Course Name:	**Programming in C**	**Semester:**	**II**
Date of Performance:	**13/01/2025**	**DIV/ Batch No:**	**C-5 (3)**
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Experiment No: 1
Title: Working with data types and operators

Aim and Objective of the Experiment:

Write a program in C to demonstrate the use of data types and operators

COs to be achieved:

CO1: Understand the concepts of data types and operators

Theory:

Area and Circumference of Circle. Ask the user to enter the value of the radius of a circle. Put the values in the formula for finding the area of a circle and the circumference of a circle and print the outcome for area of a circle and the circumference of a circle.

Input of the distance between two cities in kilometers and converting them into meters, centimeters, feet, and inches.
Ex- If there are two cities "Gwalior" and "Delhi", their distance is 500 kilometers, after converting the distance from a kilometer, the distance value will be: 500000 meters, 1640420 feet, 19685050 inches, and 50000000 centimeters.

Problem Statements:

Write a program for the following

1. Compute the area and circumference of a circle.

2. Read the distance between two cities in km and print that distance in meters, feet, inches, and centimeters.

Code :

Question 1.

```
# include <stdio.h>
int main ()
{
  float r , area , cf;
  float pi = 3.14;
  printf ("Enter radius of the circle: ") ;
  scanf ("%f" , &r);
  area = pi*r*r;
  cf = 2*pi*r;
  printf ("Area of the circle: %f\n" , area);
  printf ("Circumference of the circle: %f\n" , cf);
  return 0;
}
```

Question 2.

```
# include <stdio.h>
int main ()
{
    float km , m , cm , ft , inch;
    printf ("Enter the distance between two cities in kilometer (km): ");
    scanf ("%f" , &km);
    m =  km*1000;
    cm= km*100000;
    ft= km*3280.8399;
    inch= km*39370.0787;
    printf ("Distance in meter (m) : %f\n" , m);
    printf ("Distance in centimeter (cm) : %f\n" , cm);
    printf ("Distance in feet (ft) : %f\n" , ft);
    printf ("Distance in inch : %f\n" , inch);
    return 0;
}
```

Output:

Question 1.

```
Enter radius of the circle: 1
Area of the circle: 3.140000
Circumference of the circle: 6.280000
```

Question 2.

```
Enter the distance between two cities in kilometer (km): 500
Distance in meter (m) : 500000.000000
Distance in centimeter (cm) : 50000000.000000
Distance in feet (ft) : 1640420.000000
Distance in inch : 19685040.000000
```

Post Lab Subjective/Objective type Questions:

1. What are the basic data types in C?

Ans: The basic data types are int, float, double, character, string and void

2. Write a table for Operator Precedence and Associativity.

Ans:

Operator	Category	Precedence	Associativity
"()"	"Parentheses (Function Call, Grouping)"	"Highest"	"Left to Right"
"[]"	"Array Subscript"	"Highest"	"Left to Right"
"."	"Structure Member Access"	"Highest"	"Left to Right"
"->"	"Structure Pointer Access"	"Highest"	"Left to Right"
"++", "--"	"Post-increment, Post-decrement"	"1st"	"Left to Right"
"++", "--"	"Pre-increment, Pre-decrement"	"2nd"	"Right to Left"
"+", "-", "~", "!"	"Unary plus, Unary minus, Bitwise NOT, Logical NOT"	"3rd"	"Right to Left"
"*", "/", "%"	"Multiplication, Division, Modulus"	"4th"	"Left to Right"
"+", "-"	"Addition, Subtraction"	"5th"	"Left to Right"

"<<", ">>"	"Bitwise Shift Left, Shift Right"	"6th"	"Left to Right"
" < ", " <= ", " > ", " >= "	"Relational Operators (Less Than, Less Than or Equal, Greater Than, Greater Than or Equal)"	"7th"	"Left to Right"
"==", "!="	"Equality Operators"	"8th"	"Left to Right"
"&"	"Bitwise AND"	"9th"	"Left to Right"
"^"	"Bitwise XOR"	"10th"	"Left to Right"
`"	"`	"Bitwise OR"	"11th"
"&&"	"Logical AND"	"12th"	"Left to Right"
`"		"`	"Logical OR"
"? :"	"Ternary Conditional"	"14th"	"Right to Left"
"="	"Assignment"	"15th"	"Right to Left"
"+=", "-=", "*=", "/=", "%="	"Compound Assignment"	"15th"	"Right to Left"
`"&=", "^=", "	#ERROR!	"Bitwise Compound Assignment"	"15th"
","	"Comma (Sequence Operator)"	"Lowest"	"Left to Right"

Conclusion:

In this experiment I learnt about basic functions used in C programming. It includes importance of header files in c programs, data types, taking input using scanf function and displaying output using printf function. In this experiment I wrote a c program to calculate area and circumference of circle by taking radius input from the user and a c program to convert distance entered in kilometers (km) into various units such as meters (m), inch, centimeters (cm), and feet (ft).

Signature of faculty in charge with Date: