

Batch: C1_1 Roll No.: 16010123012

Experiment / assignment / tutorial No. 1

Grade: AA / AB / BB / BC / CC / CD / DD

Signature of the Staff In-charge with date

TITLE: Write a program for:

- Program to find area and circumference of various Geometric shapes.
- Program to calculate EMI (Equated Monthly Instalment) of loan amount if principal, rate of interest and time in years is given by the user.
$$E = (P \cdot r \cdot (1+r)^n) / ((1+r)^n - 1)$$

AIM: Write a program for:

- Program to find area and circumference of various Geometric shapes.
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Expected OUTCOME of Experiment:

- Find area and circumference of various Geometric shapes
- To calculate EMI

Books/ Journals/ Websites referred:

- Programming in ANSI C, E. Balagurusamy, 7 th Edition, 2016, McGraw-Hill Education, India.
- Structured Programming Approach, Pradeep Dey and Manas Ghosh, 1 st Edition, 2016, Oxford University Press, India.
- Let Us C, Yashwant Kanetkar, 15th Edition, 2016, BPB Publications, India.

Problem Definition:

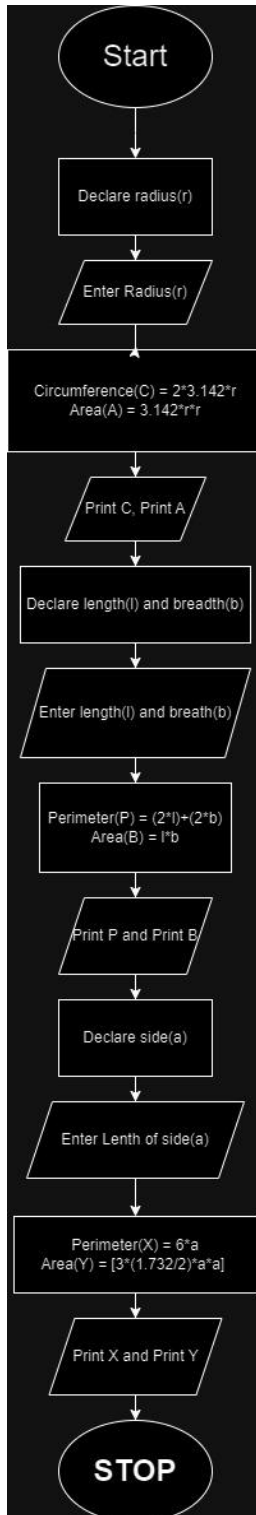
Problem 1: Area and Circumference of any shape(will be given by instructor) (example Circle)

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

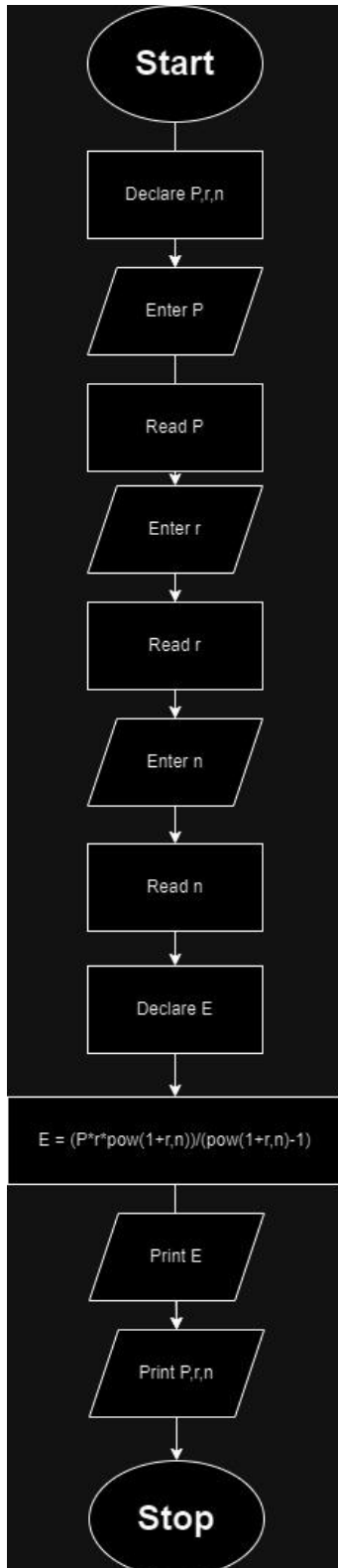
Problem 2: Calculating EMI Ask the user to enter the value of principal amount, rate of interest and time (in years).Store the value in E and print the final monthly instalment E as an outcome.Formula to be used:
$$E = (P \cdot r \cdot (1+r)^n) / ((1+r)^n - 1)$$

Flowchart:

Q1



Q2



Implementation details:

Q1

```
#include<stdio.h>
int main()
{
    //Circumference(C) and Area(A) of Circle -
    float r;
    float pi = 3.142;
    printf("Radius of Circle : ");
    scanf("%f",&r);
    float C = (2*pi*r);
    float A = (pi*r*r);
    printf("Circumference is :%f\n",C);
    printf("Area is :%f\n",A);

    //Perimeter(P) and Area(B) of Rectangle -
    float l;
    float b;
    printf("Length of Rectangle : ");
    scanf("%f",&l);
    printf("Breadth of Rectangle : ");
    scanf("%f",&b);
    float P = (2*l)+(2*b);
    float B = l*b;
    printf("Perimeter of Rectangle is :%f\n",P);
    printf("Area of Rectangle is :%f\n",B);

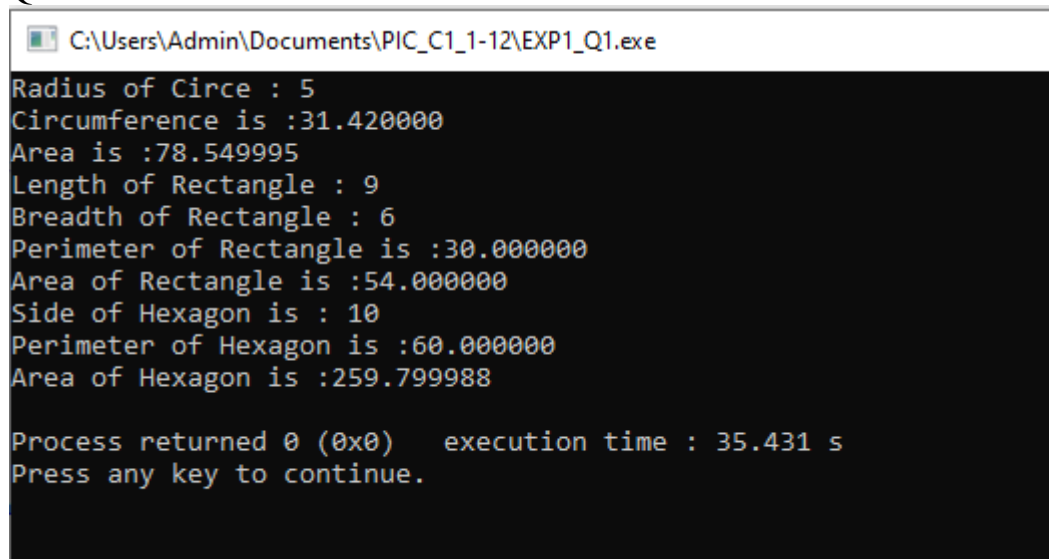
    //Perimeter(X) and Area(Y) of Hexagon -
    float a;
    printf("Side of Hexagon is : ");
    scanf("%f",&a);
    float X = 6*a;
    float Y = (3*(1.732/2)*a*a);
    printf("Perimeter of Hexagon is :%f\n",X);
    printf("Area of Hexagon is :%f\n",Y);
    return 0;
}
```

Q2

```
#include<stdio.h>
#include<math.h>
int main()
{
    float P;
    float r;
    float n;
    printf("Principal Amount : ");
    scanf("%f",&P);
    printf("Rate of Interest : ");
    scanf("%f",&r);
    printf("Number of Years : ");
    scanf("%f",&n);
    float E = (P*r*pow(1+r,n))/(pow(1+r,n)-1);
    printf("EMI : %f\n",E);
    printf("Principal Amount :%f\n",P);
    printf("Rate of Interest :%f\n",r);
    printf("Number of Years :%f\n",n);
    return 0;
}
```

Output(s):

Q1



```
C:\Users\Admin\Documents\PIC_C1_1-12\EXP1_Q1.exe
Radius of Circle : 5
Circumference is :31.420000
Area is :78.549995
Length of Rectangle : 9
Breadth of Rectangle : 6
Perimeter of Rectangle is :30.000000
Area of Rectangle is :54.000000
Side of Hexagon is : 10
Perimeter of Hexagon is :60.000000
Area of Hexagon is :259.799988
Process returned 0 (0x0)   execution time : 35.431 s
Press any key to continue.
```

Q2

```
C:\Users\Admin\Documents\PIC_C1_1-12\EXP1_Q2.exe
Principal Amount : 1000
Rate of Interest : 0.25
Number of Years : 3
EMI : 512.295105
Principal Amount :1000.000000
Rate of Interest :0.250000
Number of Years :3.000000

Process returned 0 (0x0)   execution time : 16.763 s
Press any key to continue.
```

Conclusion:

We learned to use various data types, we learned about different types of operators, their limitations and how to build our program using them. In this experiment we learned to WAP to find circumference and area of various Geometric shapes, we learned to WAP to calculate the EMI.

Post Lab Descriptive Questions

1. **What are the basic data types in C?**
There are Four Basic data types in C, namely, Char, Int, Float, Double.
2. **Write a table for Operator Precedence and Associativity.**

Precedence	Operator	Description	Associativity
1	()	Parentheses (function call)	Left-to-Right
	[]	Array Subscript (Square Brackets)	
	.	Dot Operator	
	->	Structure Pointer Operator	

Precedence	Operator	Description	Associativity
	++ , —	Postfix increment, decrement	
2	++ / —	Prefix increment, decrement	Right-to-Left
	+ / –	Unary plus, minus	
	! , ~	Logical NOT, Bitwise complement	
	(type)	Cast Operator	
	*	Dereference Operator	
	&	Address of Operator	
	sizeof	Determine size in bytes	
3	*,/,%	Multiplication, division, modulus	Left-to-Right
4	+/-	Addition, subtraction	Left-to-Right
5	<< , >>	Bitwise shift left, Bitwise shift right	Left-to-Right
6	< , <=	Relational less than, less than or equal to	Left-to-Right
	> , >=	Relational greater than, greater than or equal to	
7	== , !=	Relational is equal to, is not equal to	Left-to-Right
8	&	Bitwise AND	Left-to-Right
9	^	Bitwise exclusive OR	Left-to-Right

Precedence	Operator	Description	Associativity
10		Bitwise inclusive OR	Left-to-Right
11	&&	Logical AND	Left-to-Right
12		Logical OR	Left-to-Right
13	?:	Ternary conditional	Right-to-Left
14	=	Assignment	Right-to-Left
	+= , -=	Addition, subtraction assignment	
	*= , /=	Multiplication, division assignment	
	%= , &=	Modulus, bitwise AND assignment	
	^= , =	Bitwise exclusive, inclusive OR assignment	
	<<=, >>=	Bitwise shift left, right assignment	
15	,	comma (expression separator)	Left-to-Right

Date: 11/01/24

Signature of faculty in-charge