K. J. Somaiya College of Engineering, Mumbai -77

(A Constituent College of Somaiya Vidyavihar University)

Batch: P5-2 Roll no:16010422185

Experiment /Assignment/Tutorial No.1

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

Signature of 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.

$(E = (P.r.(1+r)^n) / ((1+r)^n - 1)$

**AIM:** Write a program for:

a. Program to find area and circumference of various Geometric shapes.

b. Program to calculate EMI (Equated Monthly Instalment) of loan amount if principal, rate of interest and time in years is given by the user.

$$E = (P.r.(1+r)^n) / ((1+r)^n - 1)$$

**Expected OUTCOME of Experiment:**

**Books/ Journals/ Websites referred:**


1. Programming in ANSI C, E. Balagurusamy, 7 th Edition, 2016, McGraw-Hill Education, India.
2. Structured Programming Approach, Pradeep Dey and Manas Ghosh, 1 st Edition, 2016, Oxford University Press, India.
3. 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.

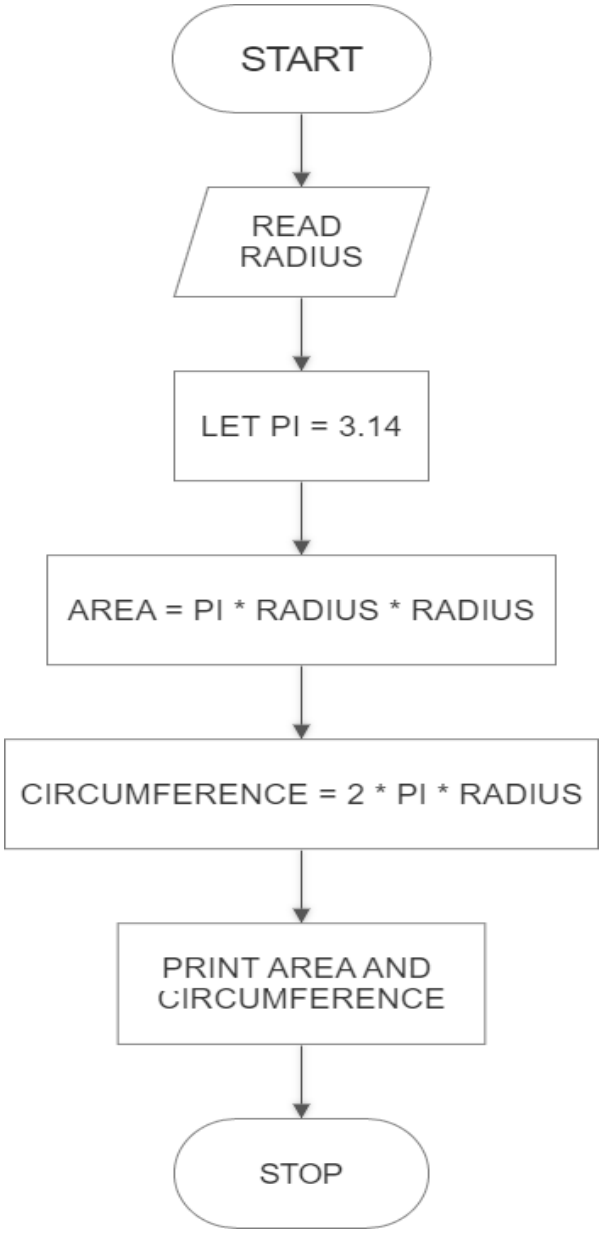
Problem 2: Calculating EMI

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 installment E as an outcome.

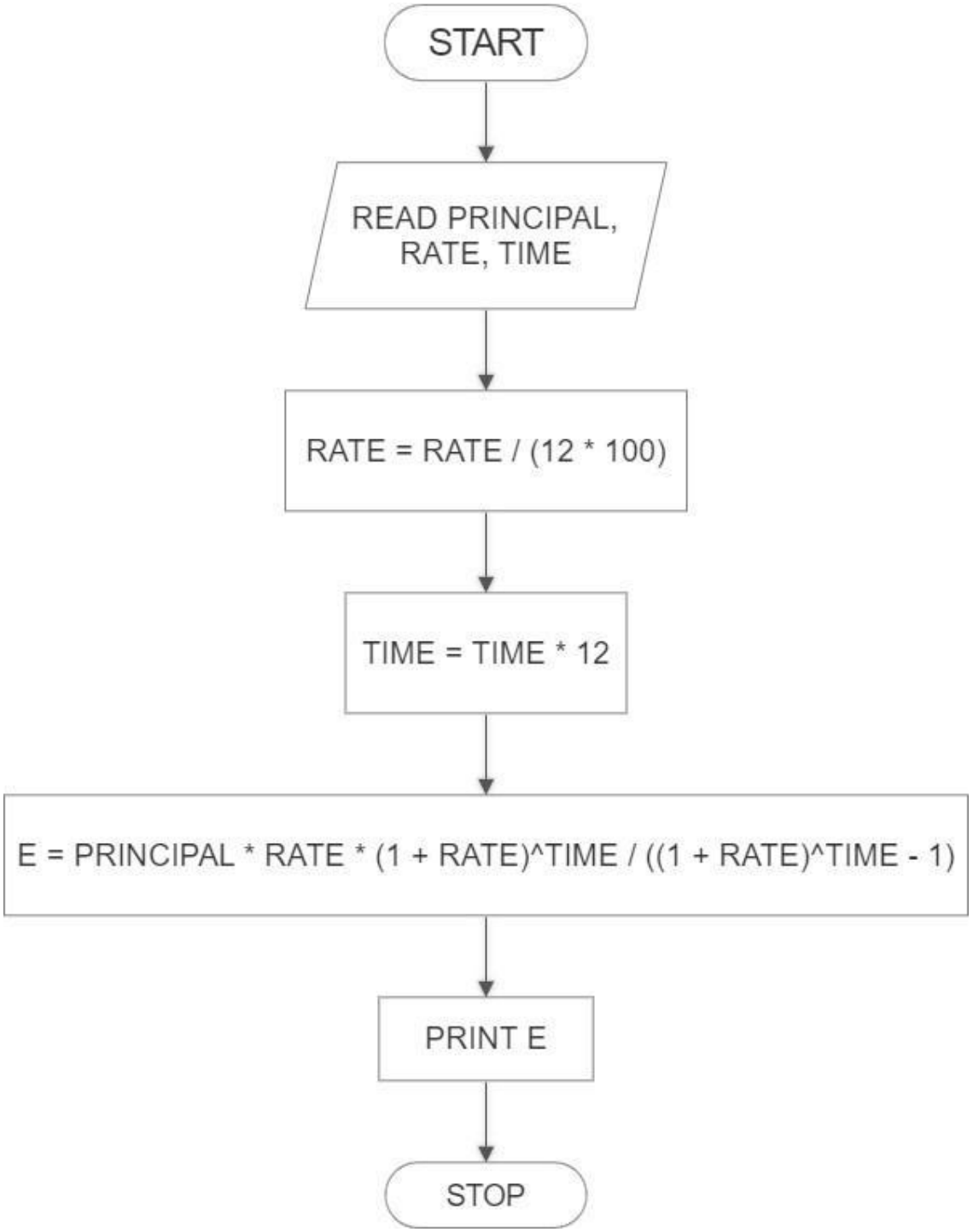
Formula to be used: $(E = (P.r.(1+r)^n) / ((1+r)^n - 1)$

**Flowchart:**

**FLOWCHART FOR PROBLEM 1 -**



**FLOWCHART FOR PROBLEM 2 -**



**Implementation details:**

**CODE FOR PROBLEM 1 -**

```
#include <stdio.h>
int main()

{

   float Radius, PI = 3.14, AREA, CIRCUMFERENCE;

   printf("Enter radius: ");
   scanf("%f", &Radius);

   AREA = PI * Radius *  Radius;
   CIRCUMFERENCE = 2 * PI *  Radius;

   printf("Area is %f and circumference is %f", AREA,CIRCUMFERENCE);
   return 0;

}
```

**CODE FOR PROBLEM 2 -**

```
#include <stdio.h>
#include
<math.h>

int main()

{

   float PRINCIPAL, RATE, TIME, E;

   printf("Enter principal: ");
   scanf("%f", &PRINCIPAL);
   printf("Enter rate: ");
   scanf("%f", &RATE);
   printf("Enter time in year: ");
   scanf("%f", &TIME);

   RATE = RATE / (12 * 100);
   TIME = TIME * 12;

   E = (PRINCIPAL * RATE * pow(1 + RATE, TIME)) / (pow(1 + RATE, TIME) - 1);
```

```
    printf("Monthly EMI is = %f\n", E);

    return 0;

}
```

**Output(s):**

**OUTPUT OF PROBLEM 1 -**

```
Enter radius: 29
Area is 2640.740234 and circumference is 182.120010
```

**OUTPUT OF PROBLEM 2 -**

```
Enter principal: 999
Enter rate: 12
Enter time in year: 10
Monthly EMI is = 14.332754
```

**Conclusion:**

**For problem 1**: Radius of a circle is taken from the user as an input. Area and circumference is calculated and the result is displayed.

**For problem 2**: Principal, rate of interest and time(in years) is taken from the user and EMI is calculated and the calculated EMI is displayed on the screen.

**Post Lab Descriptive Questions**

1. **What are the basic data types in C?**
2. **What is a flowchart? What are the standard symbols used to draw a flowchart ? Explain in brief.**

**Ans 1:**

There are five basic data types in c. They are:

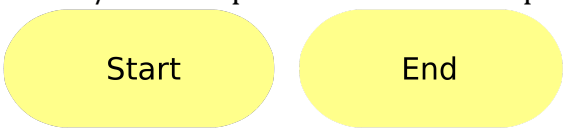
1. int - Used to store integer value.
2. float - Used to store floating point values.
3. double - Used to store floating point values with double precision.
4. char - Used to store a single character.
5. void - Used for specifying the type of function or what it returns.

**Ans 2:**

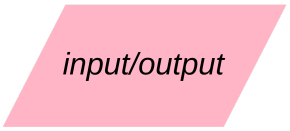
1. A flowchart is a type of diagram that represents a workflow or process.
2. A flowchart can also be defined as a diagrammatic representation of an algorithm, a step-by-step approach to solving a task.

3. The flowchart shows the steps as boxes of various kinds, and their order by connecting the boxes with arrows.
4. Standard symbols used to draw a flowchart are -

START/END - Represents start or end point.

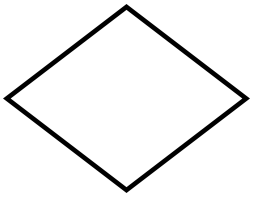



INPUT/OUTPUT - Represents input and output.




ARROW - A connector and shows relationships between representative shapes.

DECISION - A diamond shaped box used to decide yes/no and true/false conditions.



PROCESS - A rectangular shaped box used to show a process or operation.

**Date:_____** **Signature of faculty in-charge**