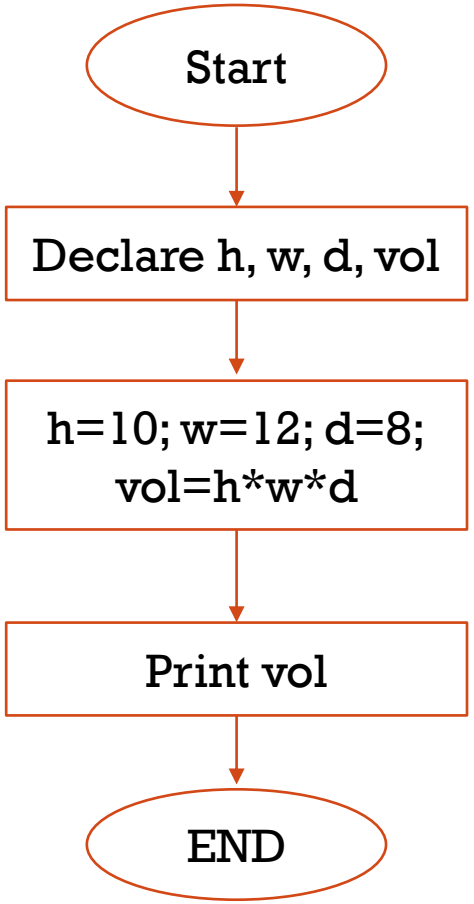
volume = height* width* depth. (vol = h*w*d)

Input variables	Processing	Output variables	Necessary header files
h (int) w (int) d (int)	vol = h*w*d	vol (int)	stdio.h

ALGORITHM

1. Start
2. Declare variables: h(int), w(int), d(int), vol(int)
3. Assign value to variables: h = 10, w=12, d=8
4. Calculate the volume as: vol = h*w*d
5. Display the volume (vol)
6. Stop

FLOWCHART & CODE




```
#include<stdio.h>
int main()
{
    //variables declaration
    int h,w,d,vol;
    //assign value to variables
    h=10;
    w=12;
    d=8;

    //calculation using mathematical formula
    vol=h*w*d;

    //display the volume
    printf("The Volume of the cube is: %d",vol);

    return 0;
}
```

PROBLEM STATEMENT

Write a Program to calculate and display the area of a CIRCLE having radius (r=2.5cm).

PROBLEM ANALYSIS

The problem is to calculate the area of a circle having its input parameter identified as: *radius* (floating-point type).

The output of the program is to display the area; hence the output parameter is identified as *area* (integer type). During the processing or calculation phase, we need a constant called π (*PI* = 3.1416).

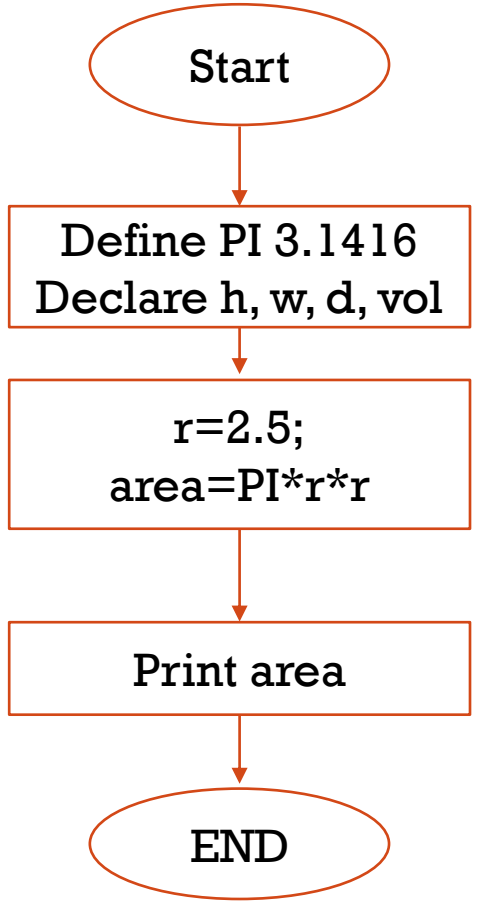
The mathematical formula to calculate area of a circle is:

$A = \pi r^2$ (area = PI * r * r)

Input variables/constants	Processing	Output variables	Necessary header files
r (float) Constant: PI 3.1416	area = PI * r * r	area (float)	stdio.h

ALGORITHM

1. Start
2. Define constant: PI 3.1416
3. Declare variables: r(float), area(float)
4. Assign value to variables: r = 2.5
5. Calculate area as: area= PI * r * r
6. Display the area
7. Stop



LAB EXERCISES

1. Write a program to add two numbers (5&7) and display its sum.
2. Write a program to multiply two numbers (10&8) and display its product.
3. Write a program to calculate area of a circle having its radius (r=5).
4. Write a program to calculate simple interest for a given P=3000, T=2, R=5.5. (I =P*T*R/100)