

Batch: C1-2 Roll No.: 16010123036

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:

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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.

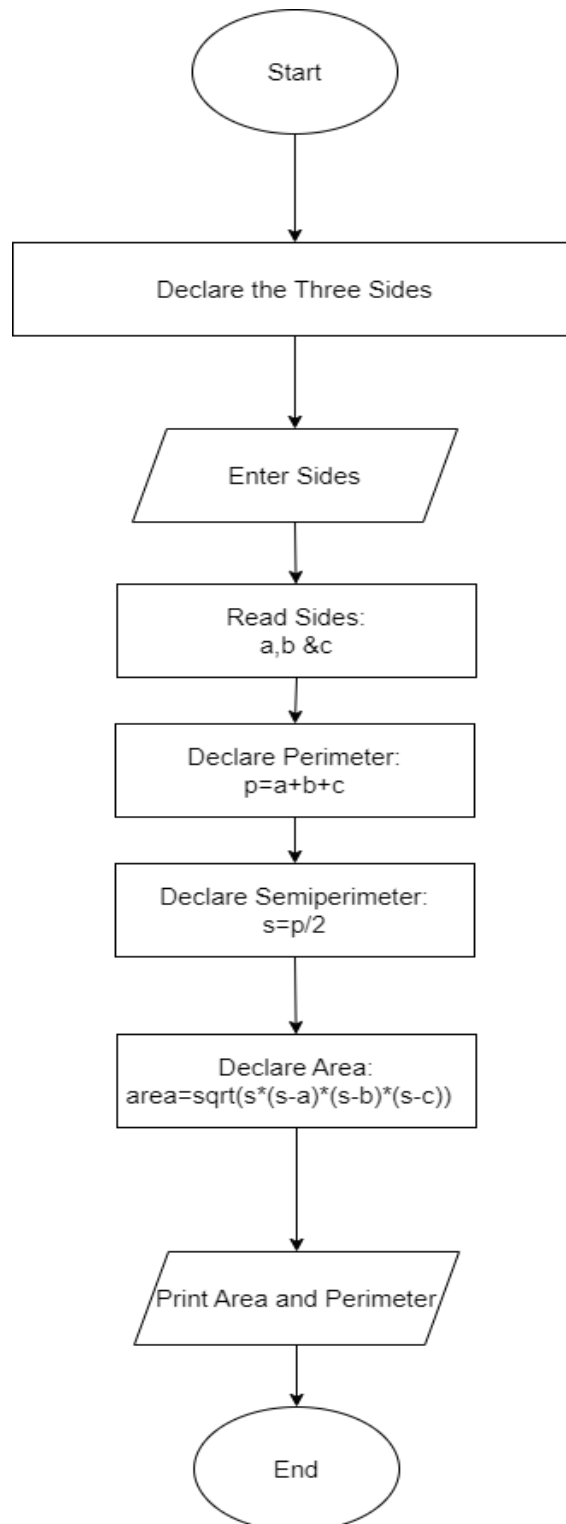
Problem Definition:

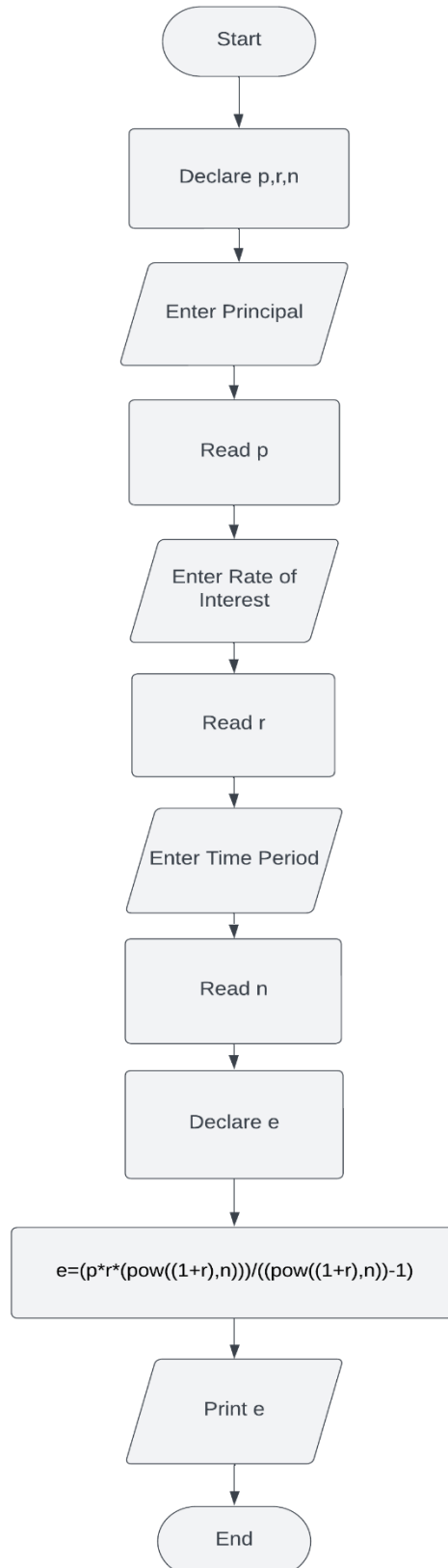
Problem 1: Area and Circumference of any shape(will be given by instructor) (example Circle)
Ask the user to enter the value of the radius of a circle. Put the values in the formula for finding area of a circle and circumference of a circle and print the outcome for area of a circle and circumference 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: $(E = (P.r.(1+r)^n) / ((1+r)^n - 1))$

Flowchart:1)





Implementation details:

1)

```
#include<stdio.h>
#include<math.h>
#include<stdlib.h>
int main(){
    printf("Name: Amandeep Singh\nRoll No: 16010123036\n");
    int a,b,c,p;
    float s,area;
    printf("Enter the length of three sides of triangle\n");
    scanf("%d%d%d",&a,&b,&c);
    s = (a+b+c)/2;
    p = a+b+c;
    area = sqrt(s*(s-a)*(s-b)*(s-c));
    printf("The area of triangle is %f\n",area);
    printf("The perimeter of triangle is %d\n",p);
    return 0;
}
```

2)

```
#include<stdio.h>
#include<math.h>
#include<stdlib.h>
int main(){
    printf("Name: Amandeep Singh\nRoll No: 16010123036\n");
    int p,n;
    float r,e;
    printf("Enter the principal amount \n");
    scanf("%d",&p);
    printf("Enter the rate of interest \n");
    scanf("%f",&r);
    printf("Enter the time period(in years) \n");
    scanf("%d",&n);
    e = (p*r*(pow((1+r),n)))/((pow((1+r),n))-1);
    printf("The the final monthly instalment is %f\n",e);
}
```

Output(s):

1)

```
Name: Amandeep Singh
Roll No: 16010123036
Enter the length of three sides of triangle
3 4 5
The area of triangle is 6.000000
The perimeter of triangle is 12
```

2)

```
Name: Amandeep Singh
Roll No: 16010123036
Enter the principal amount
10000
Enter the rate of interest
5.3
Enter the time period(in years)
7
The the final monthly instalment is 53000.132812
```

Conclusion:

In conclusion, the program effectively achieves its goals by providing functionalities to calculate the area and perimeter of a triangle, as well as the Equated Monthly Instalment (EMI) for a loan. The user-friendly menu-driven design enhances interaction, ensuring proper input handling and clear output. The program aligns with the expected outcomes of the experiment, serving as a versatile tool for geometric and financial calculations.

Post Lab Descriptive Questions

1. **What are the basic data types in C?**

Ans:

In C, the basic data types include:

1. int: Integer type, representing whole numbers.
2. float: Floating-point type, used for single-precision floating-point numbers.
3. double: Double-precision floating-point type, for double-precision floating-point numbers.
4. char: Character type, representing individual characters.
5. _Bool: Boolean type, used for true or false values.

These basic data types can be modified with qualifiers like `short` or `long` to adjust the storage size. Additionally, the `signed` and `unsigned` qualifiers can be used with integer types to indicate whether the variable can represent negative values.

2. Write a table for Operator Precedence and Associativity.

Ans:

Operator	Description	Associativity
() [] . -> ++ --	Parentheses or function call Brackets or array subscript Dot or Member selection operator Arrow operator Postfix increment/decrement	left to right
++ -- + - ! ~ (type) * & sizeof	Prefix increment/decrement Unary plus and minus not operator and bitwise complement type cast Indirection or dereference operator Address of operator Determine size in bytes	right to left
* / %	Multiplication, division and modulus	left to right
+ -	Addition and subtraction	left to right
<< >>	Bitwise left shift and right shift	left to right
< <= > >=	relational less than/less than equal to relational greater than/greater than or equal to	left to right
== !=	Relational equal to or not equal to	left to right
&&	Bitwise AND	left to right
^	Bitwise exclusive OR	left to right
	Bitwise inclusive OR	left to right
&&	Logical AND	left to right
	Logical OR	left to right
? :	Ternary operator	right to left
= += -= *= /= %= &= ^= = <<= >>=	Assignment operator Addition/subtraction assignment Multiplication/division assignment Modulus and bitwise assignment Bitwise exclusive/inclusive OR assignment	right to left
,	comma operator	left to right

Date: _____

Signature of faculty in-charge