

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

(A Constituent College of Somaiya Vidyavihar University)

**Batch: C2-2                      Roll No.: 16010122109**

**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:

- 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.

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

**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:**

Formulate a problem statement and develop the logic (algorithm/flowchart ) for its solution.

---

**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

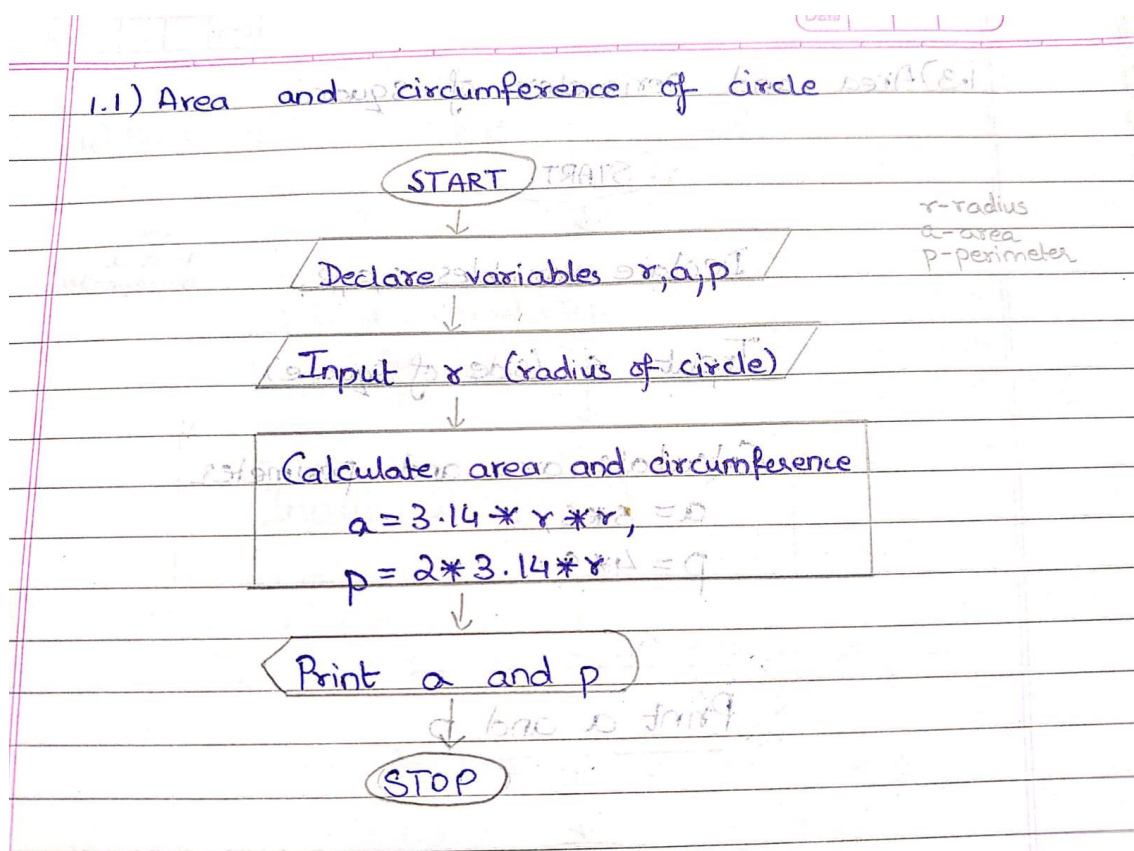
**Problem 2: Calculating EMI**

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 instalment E as an outcome.

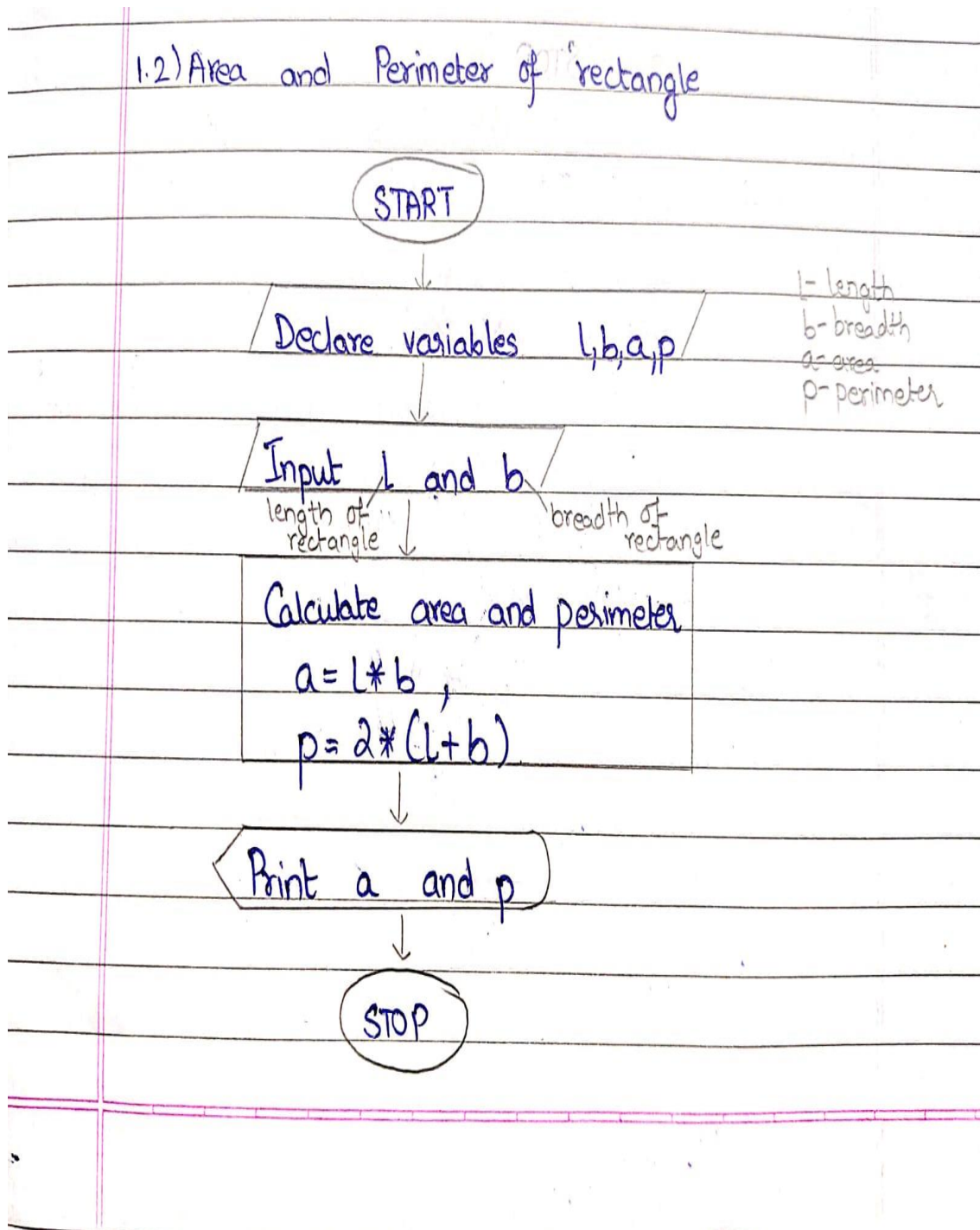
Formula to be used:  $E = (P \cdot r \cdot (1+r)^n) / ((1+r)^n - 1)$

**Flowchart:**

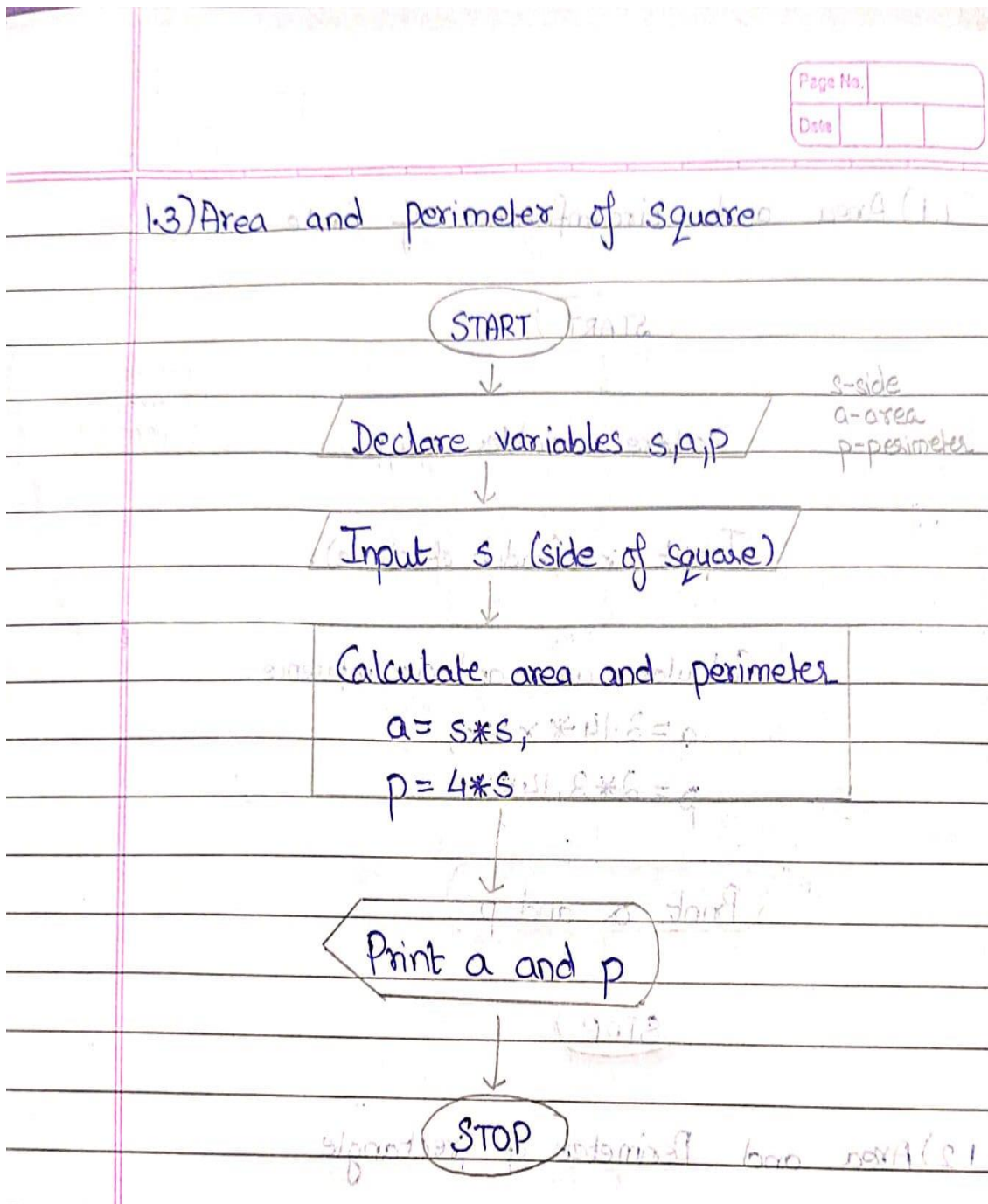
**1.1 ] Area and circumference of circle:**



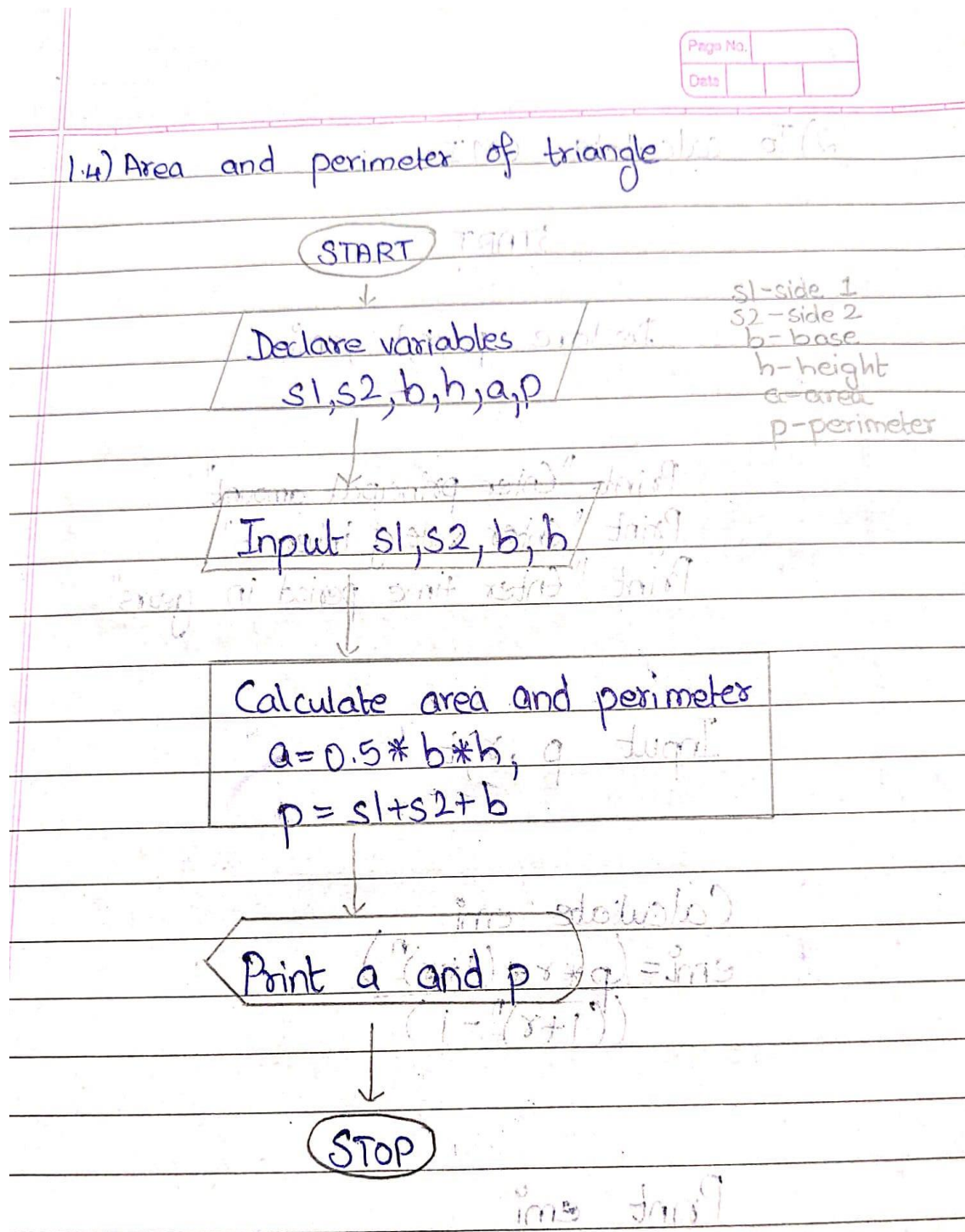
1.2 ] Area and perimeter of rectangle:



1.3 ] Area and perimeter of square:

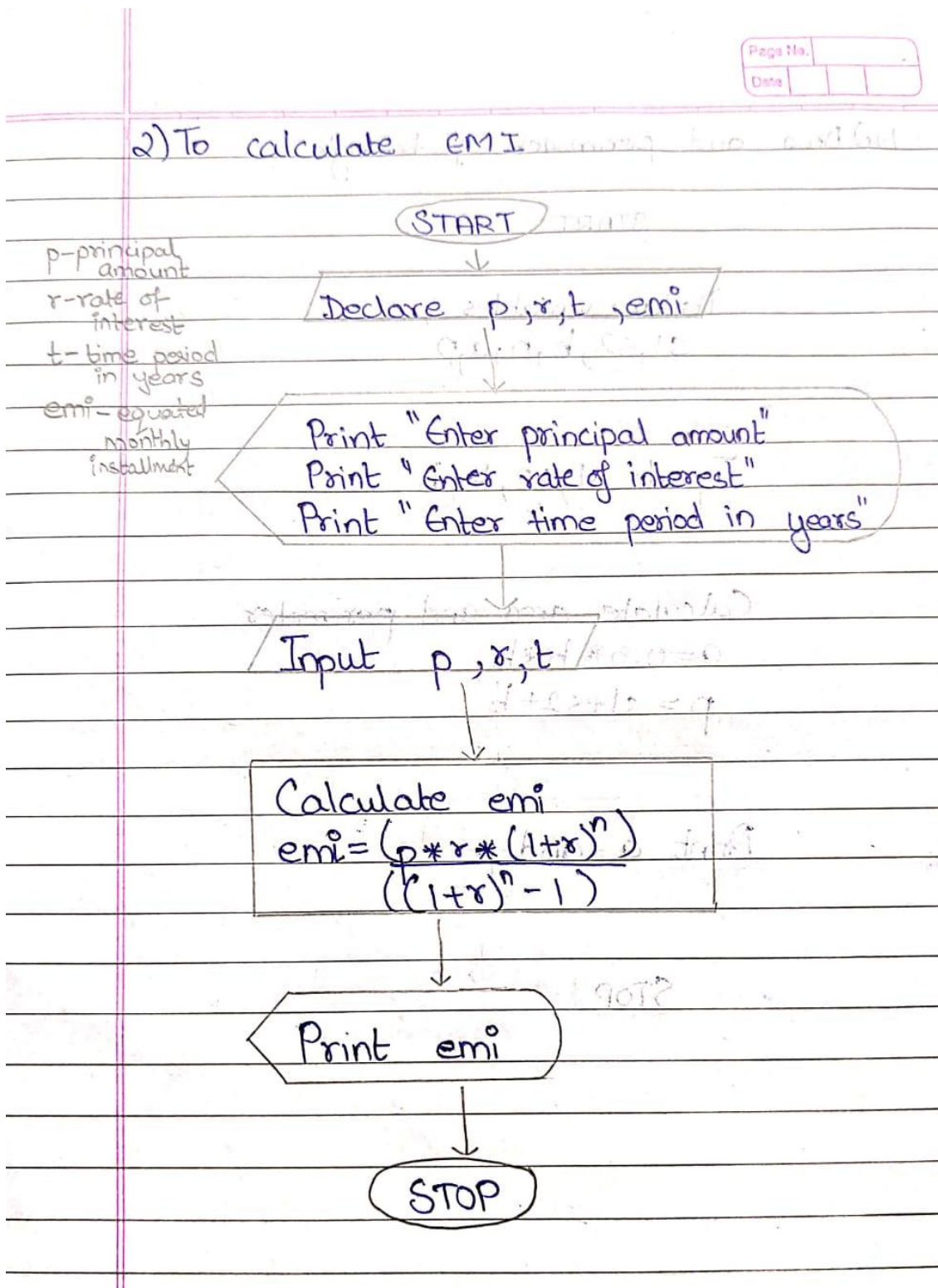


1.4 ] Area and perimeter of square:





1.5 ] To calculate EMI :



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

(A Constituent College of Somaiya Vidyavihar University)

### **Implementation details:**

```
#include <stdio.h>
main ()
// 1.1] area and circumference of circle
{
    float r,a,p;
    printf("Enter radius of circle:");
    scanf("%f",&r);
    a=3.14*r*r;
    p=2*3.14*r;
    printf("Area= %.2f",a);
    printf("\nCircumference= %.2f",p);
}
```

```
//1.2] area and perimeter of rectangle
#include <stdio.h>
main ()
{
    float l,b,a,p;
    printf("Enter length of rectangle:");
    scanf("%f",&l);
    printf("Enter breadth of rectangle:");
    scanf("%f",&b);
    a=l*b;
    p=2*(l+b);
    printf("Area= %.2f",a);
    printf("\nPerimeter= %.2f",p);
}
```

```
//1.3] area and perimeter of square
#include <stdio.h>
main ()
{
    float s,a,p;
    printf("Enter side of square:");
    scanf("%f",&s);
    a=s*s;
    p=4*s;
    printf("Area= %.2f",a);
    printf("\nPerimeter= %.2f",p);
}
```

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

(A Constituent College of Somaiya Vidyavihar University)

//1.4] area and perimeter of triangle

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

```
main ()
```

```
{
```

```
    float b,h,s,s2,a,p;
```

```
    printf("Enter base of triangle:");
```

```
    scanf("%f",&b);
```

```
    printf("Enter height of triangle:");
```

```
    scanf("%f",&h);
```

```
    printf("Enter side 1 of triangle:");
```

```
    scanf("%f",&s);
```

```
    printf("Enter side 2 of triangle:");
```

```
    scanf("%f",&s2);
```

```
    a=0.5*b*h;
```

```
    p=s+s2+b;
```

```
    printf("Area= %.2f",a);
```

```
    printf("\nPerimeter= %.2f",p);
```

```
}
```

//2] calculate emi

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

```
main ()
```

```
{
```

```
    float pr,r,t,e;
```

```
    printf("To calculate EMI (Equated Monthly Instalment) of loan amount:-\n");
```

```
    printf("Enter the principal amount:");
```

```
    scanf("%f",&pr);
```

```
    printf("Enter the rate of interest:");
```

```
    scanf("%f",&r);
```

```
    printf("Enter the time period in a year:");
```

```
    scanf("%f",&t);
```

```
    r=r/(12*100);
```

```
    t=t*12;
```

```
    e=(pr*r*pow(1+r,t))/(pow(1+r,t)-1);
```

```
    printf("EMI= %.2f",e);
```

```
}
```

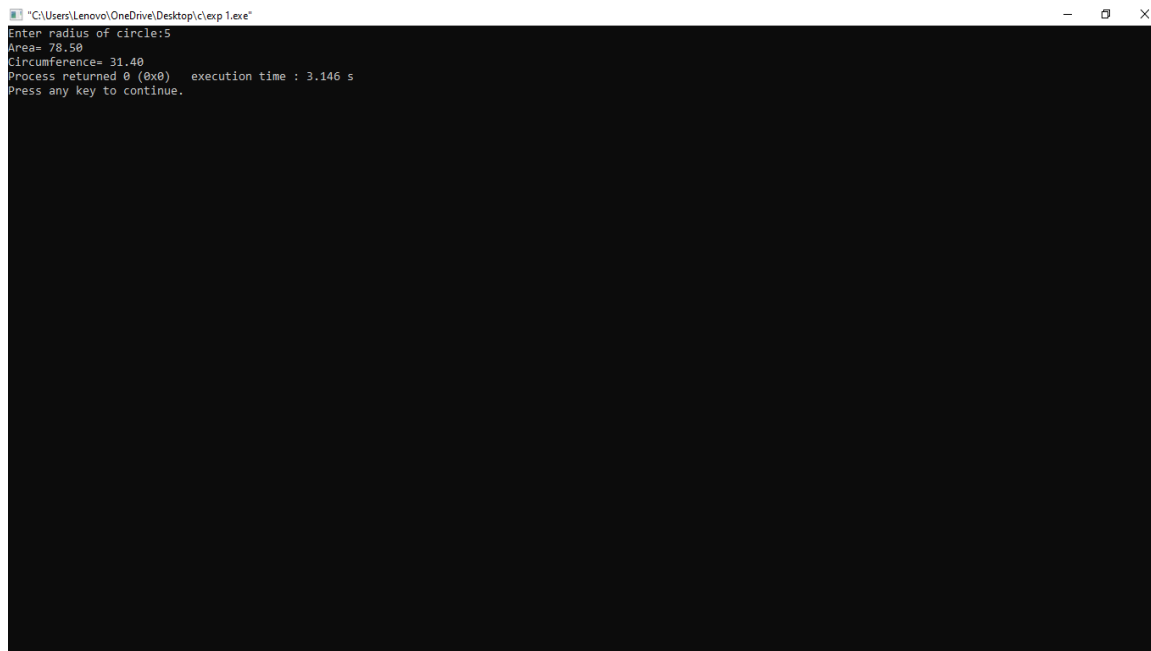


## K. J. Somaiya College of Engineering, Mumbai-77

(A Constituent College of Somaiya Vidyavihar University)

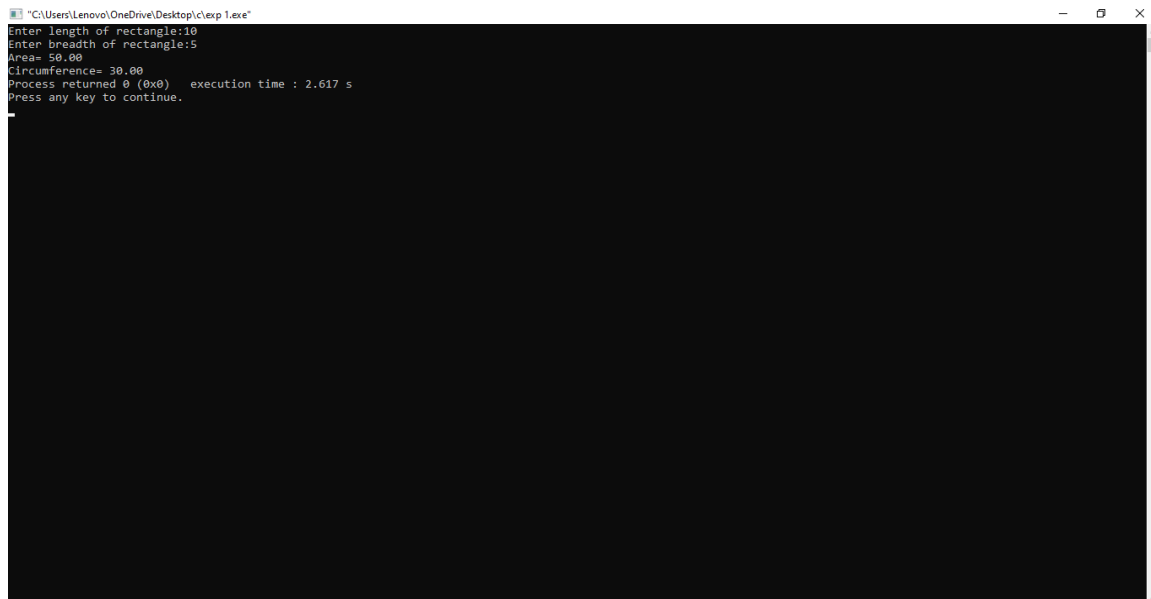
### Output(s):

#### 1.1 ] CIRCLE

A screenshot of a Windows command prompt window titled "C:\Users\Lenovo\OneDrive\Desktop\c\exp 1.exe". The program prompts the user to "Enter radius of circle:5". It then displays the calculated "Area= 78.50" and "Circumference= 31.40". Below these, it shows "Process returned 0 (0x0) execution time : 3.146 s" and "Press any key to continue.".

```
"C:\Users\Lenovo\OneDrive\Desktop\c\exp 1.exe"
Enter radius of circle:5
Area= 78.50
Circumference= 31.40
Process returned 0 (0x0) execution time : 3.146 s
Press any key to continue.
```

#### 1.2] RECTANGLE

A screenshot of a Windows command prompt window titled "C:\Users\Lenovo\OneDrive\Desktop\c\exp 1.exe". The program prompts the user to "Enter length of rectangle:10" and "Enter breadth of rectangle:5". It then displays the calculated "Area= 50.00" and "Circumference= 30.00". Below these, it shows "Process returned 0 (0x0) execution time : 2.617 s" and "Press any key to continue.".

```
"C:\Users\Lenovo\OneDrive\Desktop\c\exp 1.exe"
Enter length of rectangle:10
Enter breadth of rectangle:5
Area= 50.00
Circumference= 30.00
Process returned 0 (0x0) execution time : 2.617 s
Press any key to continue.
```

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

(A Constituent College of Somaiya Vidyavihar University)

### 1.3] SQUARE

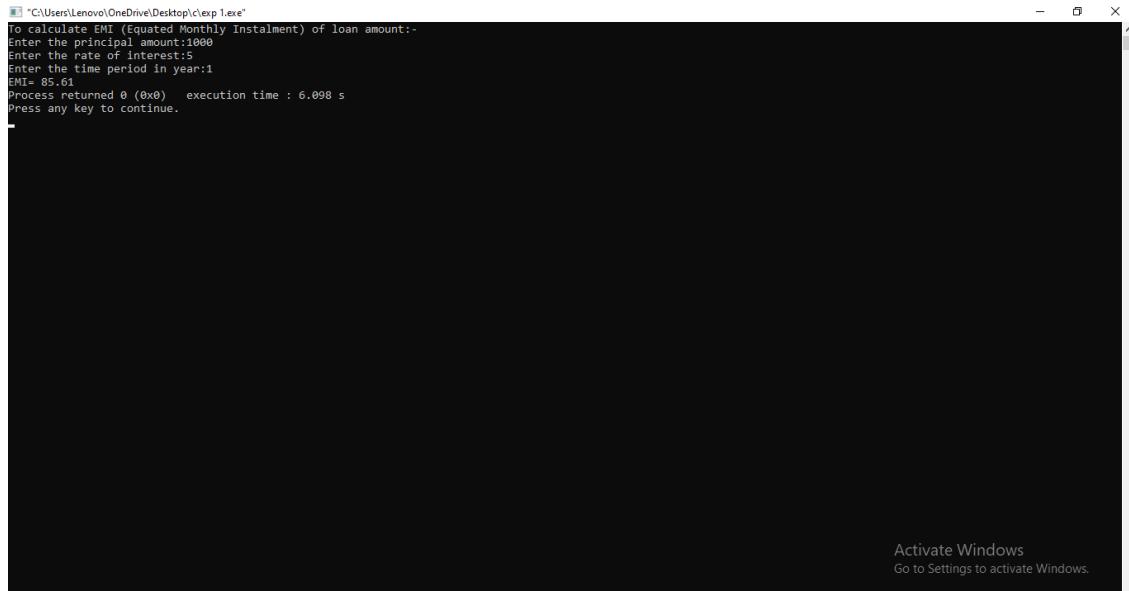
```
"C:\Users\Lenovo\OneDrive\Desktop\c\exp 1.exe"
Enter side of square:10
Area= 100.00
Circumference= 40.00
Process returned 0 (0x0)   execution time : 3.632 s
Press any key to continue.
```

### 1.4 ] TRIANGLE

```
"C:\Users\Lenovo\OneDrive\Desktop\c\exp 1.exe"
Enter base of Triangle:10
Enter height of triangle:10
Enter side 1 of triangle:5
Enter side 2 of triangle:5
Area= 50.00
Circumference= 20.00
Process returned 0 (0x0)   execution time : 9.023 s
Press any key to continue.
```

Activate Windows  
Go to Settings to activate Windows.

## 2 ] To calculate EMI



```
To calculate EMI (Equated Monthly Instalment) of loan amount:-
Enter the principal amount:1000
Enter the rate of interest:5
Enter the time period in year:1
EMI= 85.61
Process returned 0 (0x0)   execution time : 6.098 s
Press any key to continue.
```

### **Conclusion:**

We have learned how to use printf and scanf function, system variables .

### **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.**

1) Basic data types in C:

Integer

Double

Float

Character



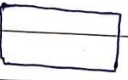

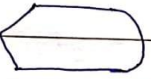

Short

Long

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

(A Constituent College of Somaiya Vidyavihar University)

2) A flowchart is a diagram that represents an algorithm . It is a diagrammatic representation which gives solution of a problem. Flowchart shows steps as boxes of other kind and their order is connected by arrows. It provides breakdown of essential steps in solving a problem.

Flowchart symbols		
- Oval		Denotes start or end of the programme
- Parallelogram		Denotes input operation
- Rectangle		Denotes process to be carried out
- Diamond		Denotes decision to be made. The program should continue along one of the two routes (Eq: If/Then/Else)
- Hybrid		Denotes output operation
- Flowline		Denotes the direction of logic flow in the programme

Date: \_\_\_\_\_

Signature of faculty in-charge

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

(A Constituent College of Somaiya Vidyavihar University)