بِسۡمِ اللّٰہِ الرَّحۡمٰنِ الرَّحِیۡمِ

شروع اللہ تعالیٰ کے نام سے جو بڑا مہربان نہایت رحم والا ہے

Practical Notebook

COMPUTER SCIENCE

9th class.

PUNJAB CURRICULUM AND TEXTBOOK BOARD LAHORE

Authors: **Dr. Muhammad Atif Chattha**
Associate Professor,
Department of Computer Science and IT,
The University of Lahore, Pakistan.

Director Manuscripts: **Dr. Abdullah Faisal**

Supervision: **Jahanzaib Khan**

Dy. Graphics/ Artist: **Aisha Sadiq**

Layout: **Uzair Ahmad**

Designing: **Aleem Ur Rehman**

Co-oridnator: **Jahanzaib Khan**
Subject Specialist (Computer Science)
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Unit # 1 Flowcharts

Unit Introduction

A problem is solved by taking some steps and flowcharts are used to represent those steps graphically. This unit introduces developing a flowchart.

1.1 Basics of a flowchart

1.1.1 Definition

A flowchart is a graphical presentation of certain steps to solve a problem. There is a predefined set of symbols used to show steps and their order.

Figure 1-1 shows a flowchart for the simple problem of wearing shoes with socks. It shows that the order of steps is an important factor to complete a process.

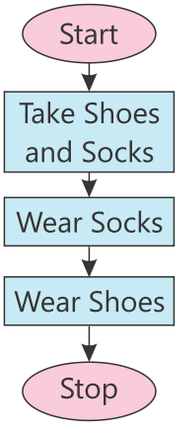


Figure 1.1 A sample Flowchart

1.1.2 Importance of flowcharts in problem solving

A flowchart gives a mechanism to solve a problem and when we observe that mechanism graphically, we quickly understand the solution. In problem solving, flowcharts can be used to plan a solution. It is more effective to visualize a solution graphically than a text. A graphical representation also makes it effective to verify whether a solution is correct or not.

1.1.3 Determining Requirements for a Flowchart

In a flowchart we use input, output, decision making and processing as shown in Figure 1-2. For a flowchart the requirements are to know:

- **Inputs:** Input means taking data from the user. It is important to know, how many and what type of inputs are required. For example, to make tea we need water, milk, sugar, fire, etc. as input.
- **Processing:** Processing is applied to the input w.r.t. the required results. For example, cooking is a process to make tea. A flowchart contains steps to show processing. For numeric data input, a processing can be applying formula, e.g., calculating average of given values.
-

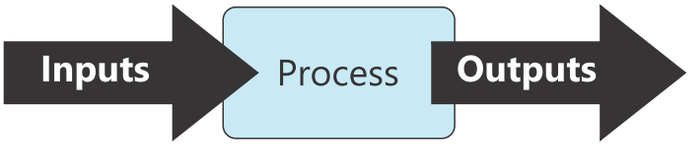


Figure 1.2 Flow from Input to Output

- **Decision Making:** Decision making in a flowchart is used to determine whether a statement is true or false. According to that decision, we take appropriate steps. For example, we will make tea if milk is available, otherwise we will go for black coffee. In such a case, we design a flowchart that shows processing after making a decision about the available values.
- **Outputs:** Outputs are used to display information and usually this information exhibits the processed results. In example of tea making, the output is tea.

1.1.4 Flowchart Symbols

Flowcharts explain the problem solving using symbols and text. They use special shapes to represent steps where arrows show the connectivity of the steps. Table 1-1 shows the most widely used symbols in a flowchart

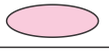
Symbol	Name	Description
	Flow line	It is used to determine the flow of steps in a flowchart.
	Terminal	It indicates start and end of a flowchart.
	Process	It represents operations to change values.
	Decision	It shows a conditional operation that determines which one of the two paths to take. The operation is commonly a yes/no question or a true/false test.
	Input / Output	It indicates the input of data from user or displaying results to user.
	Connector	If a flowchart doesn't fit on a page, then we use connector to connect parts of a flowchart on different pages.

Table 1.1

1.1.5 Arithmetic Operators and their precedence

Symbol	Name
%	Modulus
/	Division
*	Multiplication
-	Subtraction
+	Addition

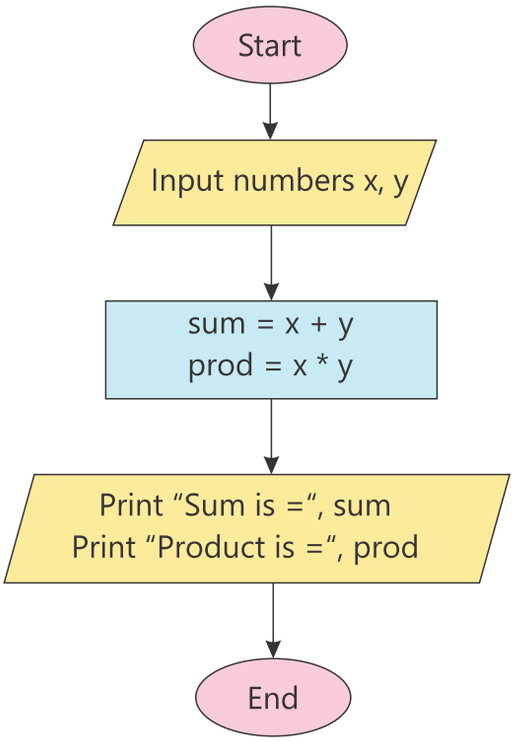
Table 1.2

Exercise of Flowcharts

Practical 1

Draw a flowchart that calculates the sum and product of two numbers.

Flowchart:



Dry run:

Supposed Input:
x = 6 and y = 8

Process:
sum = 6 + 8
prod = 6 * 8

Output:
Sum is = 14
Product is = 48

Note:

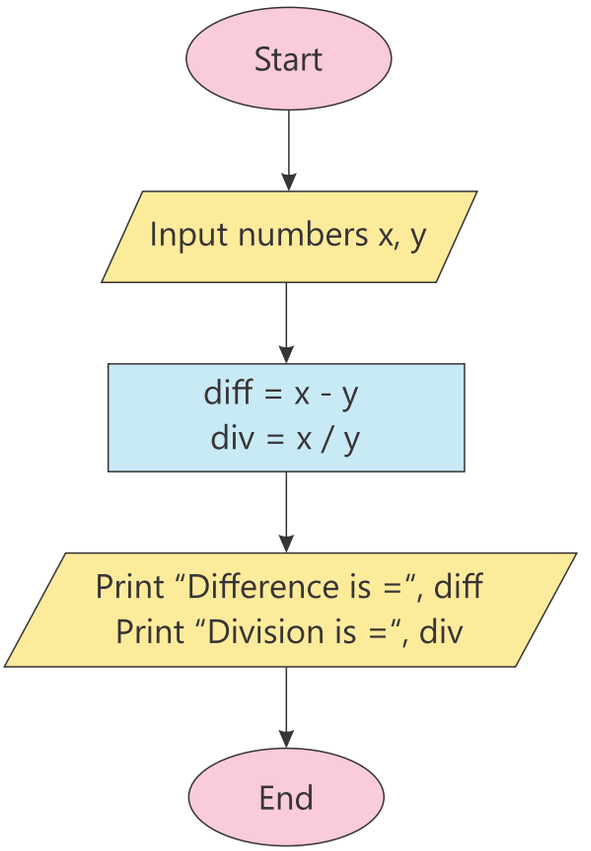
Input statement is used to get data from a user and store in computer memory.
Print statement is used to display data and its respective message. For example, In the above flowchart,

Print "Sum is =", sum
Message — Data stored in memory with name sum

Practical 2

Draw a flowchart that calculates the difference and division of two numbers.

Flowchart:



Dry run:

Supposed Input:

x = 16 and y = 8

Process:

diff = 16 - 8

div = 16 / 8

Output:

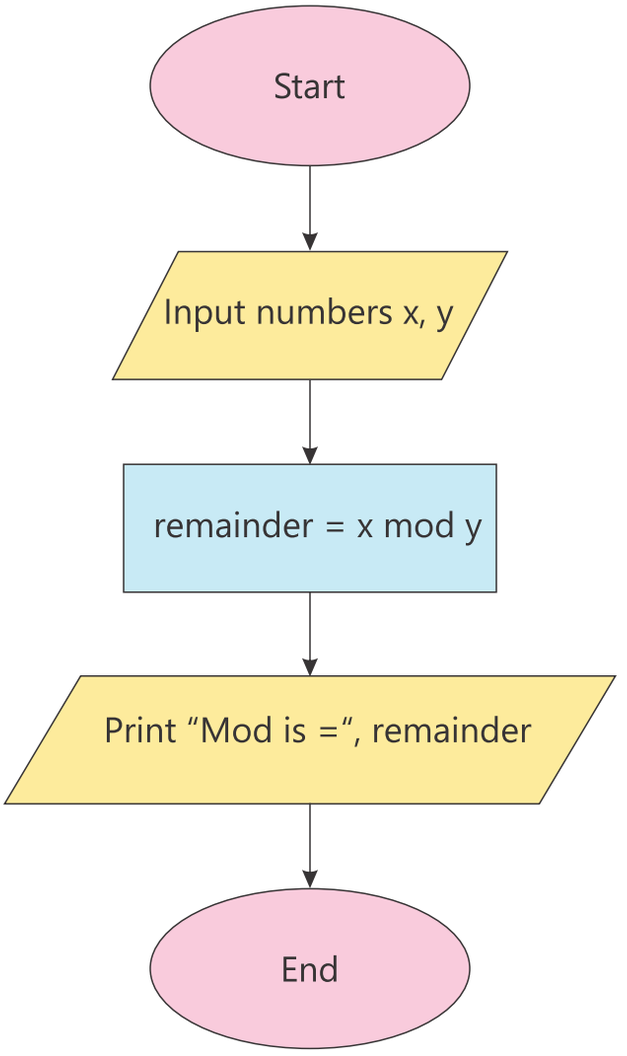
Difference is = 8

Division is = 2

Practical 3

Draw a flowchart that calculates the modulus of an integer with respect to another integer.

Flowchart:



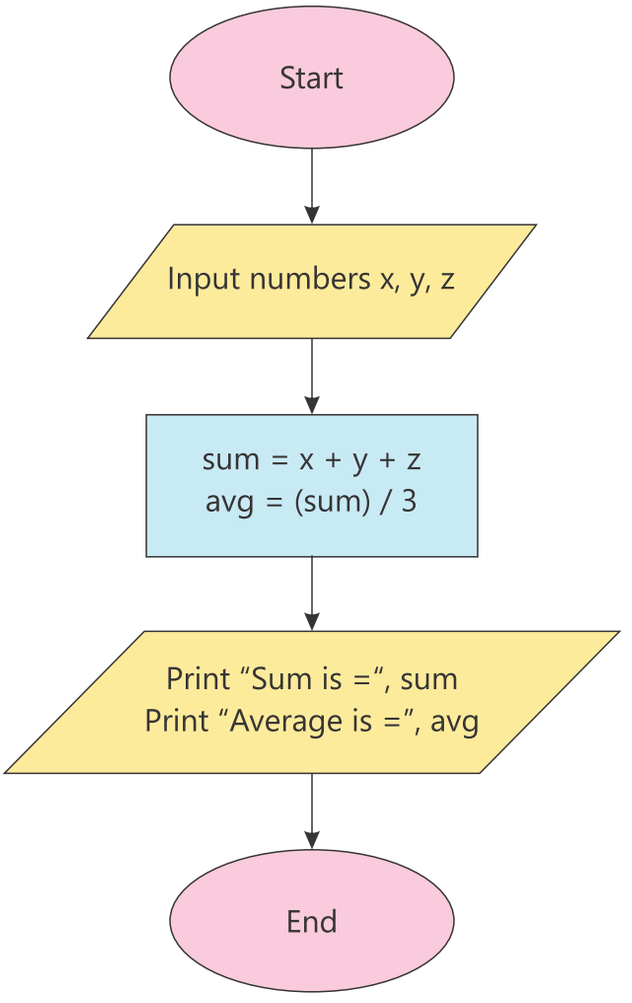
Note:

mod is used to get remainder of a division, after one number is divided by another.
For Example: 15 mod 4 gives 3

Practical 4

Draw a flowchart that calculates the sum and average of three numbers.

Flowchart:



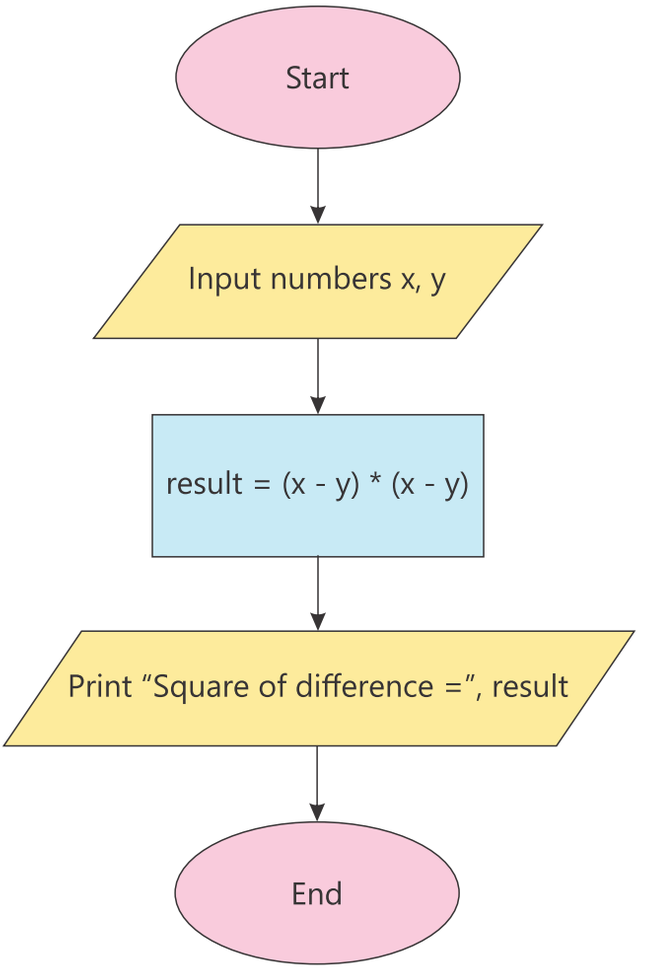
Note:

The operator '/' divides one number by another and gives quotient. For example, 17 / 5 will give 3.4.

Practical 5

Draw a flowchart that takes two numbers (say x and y) as input and displays square of their difference i.e $(x - y)^2$

Flowchart:



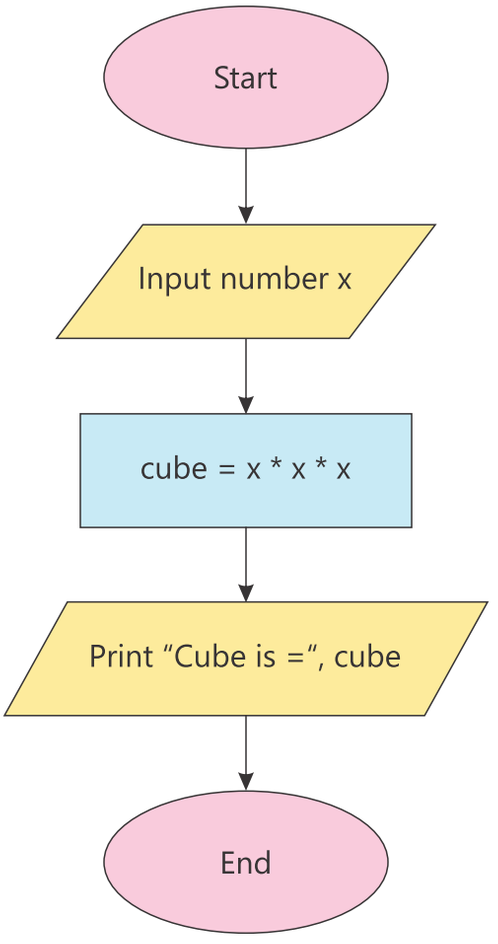
Note:

The ' * ' operator is used for multiplication.

Practical 6

Draw a flowchart that calculates the cube of a number.

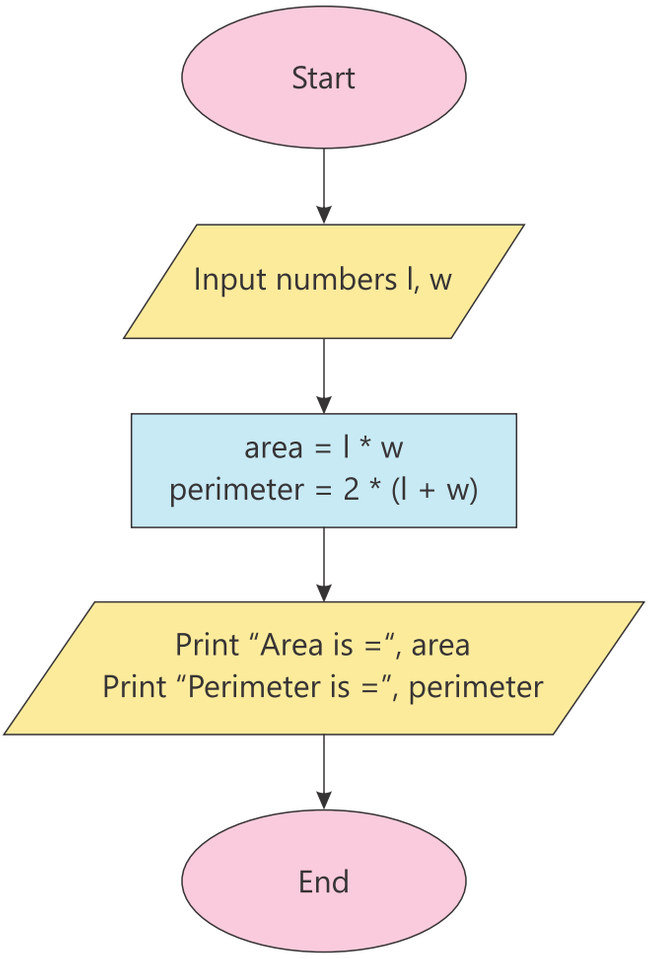
Flowchart:



Practical 7

Draw a flowchart that calculates the area and perimeter of a rectangle.

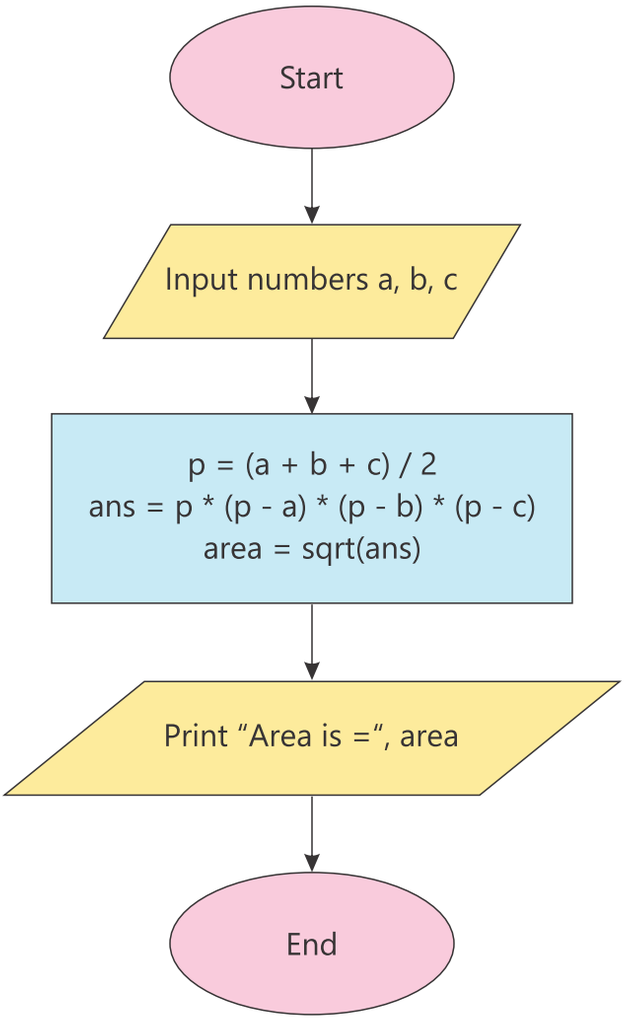
Flowchart:



Practical 8

Draw a flowchart that calculates the area of a triangle when three sides are given.

Flowchart:



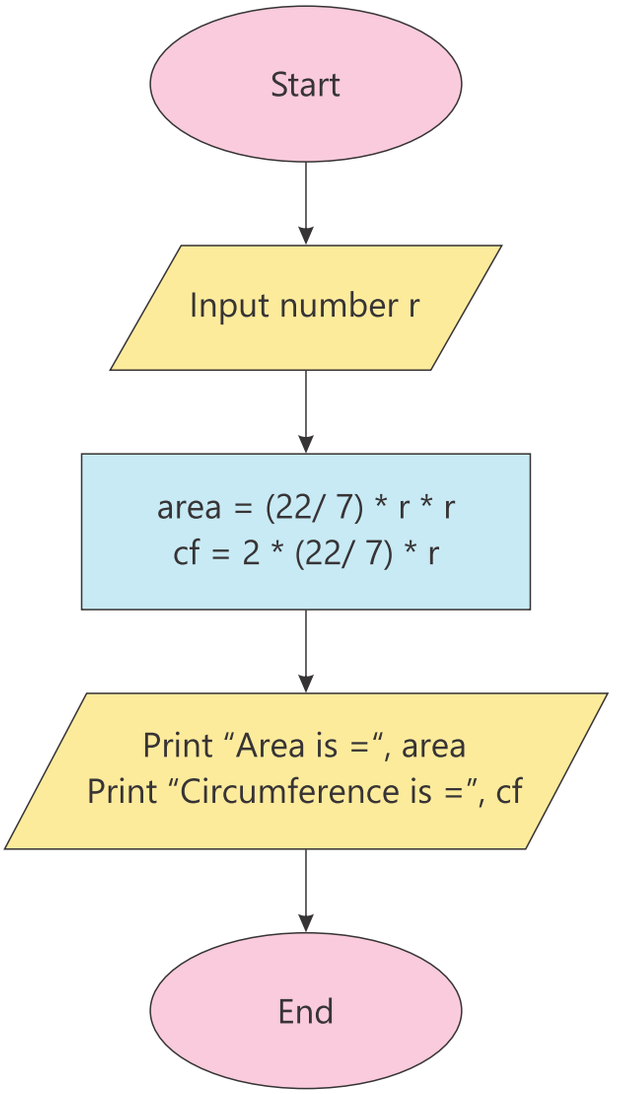
Note:

Here "sqrt" is applied as a function to calculate square root. For example, sqrt(121) will generate 11.

Practical 9

Draw a flowchart that calculates the area and circumference of a circle.

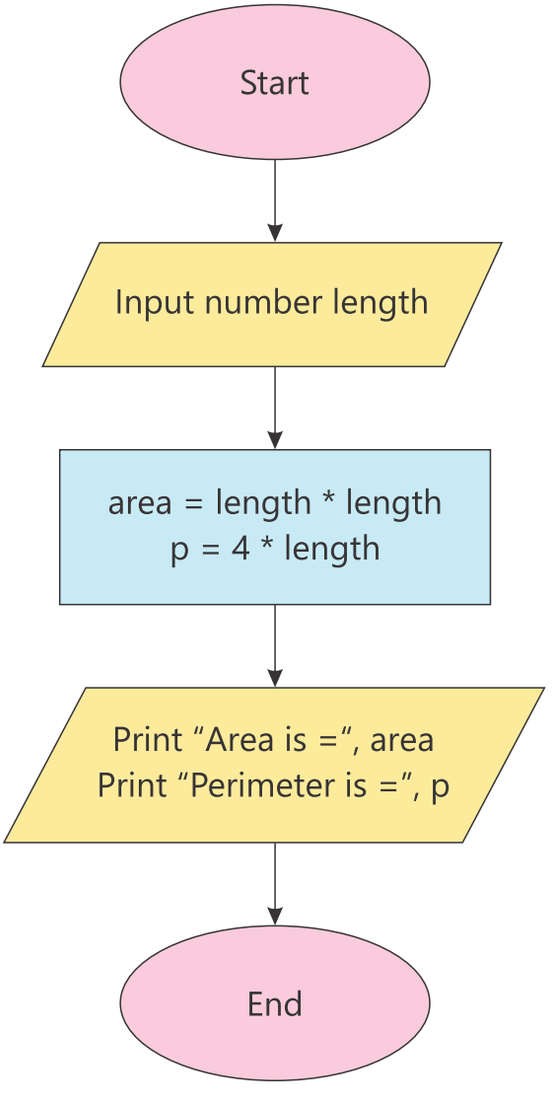
Flowchart:



Practical 10

Draw a flowchart that calculates the area and perimeter of a square when one side is given.

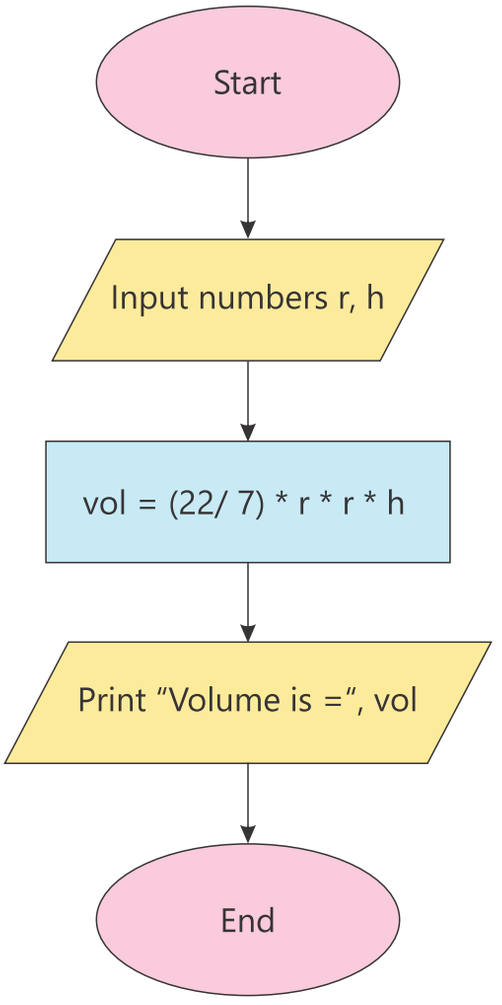
Flowchart:



Practical 11

Draw a flowchart that calculates the volume of a cylinder

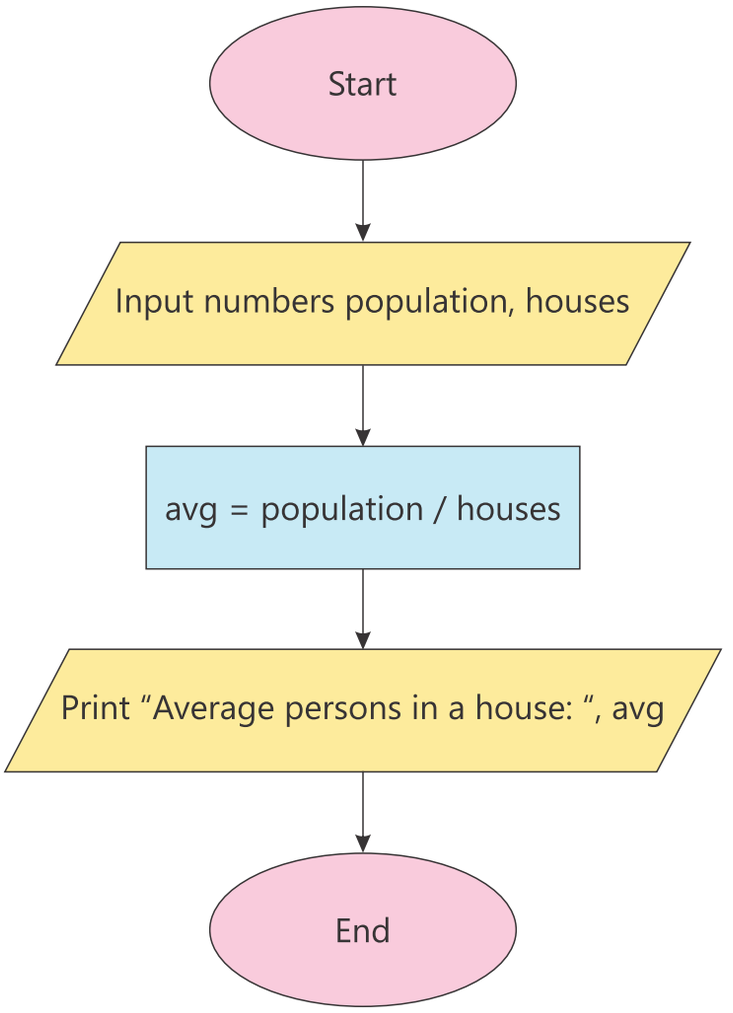
Flowchart:



Practical 12

Draw a flowchart that takes population of Pakistan and number of houses in the whole country as input and gives average number of persons living in a house.

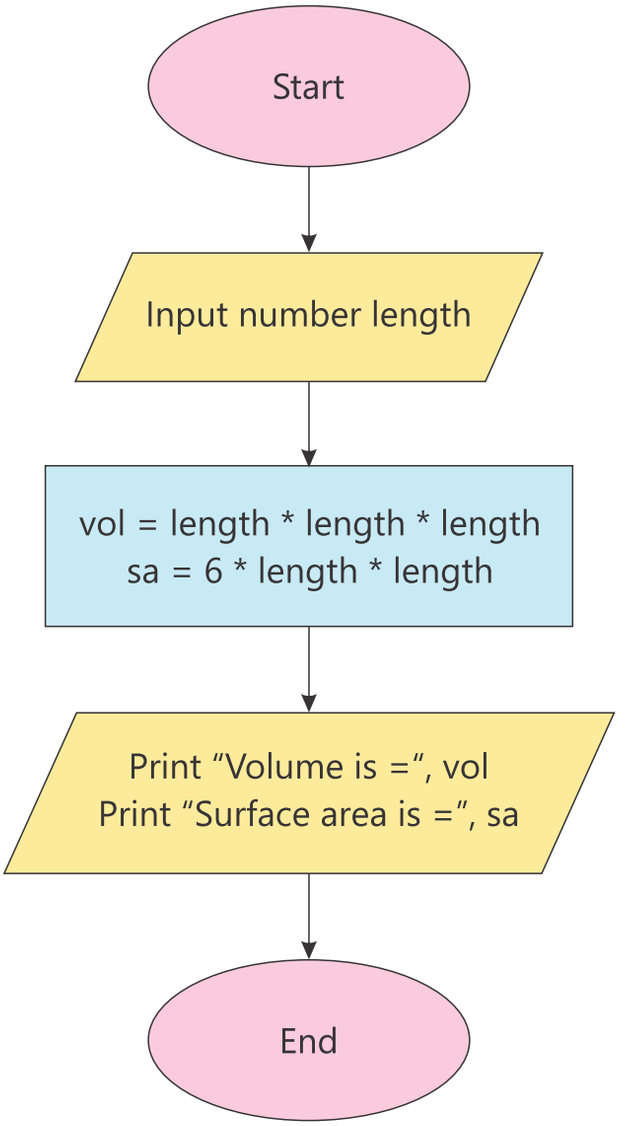
Flowchart:



Practical 13

Draw a flowchart that calculates the surface area and volume of a cube.

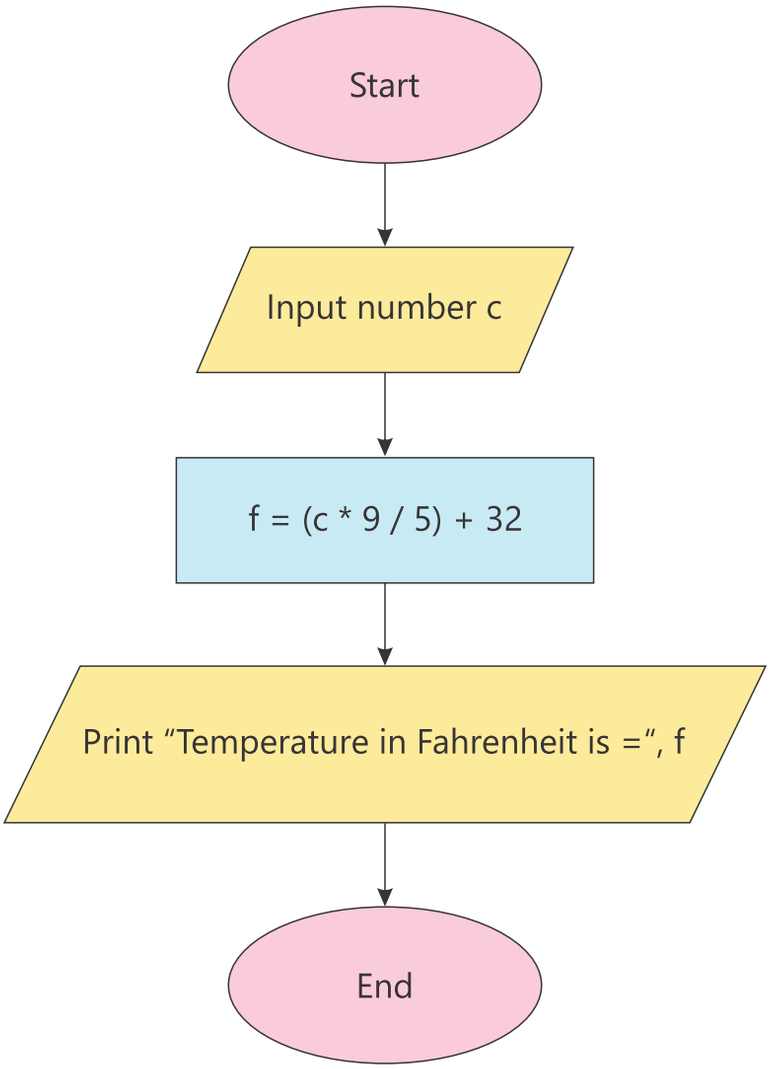
Flowchart:



Practical 14

Draw a flowchart that converts the temperature from centigrade to fahrenheit.

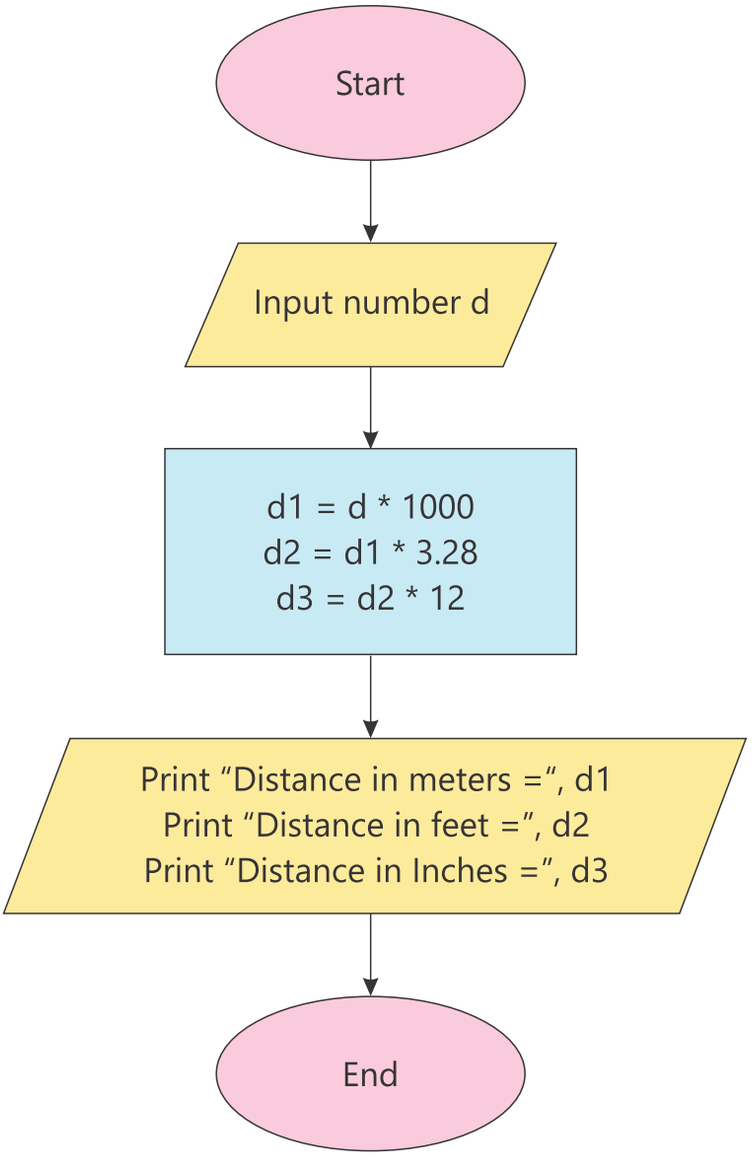
Flowchart:



Practical 15

Draw a flowchart that takes distance between two cities in kilometers as input and prints that distance in meters, feet and inches.

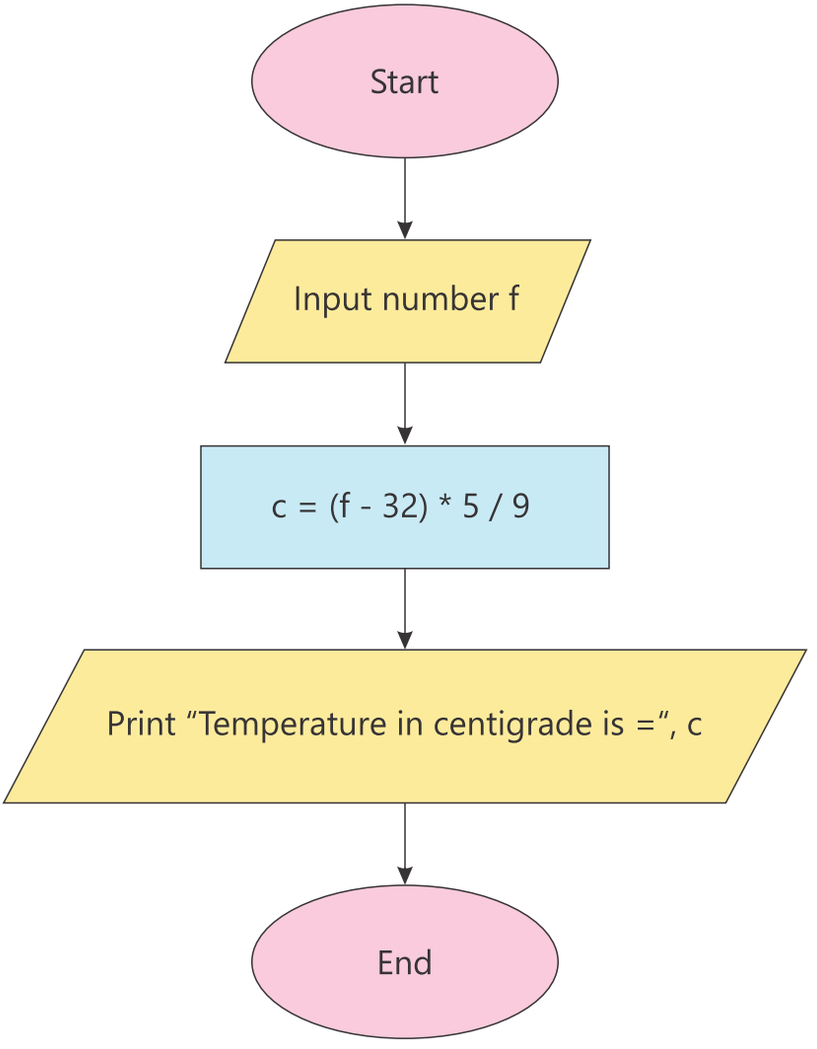
Flowchart:



Practical 16

Draw a flowchart that converts the temperature from fahrenheit to centigrade.

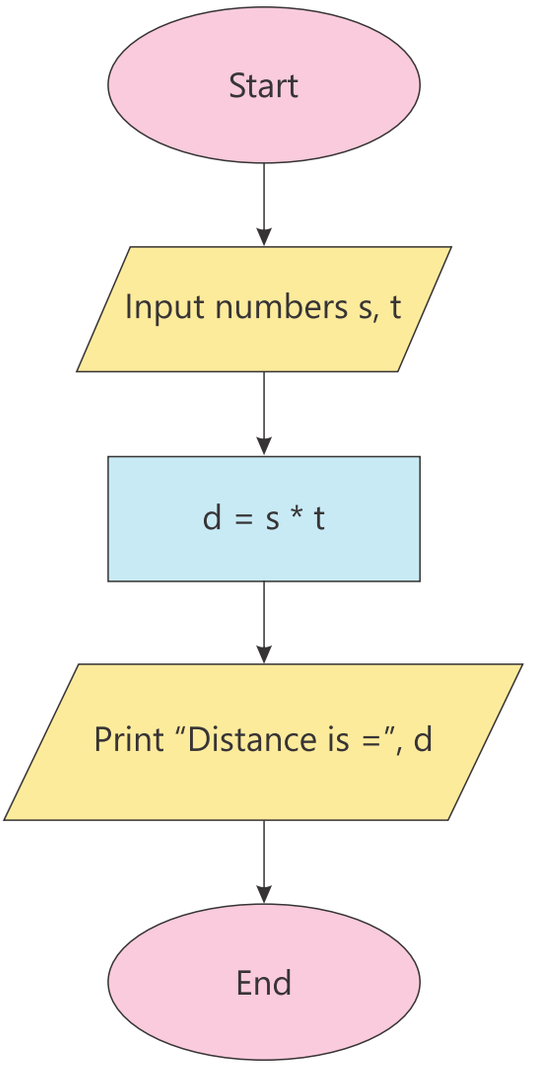
Flowchart:



Practical 17

Draw a flowchart that takes speed and time as input and prints the distance covered.

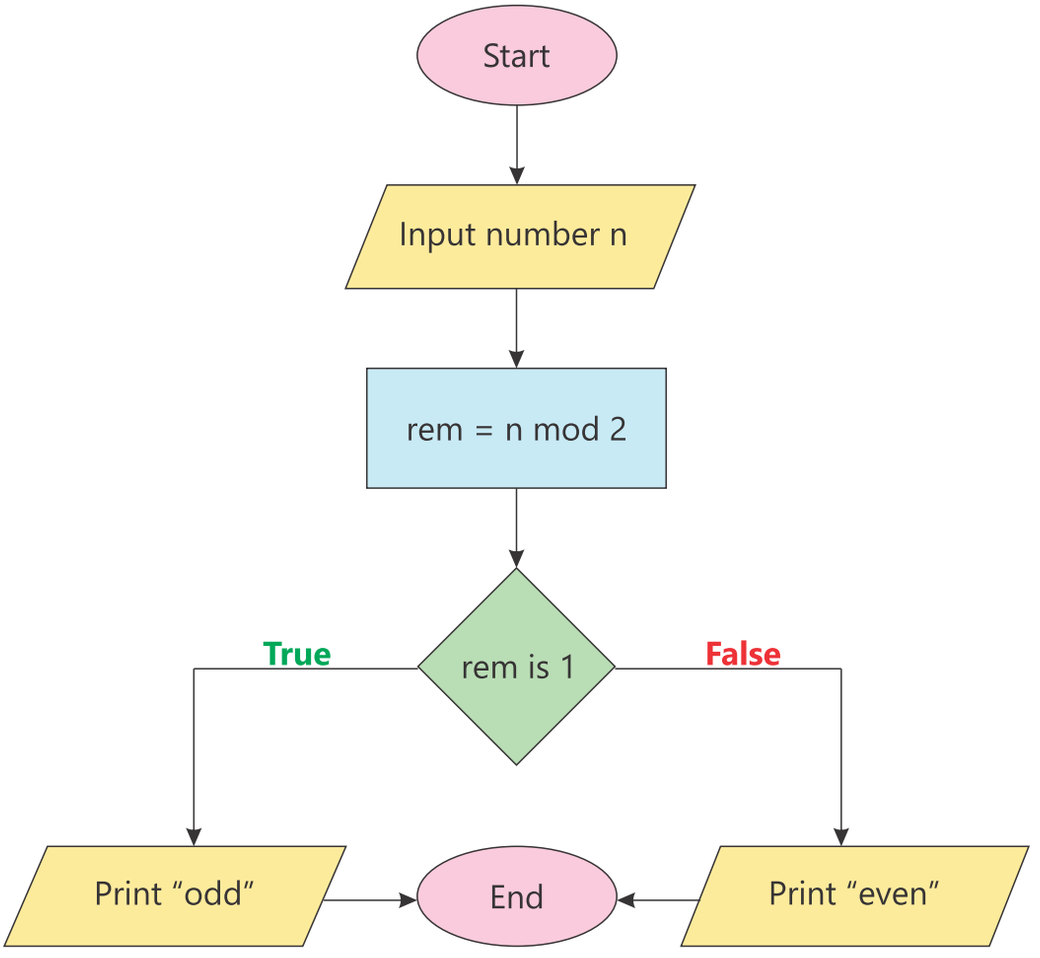
Flowchart:



Practical 18

Draw a flowchart that takes a number as input and displays whether it is even or odd.

Flowchart:



Dry run:

Supposed Input:
n = 5

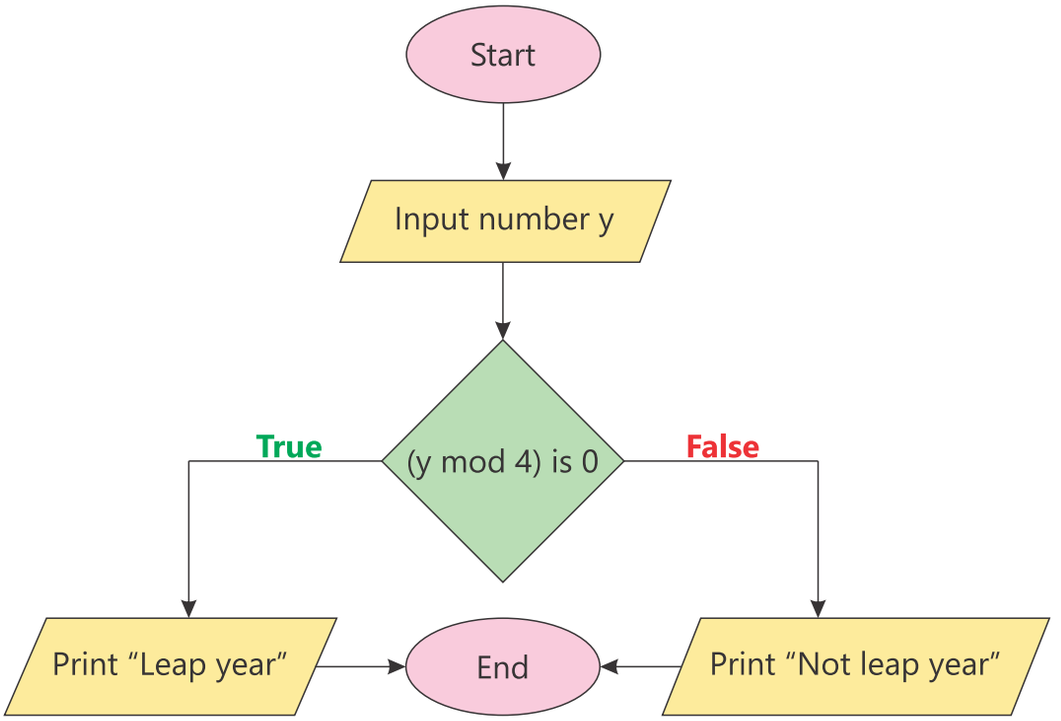
Process:
rem = 5 mod 2

Output:
Odd

Practical 19

Draw a flowchart that takes a year as input displays whether the year is a leap year or not.

Flowchart:



Dry run:

Supposed Input:
y = 2002
Decision:
2002 mod 4 is 0 (false)
Output:
Not leap year

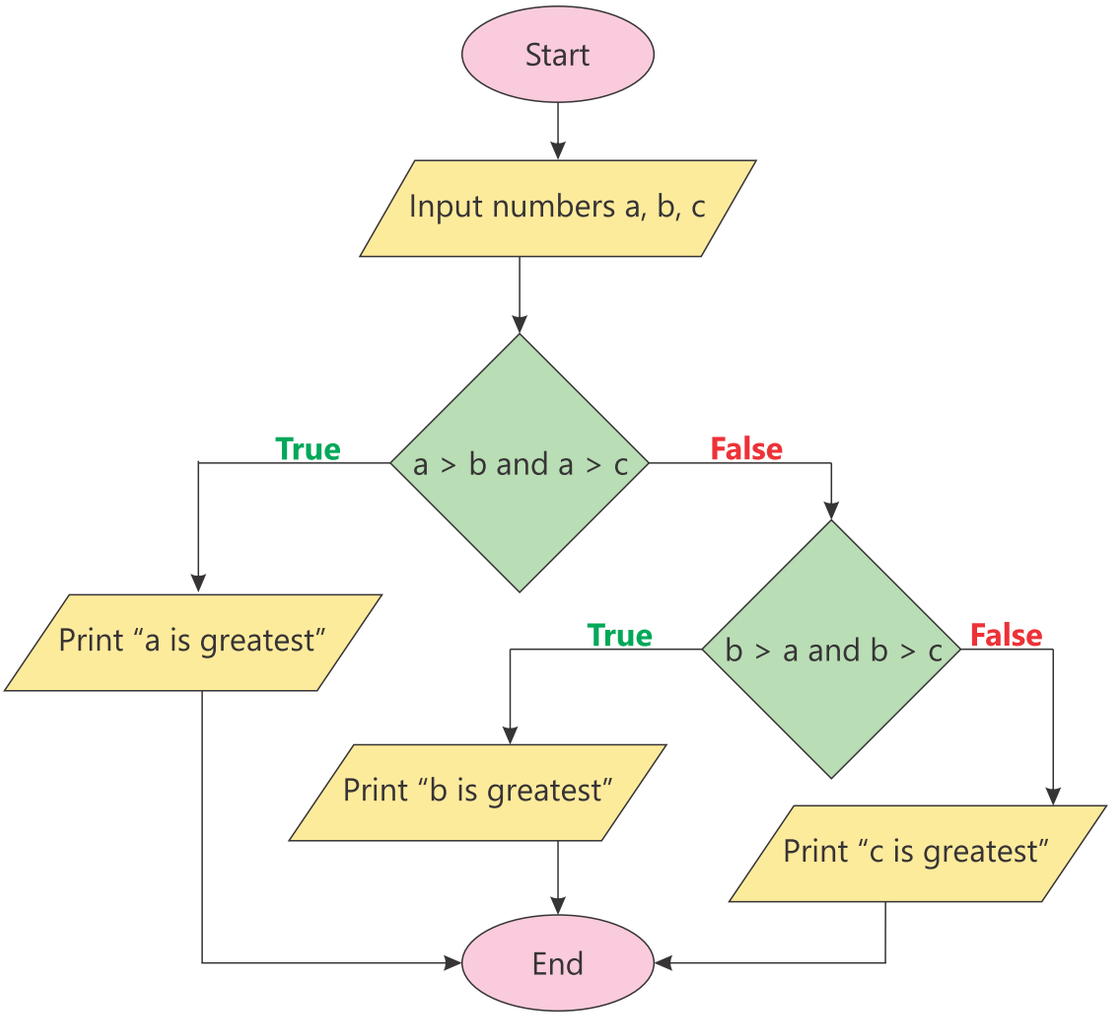
Note:

A year divisible by 4 is considered to be a leap year. The expression "(y mod 4) is 0" is dividing a year value by 4 and comparing whether its remainder is 0 or not. Remainder 0 means completely divisible.

Practical 20

Draw a flowchart that takes three numbers as input and displays the largest among them.

Flowchart:



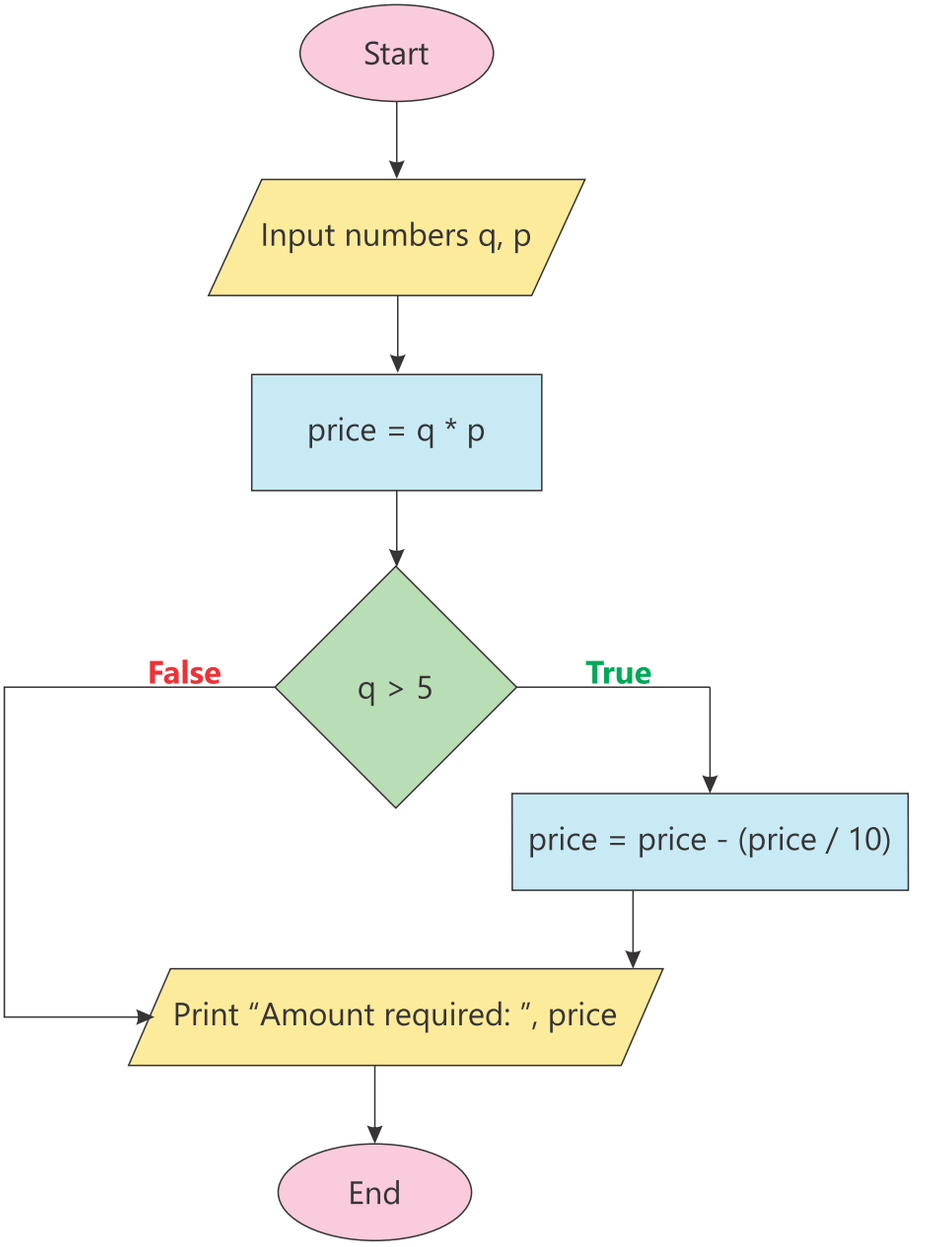
Note:

In the expression "a > b and a > c" we check both "a > b" and "a > c" separately. Their results (true or false) are combined in a way that if both give "true", we get overall "true", otherwise we get "false".

Practical 21

Draw a flowchart to calculate total expenses to buy notebooks. When there is a discount of 10% if more than 5 notebooks are purchased. The flowchart takes quantity and price per notebook and displays the total cost.

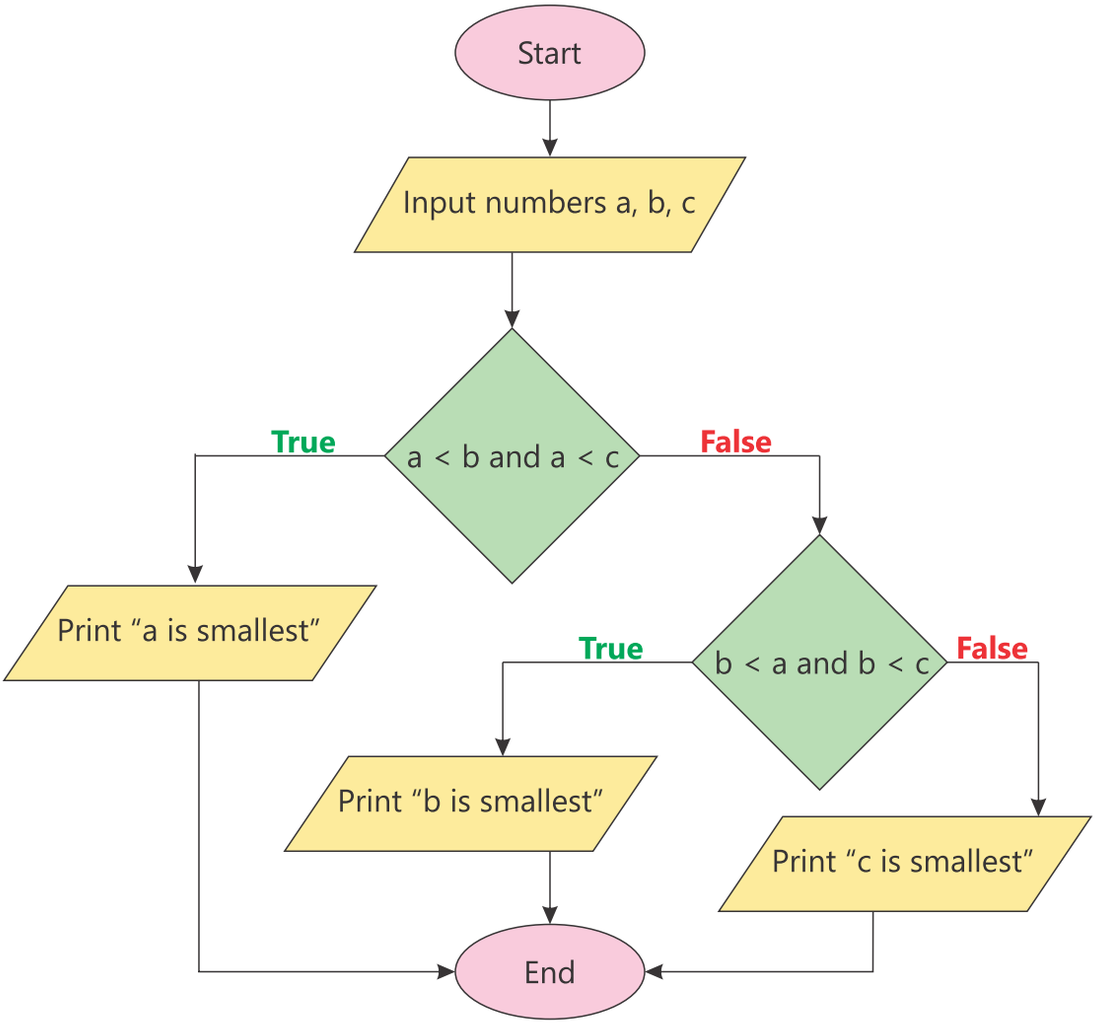
Flowchart:



Practical 22

Draw a flowchart that takes three numbers as input and displays the smallest among them.

Flowchart:



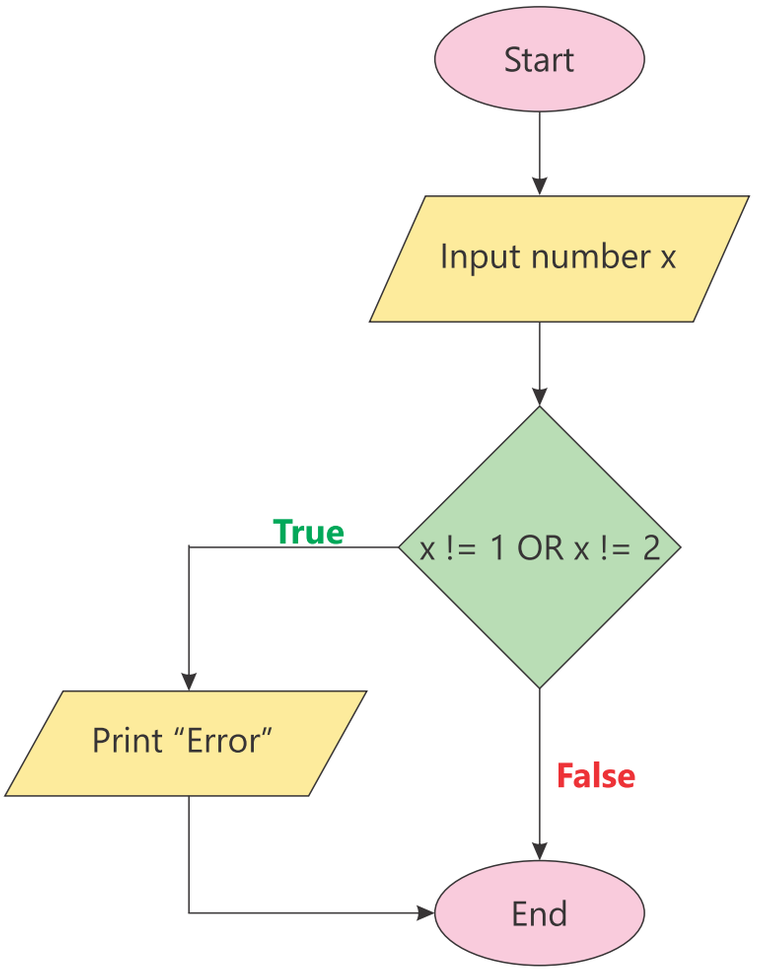
Note:

Students are advised to check the above flowchart by assuming different sets of values for a, b and c.

Practical 23

Draw a flowchart that takes a number as input and prints an error message if the number is not 1 or 2.

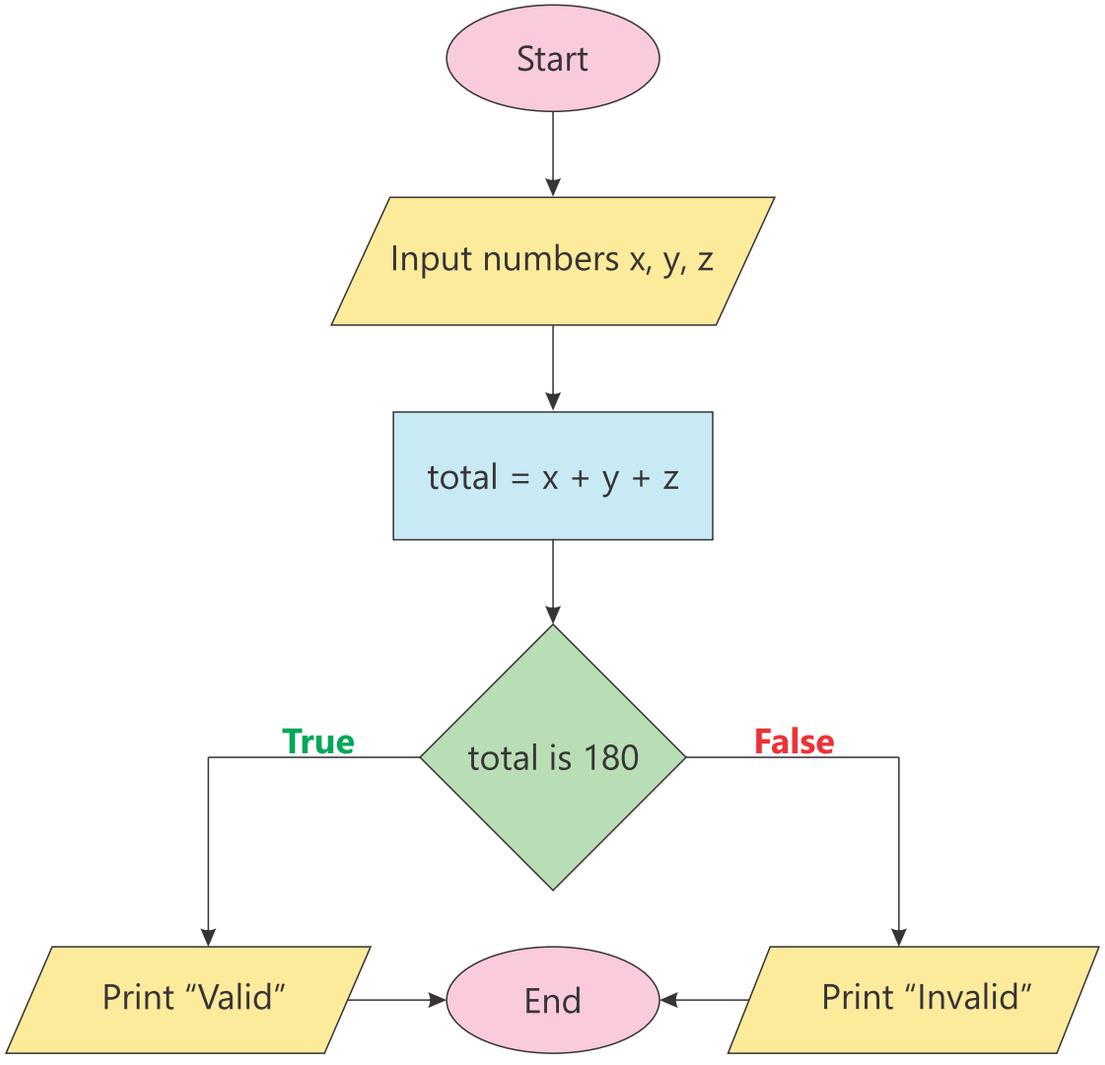
Flowchart:



Practical 24

Draw a flowchart that takes three angles of a triangle as input and displays “valid' if the sum of all the three angles is equal to 180 degrees, otherwise it displays “invalid”.

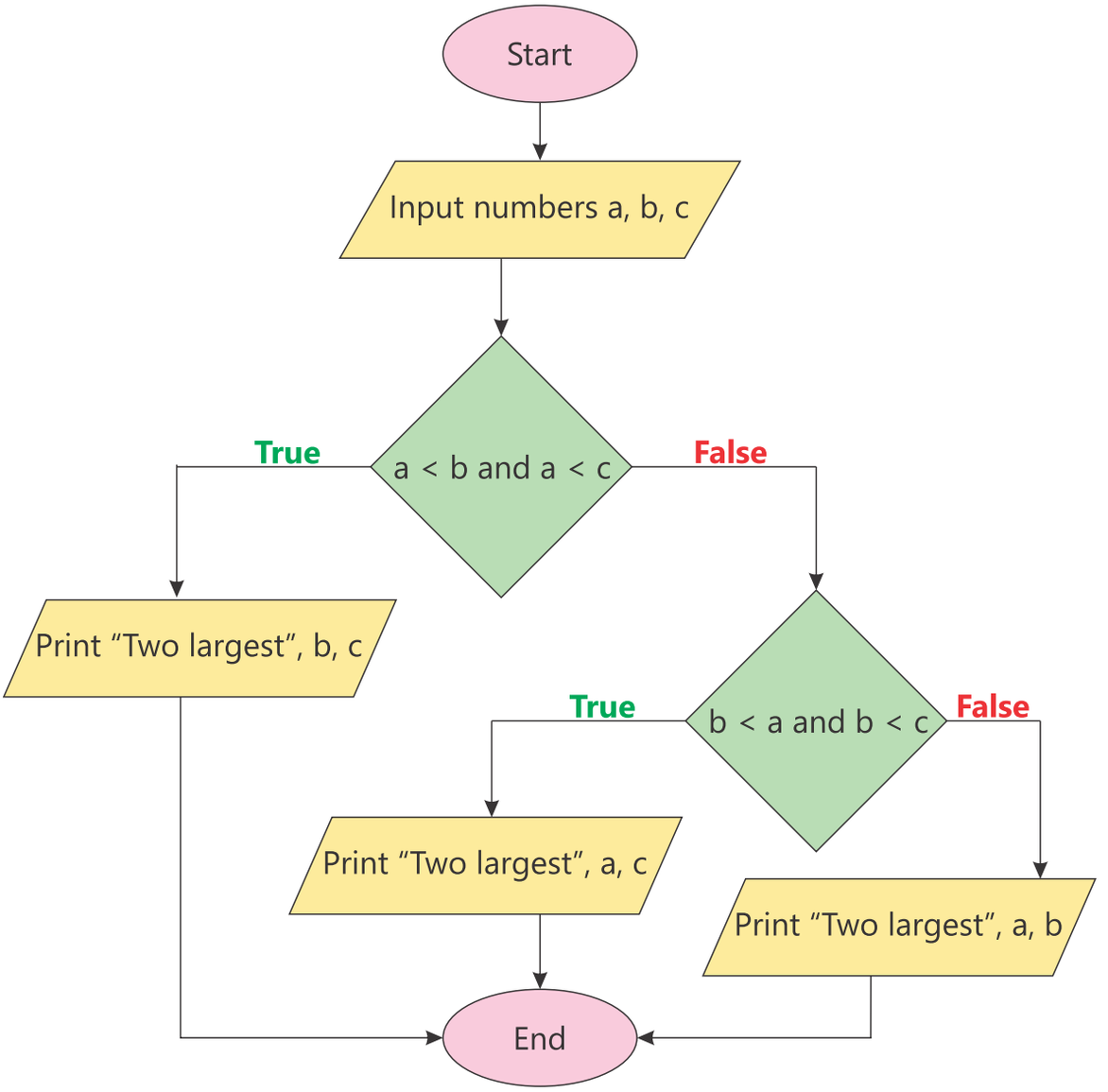
Flowchart:



Practical 25

Draw a flowchart that takes three integers as input and displays the largest two.

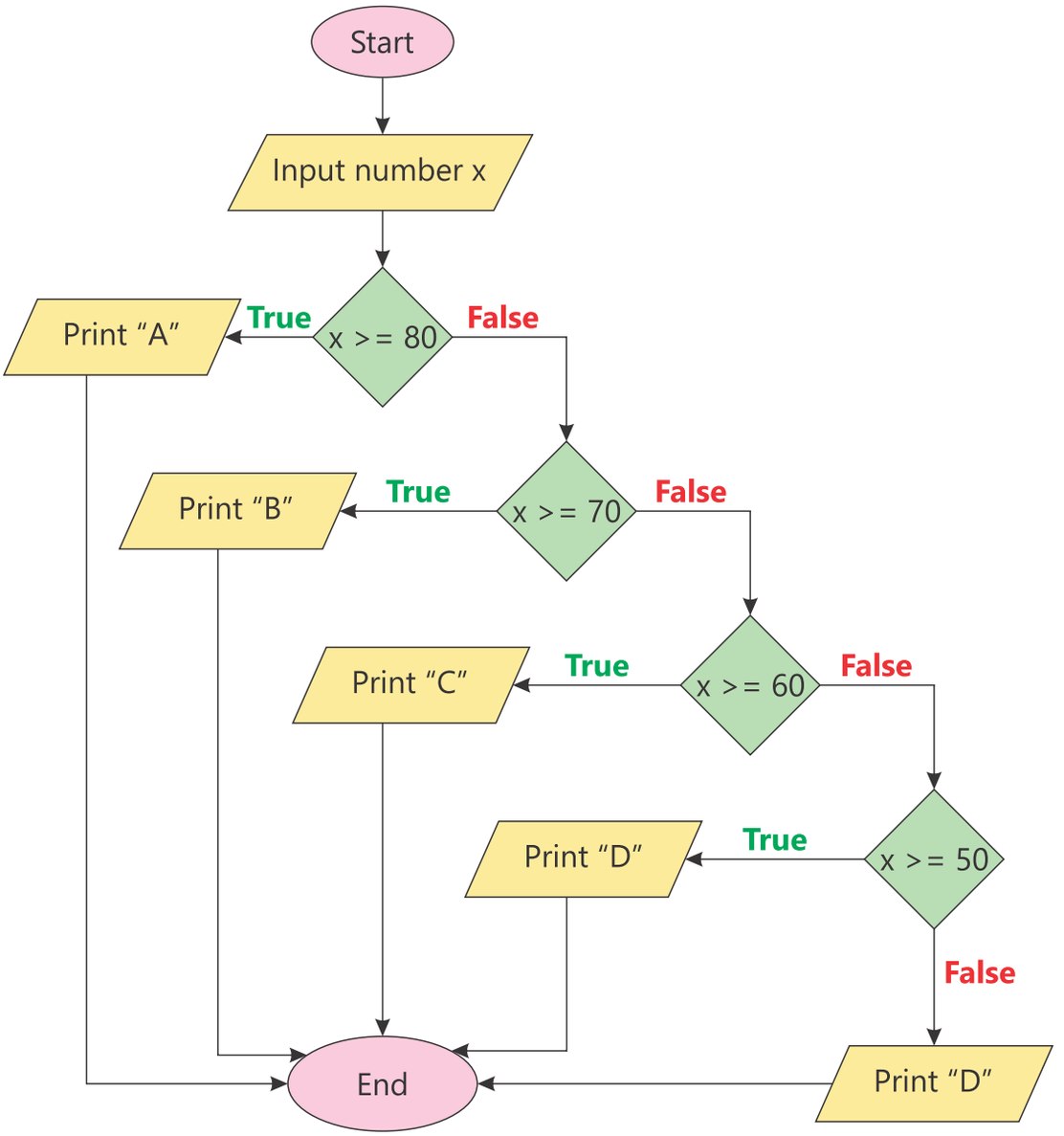
Flowchart:



Practical 26

Draw a flowchart that prints the grade of a student.

Flowchart:

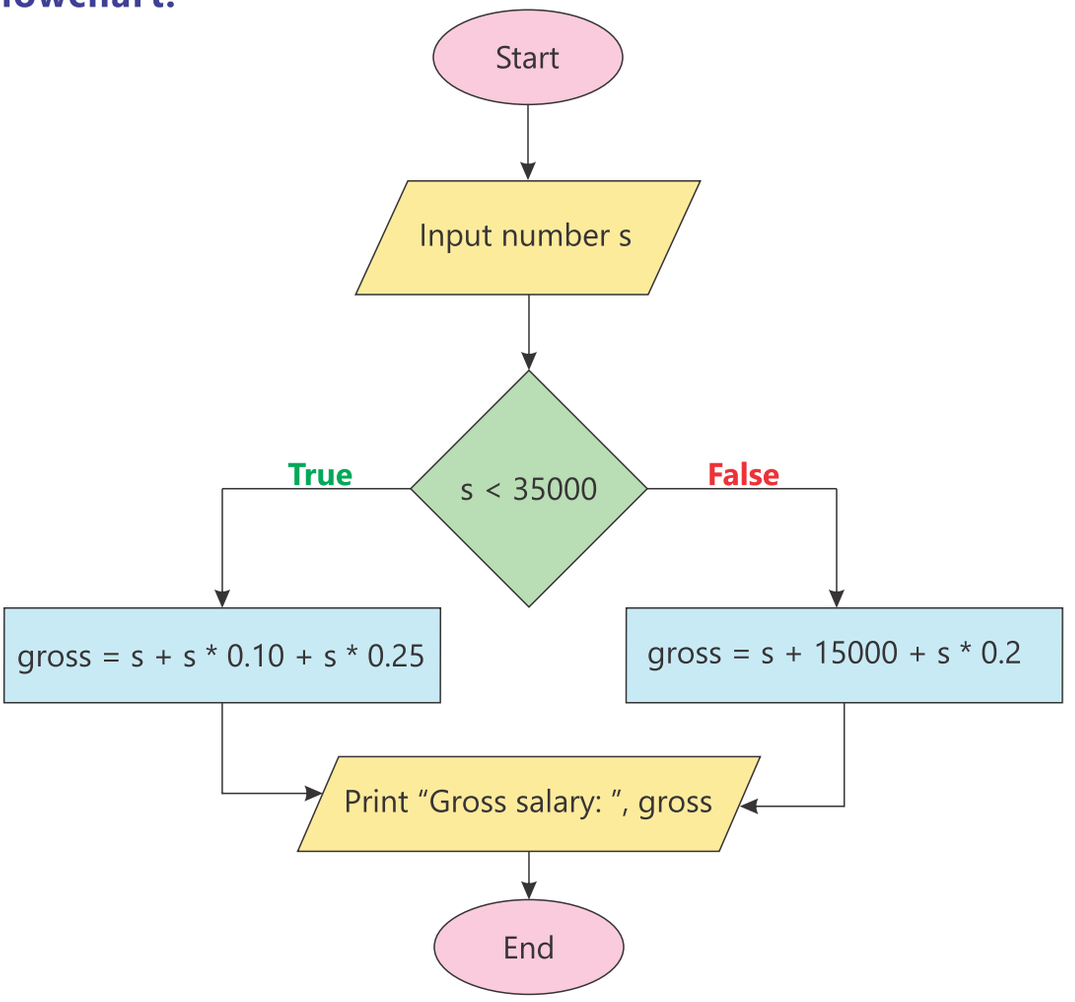


Practical 27

Draw a flowchart to calculate and display the gross salary of an employee if the input is basic salary. The gross salary is calculated as:

- If his basic salary is less than Rs. 35000, then house rent is added as 10% of basic salary and medical allowance is added as 25% of basic salary.
- If the salary is either equal to or above Rs. 35000, then house rent is Rs. 15000 and medical allowance is 20% of basic salary.

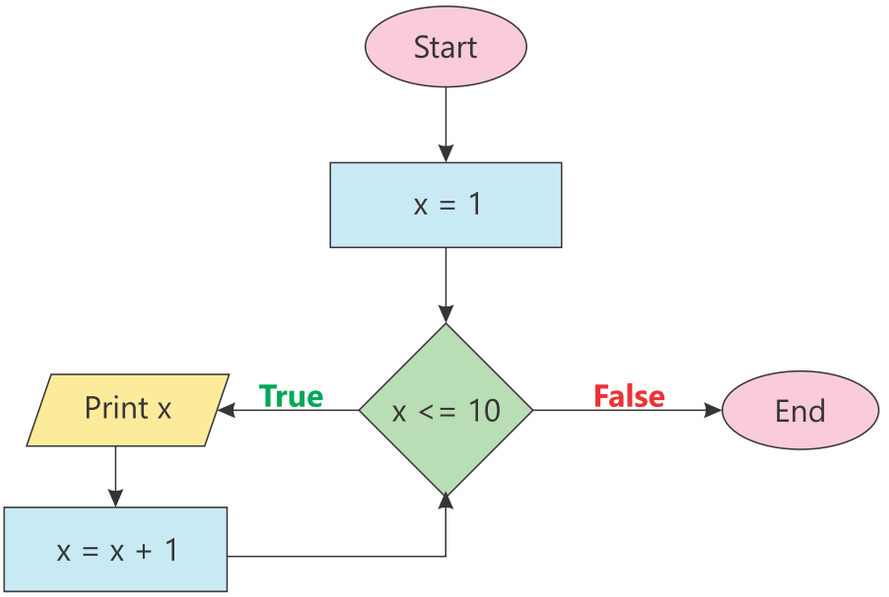
Flowchart:



Practical 28

Draw a flowchart that prints first 10 integers using loop.

Flowchart:



Dry run:

Process:
x = 1
Decision:
1 < 10 or 1 = 10 (true)
Output:
1
Process:
x = 1 + 1 = 2
Decision:
2 < 10 or 2 = 10 (true)
Output:
2
Process:
x = 2 + 1 = 3
Decision:
3 < 10 or 3 = 10 (true)
Output:
3
.
.
.
Process:
x = 9 + 1 = 10
Decision:
10<10 or 10 = 10 (true)
Output:
10
Process:
x=10 + 1 = 11
Decision:
10<11 or 10=11(false)
End

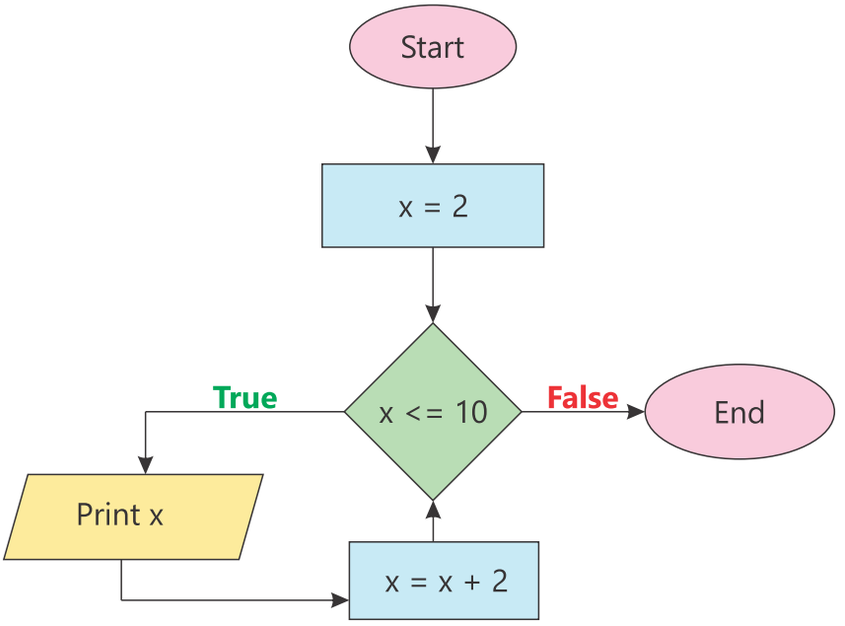
Note:

Loop means repetition of steps and we continue repeating until some condition becomes "False". For example, here "x <= 10" is the condition for the loop.

Practical 29

Draw a flowchart that prints even numbers from 1 to 10.

Flowchart:



Dry run:

Process:
x = 2
Decision:
2 < 10 or 2= 10 (true)
Output:
2
Process:
x = 2 + 2 = 4
Decision:
4 < 10 or 4= 10 (true)
Output:
4
Process:
x = 4 + 2 = 6
Decision:
6 < 10 or 6= 10 (true)
Output:
6
.
.
.
Process:
x = 8 + 2 = 10
Decision:
10< 10 or 10= 10 (true)
Output:
10
Process:
x=10 + 2 = 12
Decision:
10<12 or 10=12 (false)
End

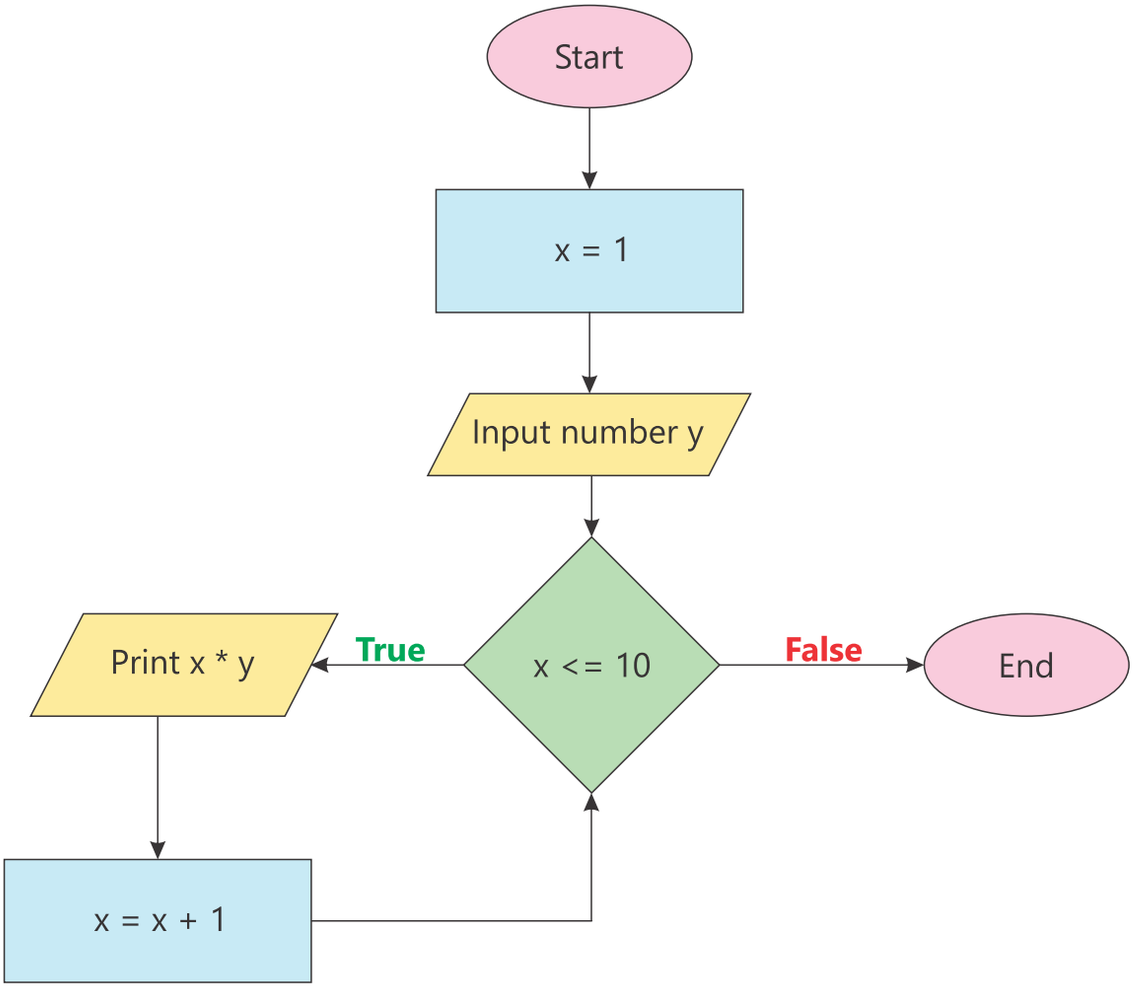
Note:

We can convert this flowchart to odd numbers by initial value of 'x' as 1.

Practical 30

Draw a flowchart that takes a number as an input and prints its multiplication from 1 to 10.

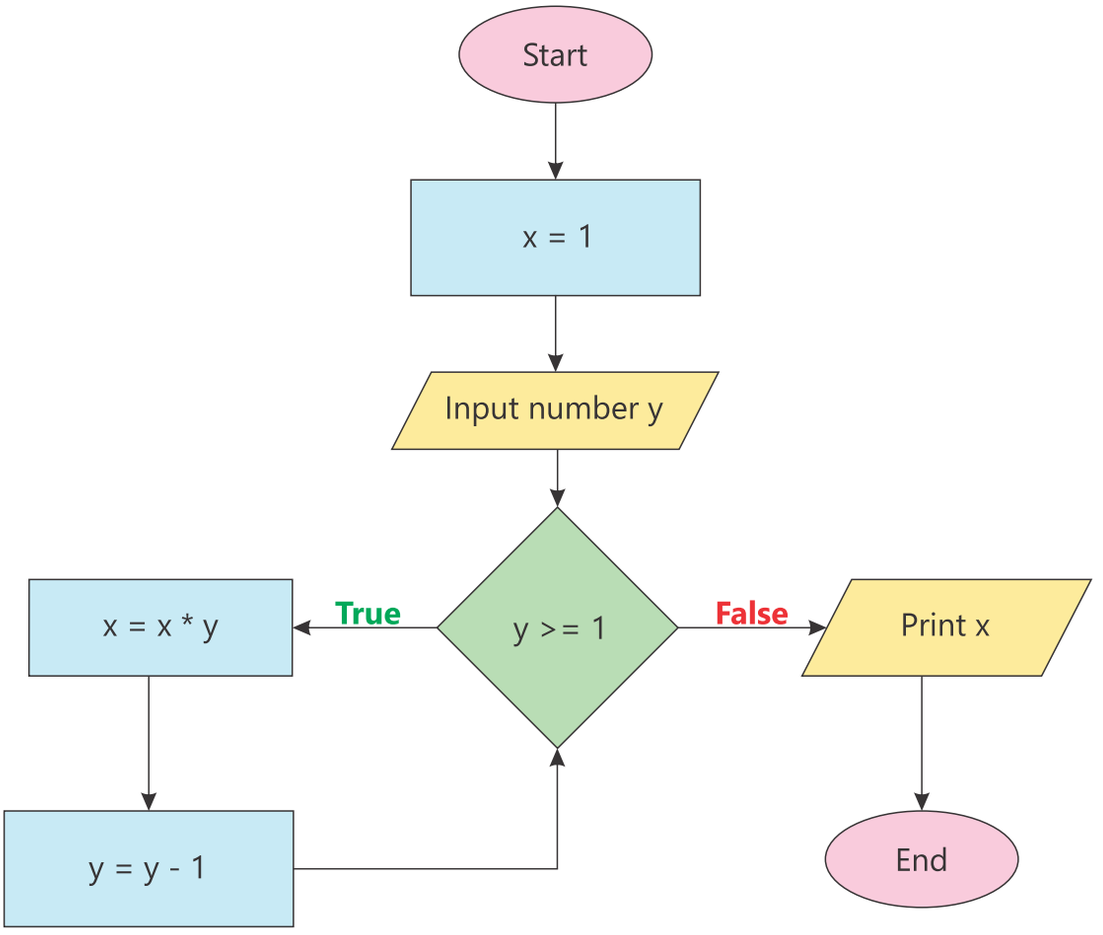
Flowchart:



Practical 31

Draw a flowchart that takes a number as an input from the user and prints its factorial.

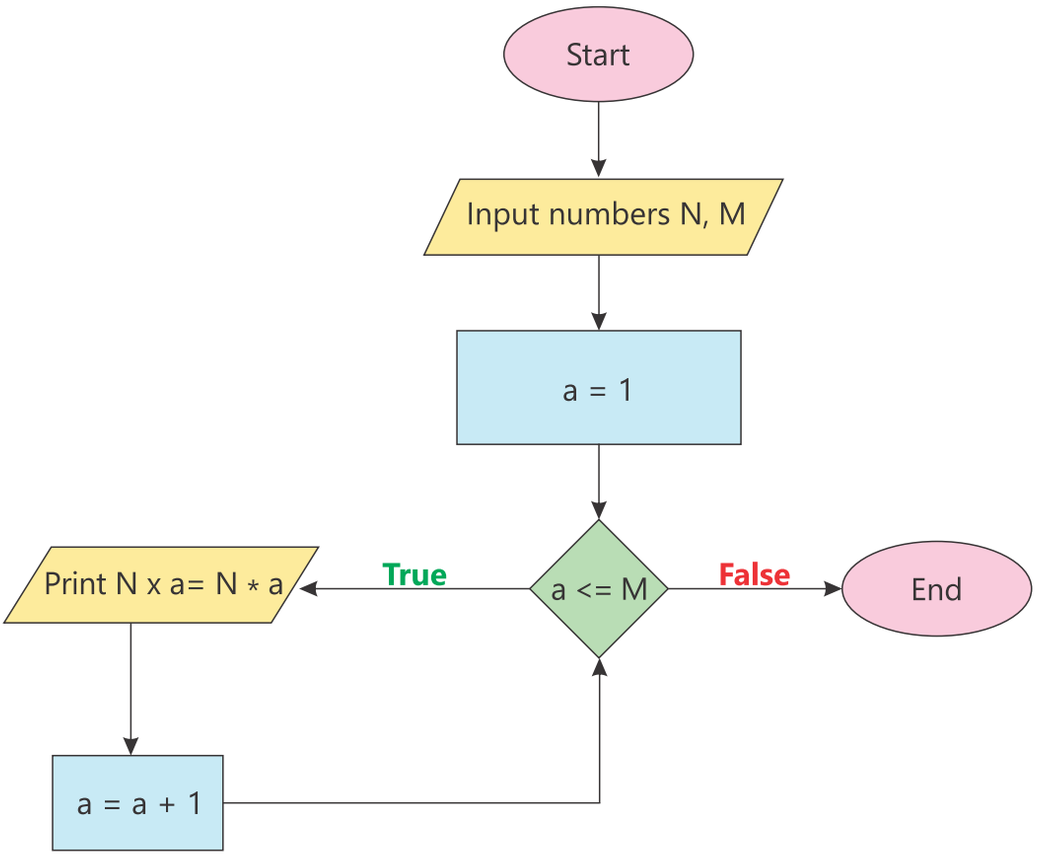
Flowchart:



Practical 32

Draw a flowchart that takes two numbers as input from the user and prints the multiplication table of first number up to the second number.

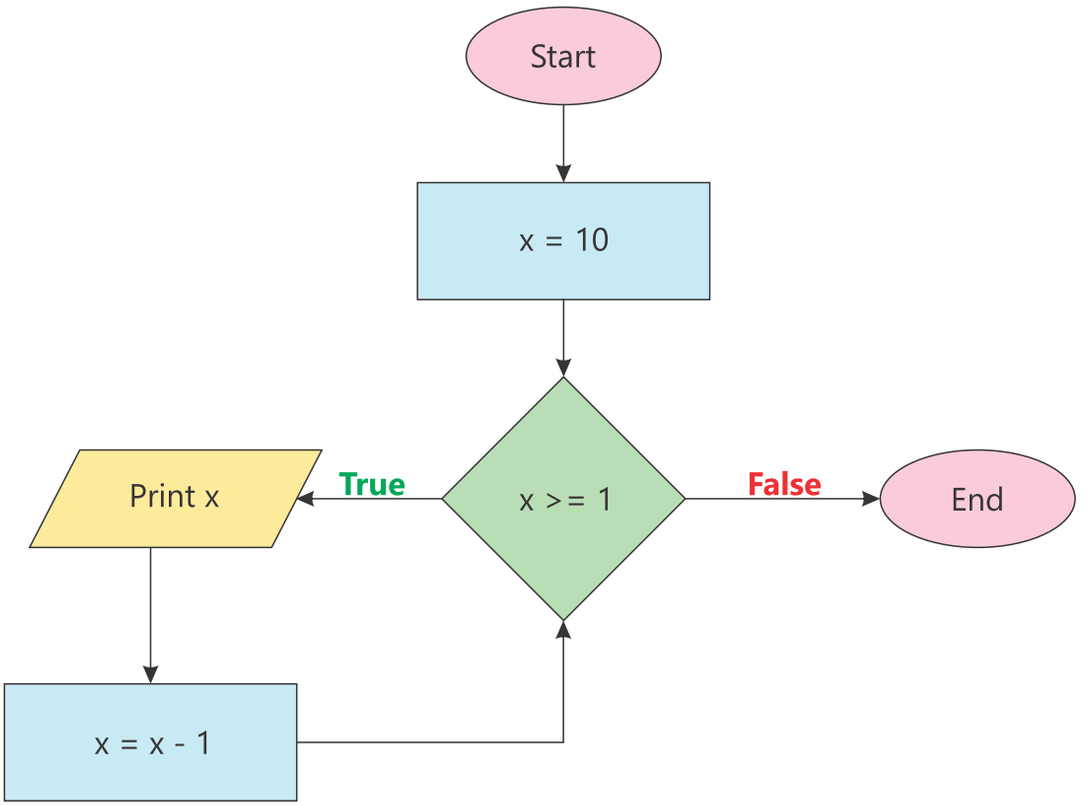
Flowchart:



Practical 33

Draw a flowchart that prints integers from 10 to 1 (reverse order, using loop).

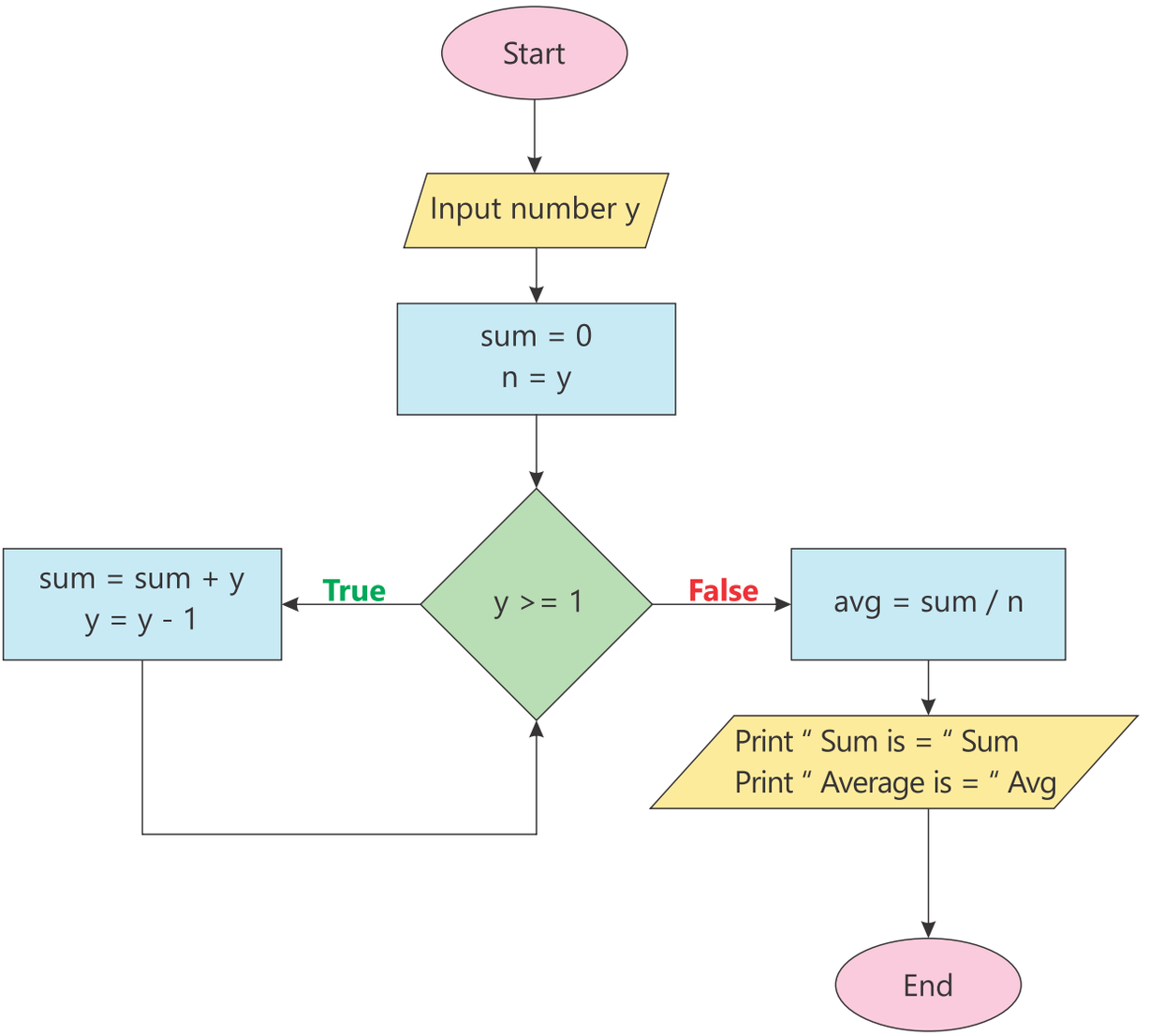
Flowchart:



Practical 34

Draw a flowchart that takes input "n" from the user and prints the sum of first "n" numbers and their average.

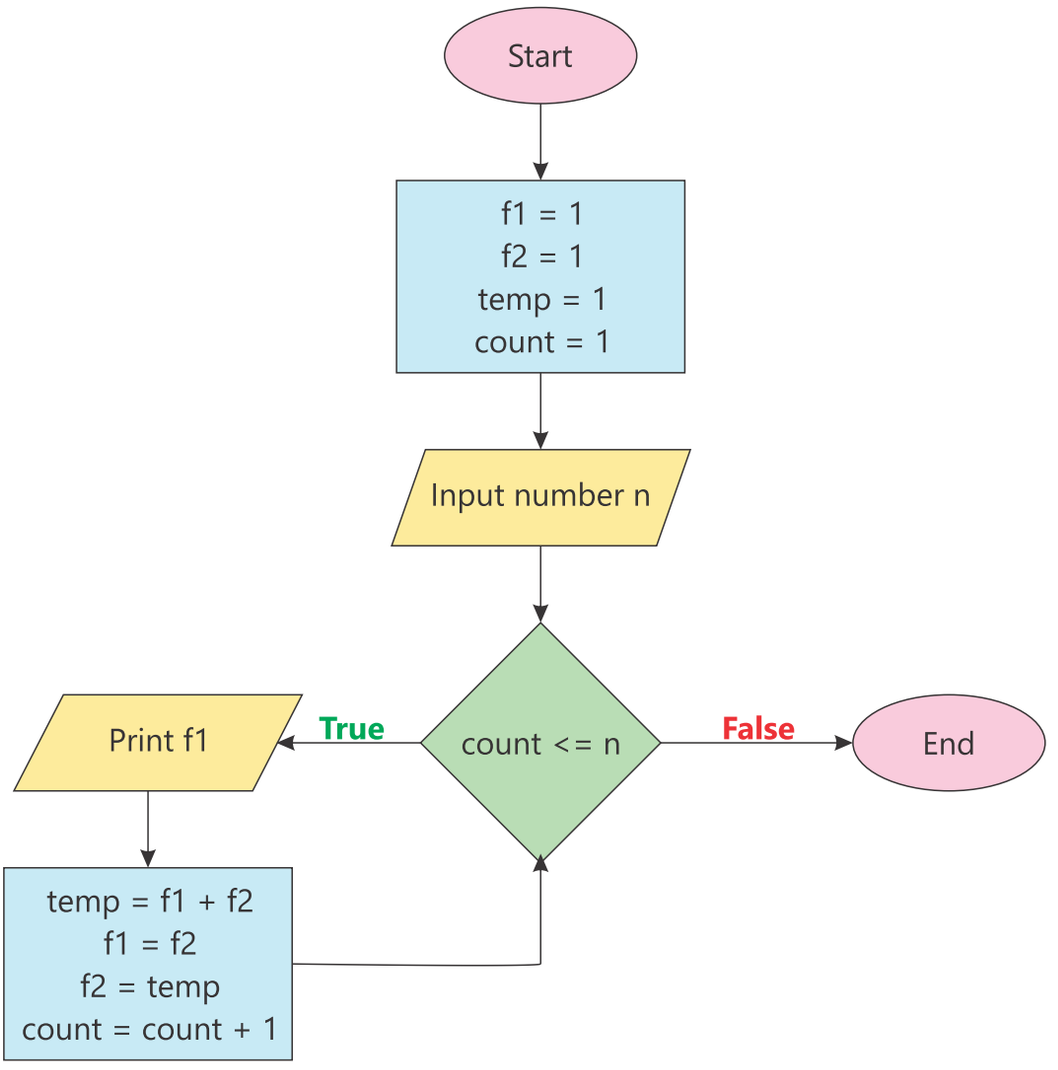
Flowchart:



Practical 35

Draw a flowchart that takes a number "n" from the user and prints the first "n" numbers of Fibonacci series.

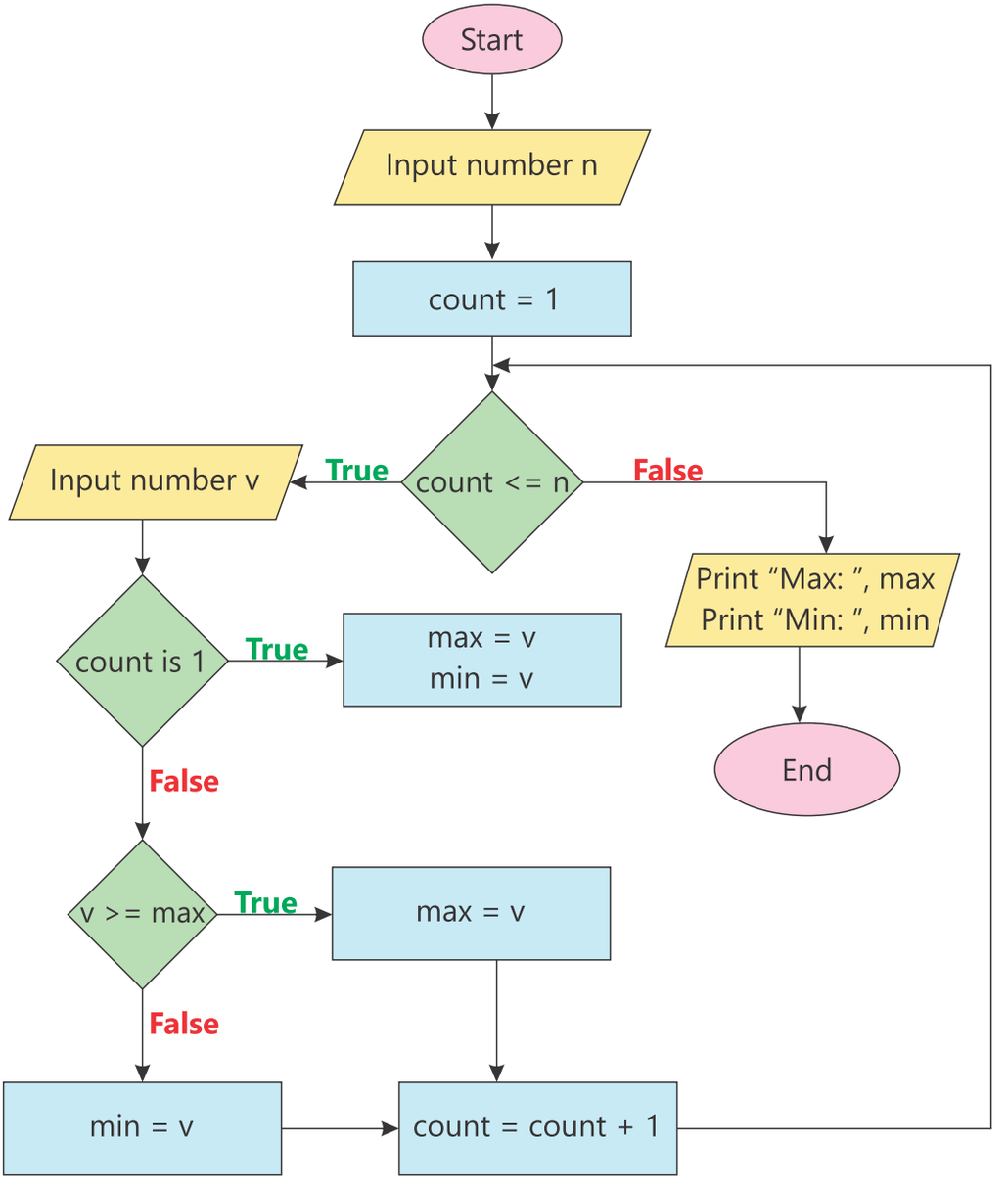
Flowchart:



Practical 36

Draw a flowchart that takes n numbers as input from the user and prints the minimum and maximum among them.

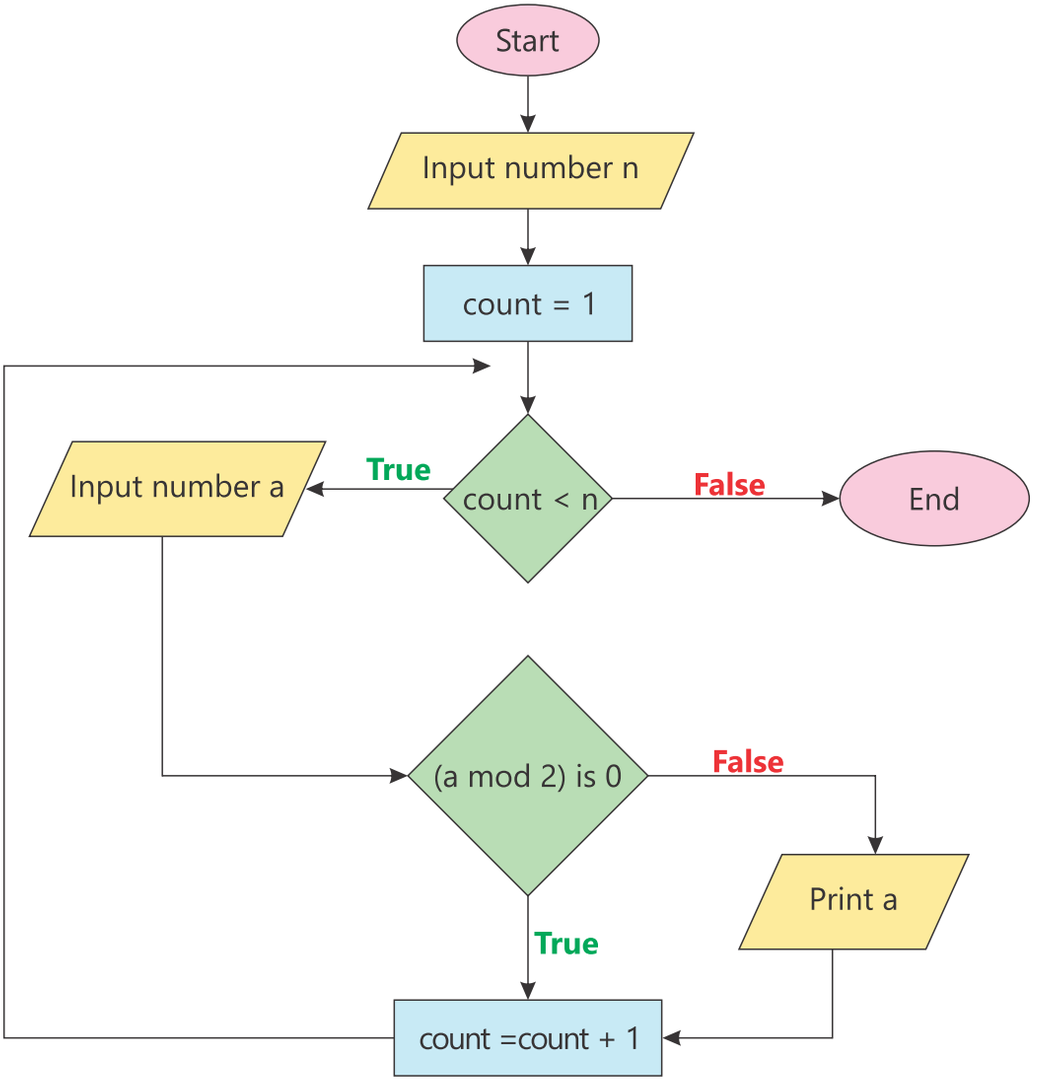
Flowchart:



Practical 37

Draw a flowchart that takes n numbers as input from the user and prints the odd ones.

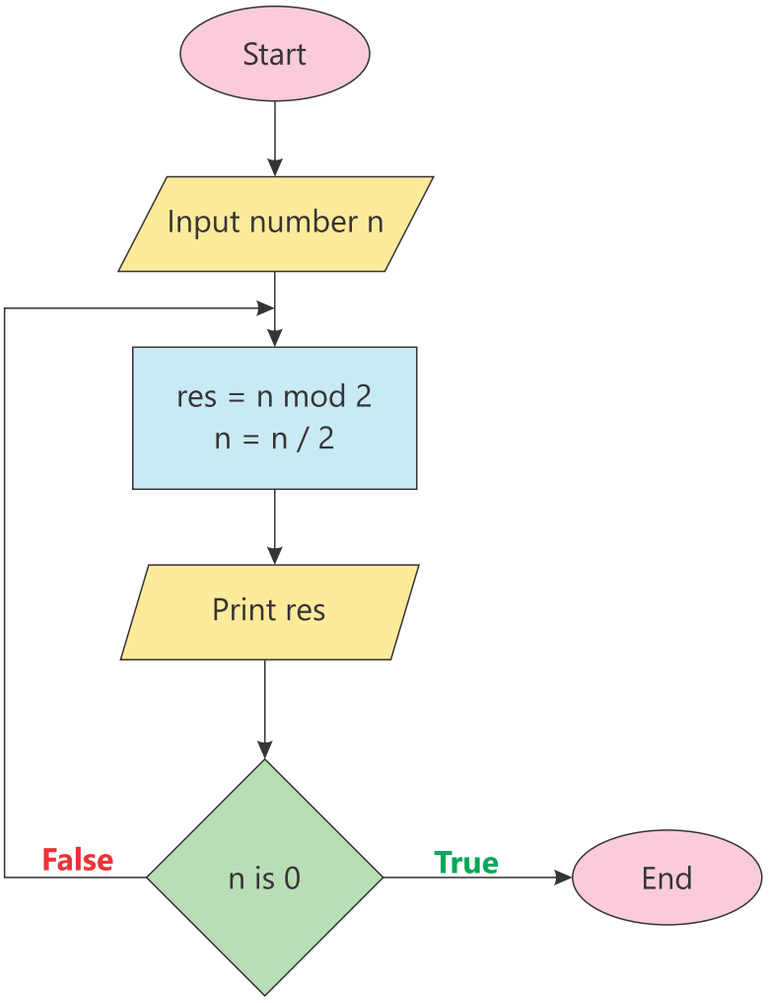
Flowchart:



Practical 38

Draw a flowchart that takes a number as input and prints its binary representation.

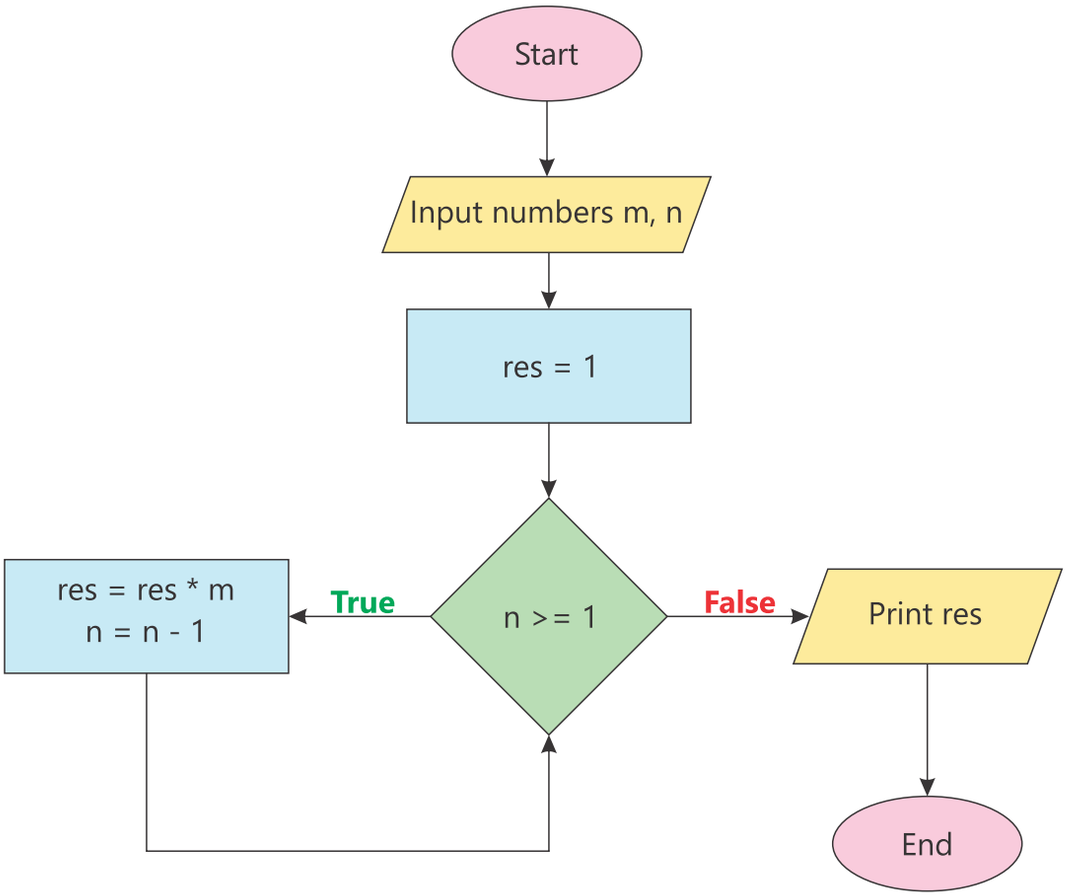
Flowchart:



Practical 39

Draw a flowchart that takes two numbers “m” and “n” as input from the user and calculates “m” to the power of “n”.

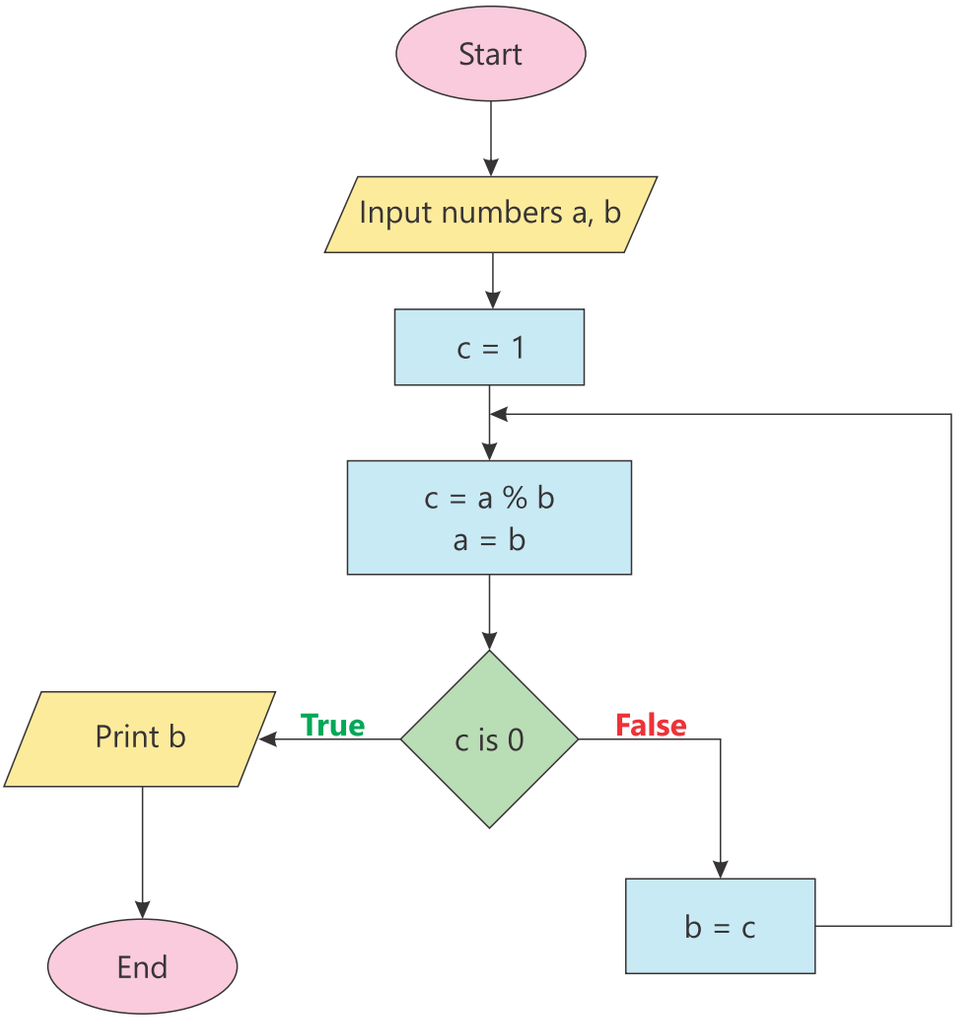
Flowchart:



Practical 40

Draw a flowchart that takes two numbers as input and calculates the GCD of the numbers using Euclidean Algorithm.

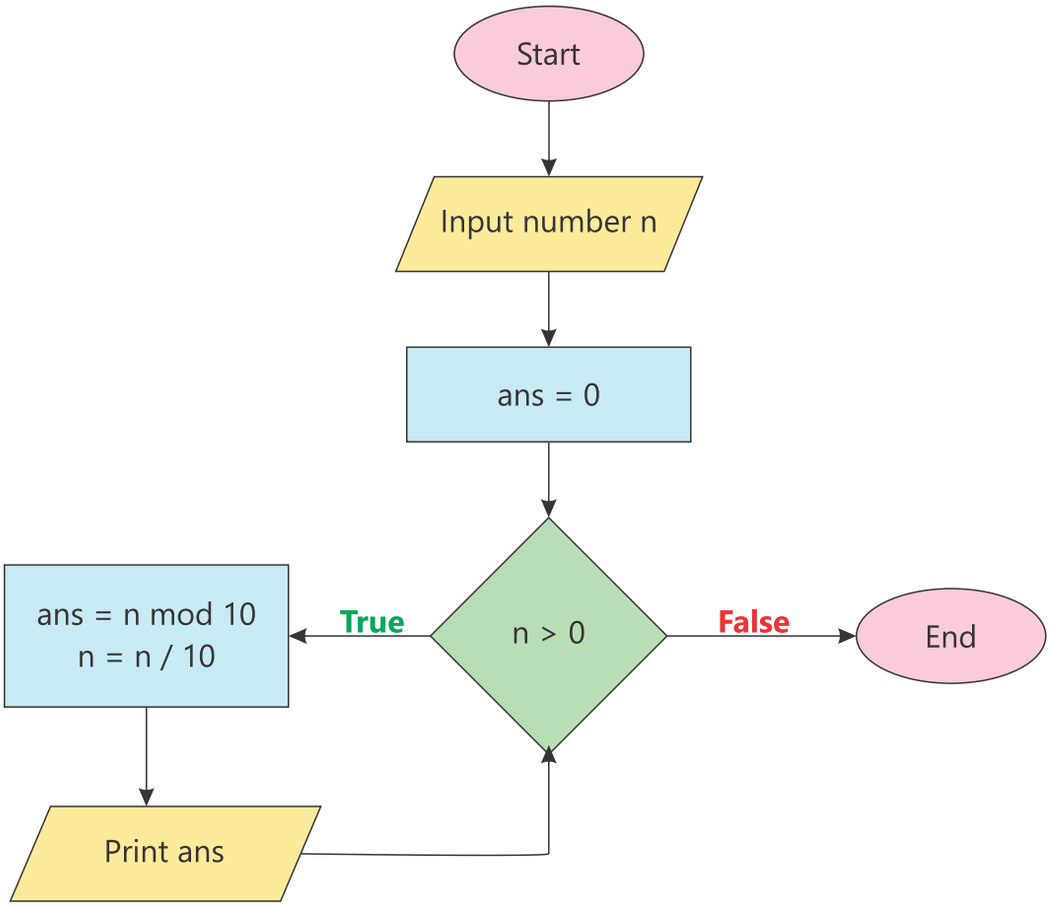
Flowchart:



Practical 41

Draw a flowchart that takes a five digits integer as input and reverses its presentation. For example "12345" becomes "54321".

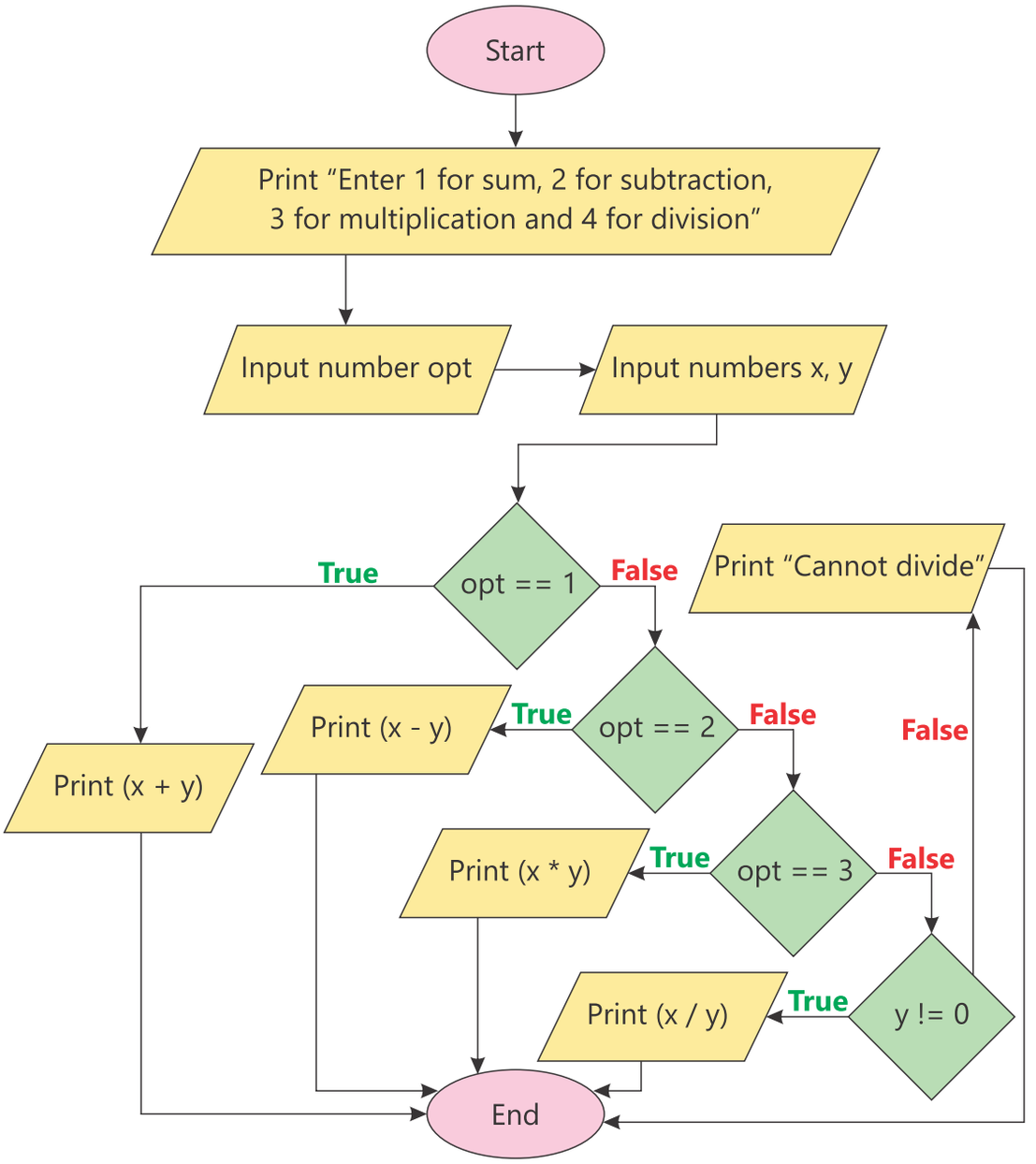
Flowchart:



Practical 42

Draw a flowchart that takes inputs from the user and performs the basic arithmetic operations on them using a modular approach. (A simple calculator).

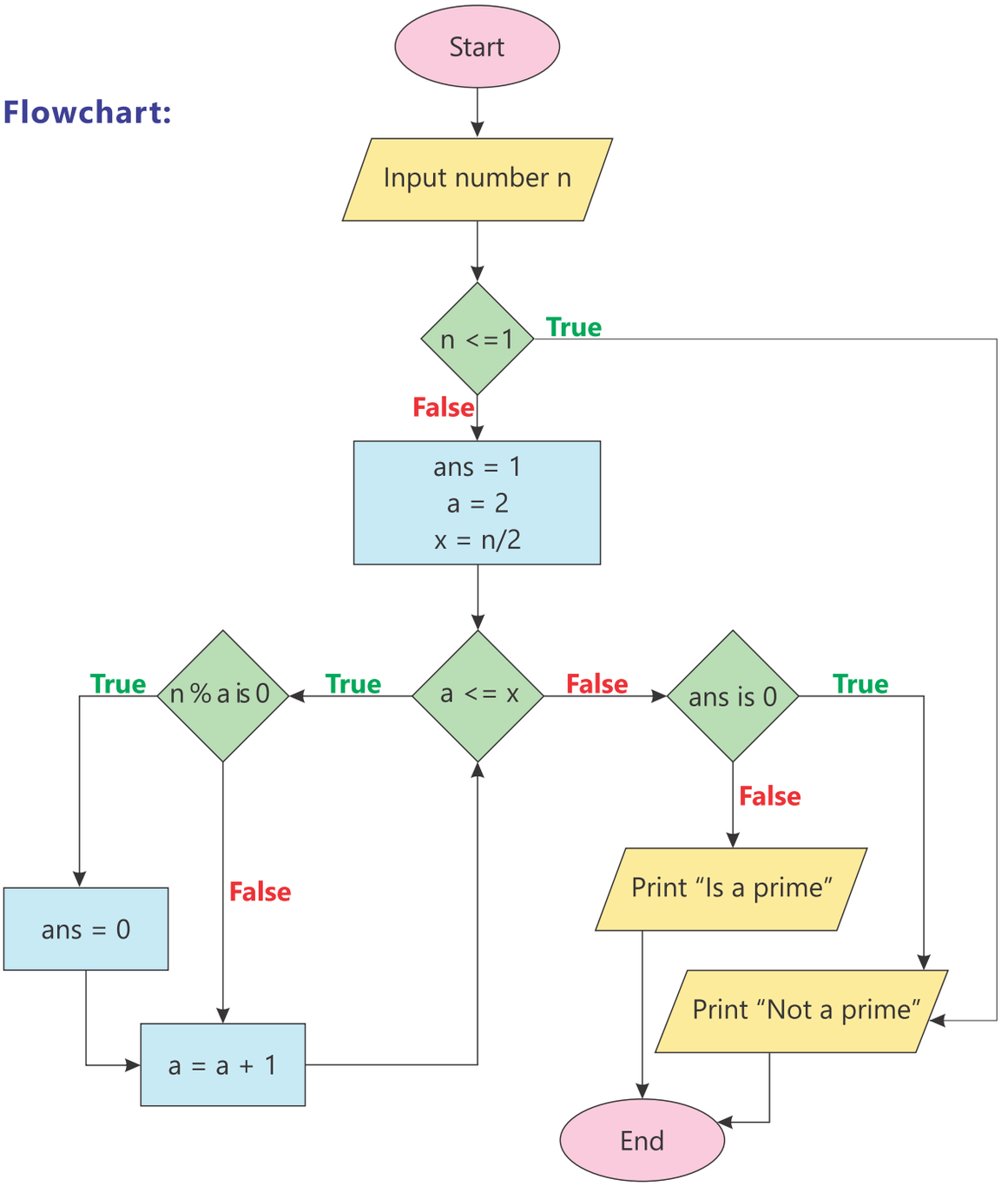
Flowchart:



Practical 43

Draw a flowchart that takes an integer as input from the user and prints whether the integer is prime or not.

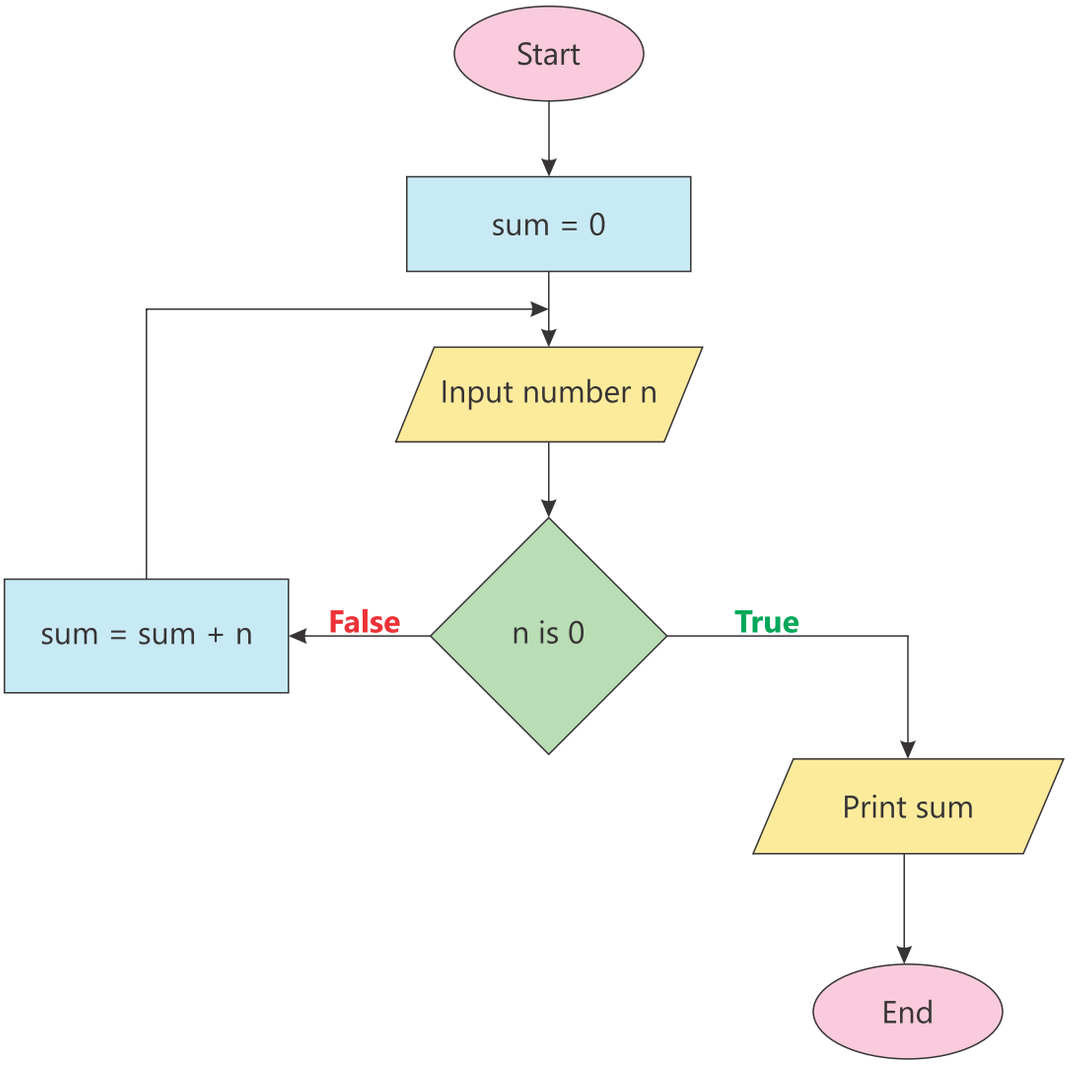
Flowchart:



Practical 44

Draw a flowchart which takes input till user enters 0 and prints their sum.

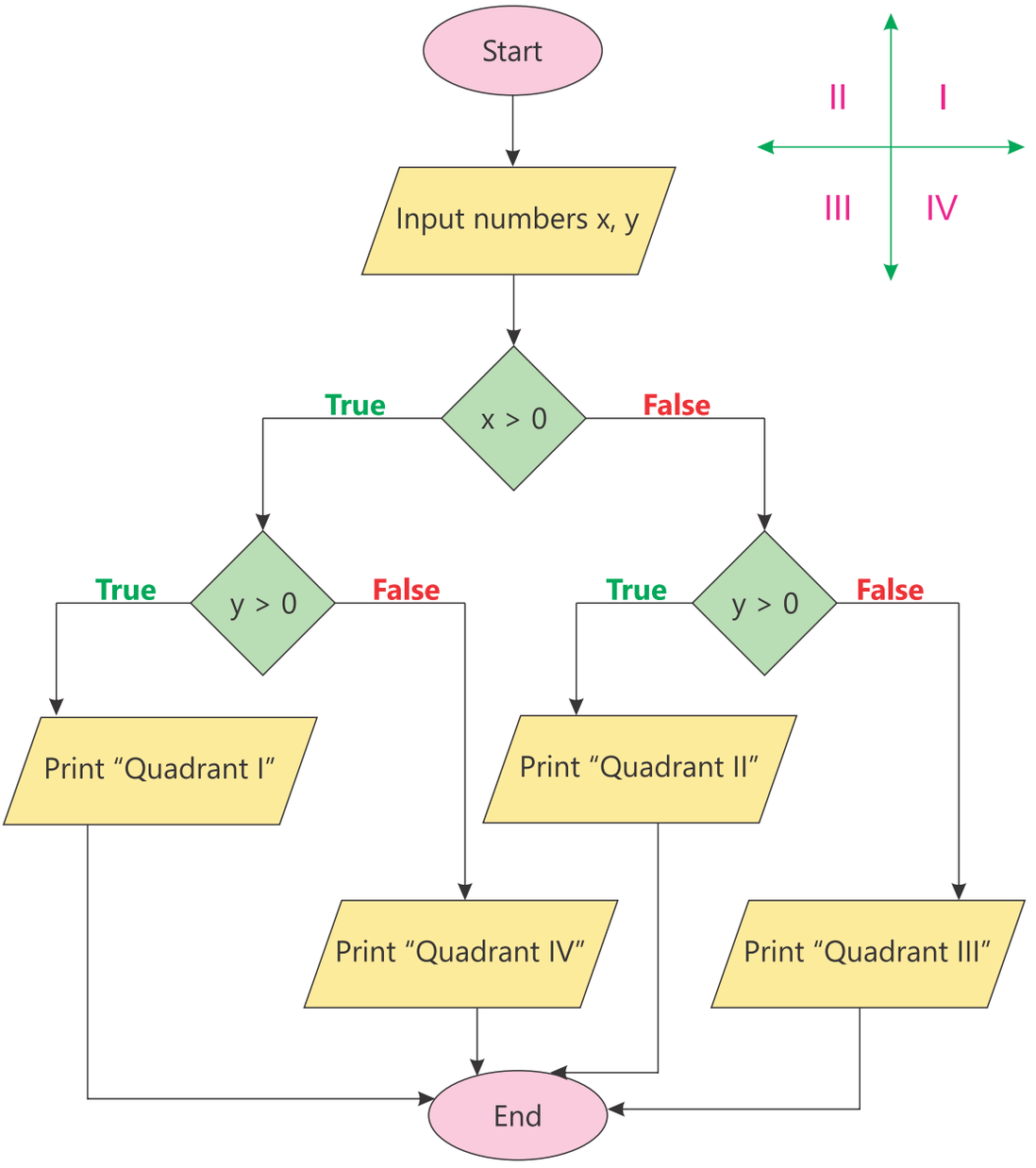
Flowchart:



Practical 45

Draw a flowchart that takes x and y coordinates and indicates in which quadrant does the point lie.

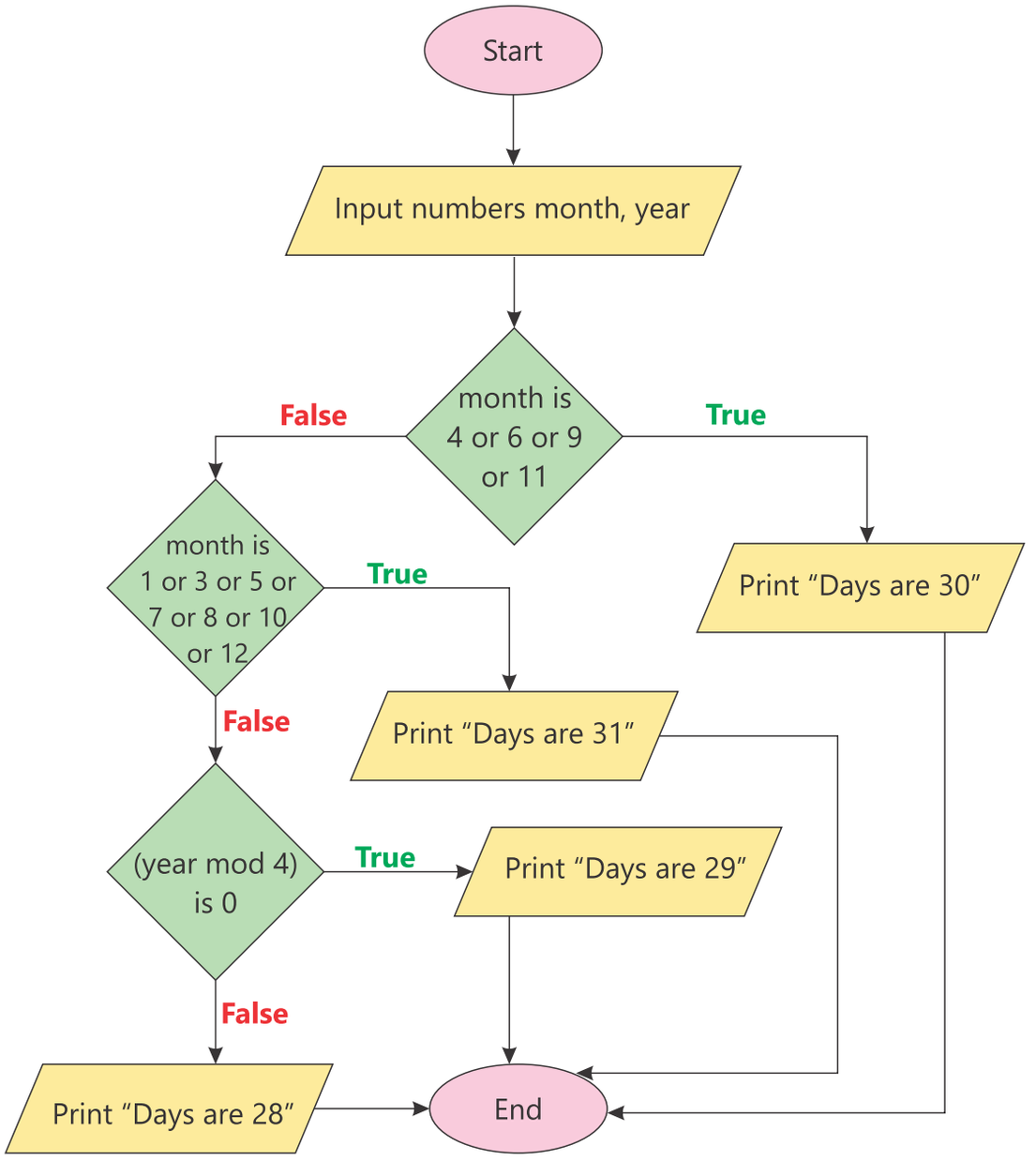
Flowchart:



Practical 46

Draw a flowchart which takes month as an input and indicates whether it has 31 or 30 days, also take year as input and determine the days of Febuary.

Flowchart:



EXCEPTIONAL EXERCISES

Question 1: Draw a flowchart which takes an input and tells whether it's a Mersenne prime or not, a Mersenne prime is a prime number that is one less than a power of two. That is, it is a prime number of the form $M_n = 2^n - 1$ for some integer n.

Question 2: Draw a flowchart that takes a number as input and determines whether it is a Armstrong number or not. A number is called Armstrong if sum of cube of all its digits is equal to that number.

Example: 153 were: $1^3 + 5^3 + 3^3 = 1 + 125 + 27$

VIVA QUESTIONS AND ANSWERS

Short Questions and Answers

1) What is a flowchart?

Ans: A flowchart is a graphical presentation of the steps to solve a problem.

2) What is the importance of using a flowchart?

Ans: A flowchart is used to quickly understand the way a problem is solved. A graphical solution is more effective than a textual one.

3) What do we mean by "input" of a flowchart?

Ans: An input means taking data from a user for further processing.

4) What do we mean by "processing" in flowcharts?

Ans: Processing means the steps upon some data to solve a problem.

5) Why do we use decision making in problem solving?

Ans: To determine whether a statement is true or false. For example, a year is a leap year or not, is determined by decision making in a flowchart.

6) What do you mean by "output" in flowcharts?

Ans: It is used to show the results or outcomes of a flowchart.

7) Why do we use the "flow line" symbol in flowcharts?

Ans: It is used to show the flow of steps in a flowchart.

8) For what purpose do we use the "start/terminal" symbol in a flowchart?

Ans: To indicate the start and end of a flowchart.

9) For what purpose do we use the "connector" symbol in a flowchart?

Ans: It is used to connect different parts of a flowchart lying on multiple pages.

10) What is a logical error?

Ans: A logical error is a mistake in a flowchart that provides incorrect results.

11) What is "divide and concur" approach in problem solving?

Ans: It is a strategy to divide a complex problem into subproblems.

VIVA QUESTIONS AND ANSWERS

12) What is "candid solution" in problem solving?

Ans: The candid solution represents the spontaneous solution and it is possible that a candid solution may not be the actual solution of a problem.

13) What are the two basic parameters used to measure the efficiency of an algorithm?

Ans: Number of steps and amount of memory used to solve a problem are two basic parameters to measure the efficiency of an algorithm.

14) What are the advantages of flowcharts? Enumerate any three.

Ans:
1. Easy to Draw
2. Easy to understand
3. Easy to identify errors

15) What are the disadvantages of flowcharts? Enumerate any three.

Ans:
1. More time required to draw
2. Modifying is not easy
3. Not suitable for large problems

16) What is test data?

Ans: Test data is used to verify whether a given solution is correct or not.

17) What is a validation?

Ans: Validation means to check whether a solution is correct or not.

18) What is Verification?

Ans: Verification means to check whether the solution is solving the actual problem for which it was designed.

Unit # 2 Designing Websites

Unit Introduction

Using the Internet is almost an essential part of our lives. We visit web sites for online shopping, social networking, checking results, sending/receiving emails etc. A website is collection of web pages and Hypertext Markup Language (HTML) is used to create a web page. This unit introduces basics of HTML.

2.1 Introduction to HTML

A website is stored on a web server or in other words, a web server hosts a website and is served on request. A request to a web server is mostly sent through a web browser (for example, Fire fox, Chrome, Internet Explorer, etc.).

In response to a request, a web browser receives HTML document and displays information after interpreting that document.

2.1.1 Definition

HTML is a standard markup language to create a web page. It is called markup because the data of a web page is marked with tags shown in the required format (see Figure 2.1). For Example, if we want to show results of 9th class on a web page then first we will use some heading and then a table showing marks of every student in a serial. Tags are used for giving headings, making tables, giving colours etc.

There are two important terms that are needed to be understand in the context of HTML.

1. Hyper Text
2. Markup Language

Hyper Text

The term *Hyper text* is used due to the special text in a web page called hyperlinks. By clicking on these links one can move from one web page to another. Hyperlinks are used to navigate on the World Wide Web (WWW).

Markup Language

A web page consists of a series of elements which are represented by tags. For example, a paragraph of text is needed on web page, it is used as:

** Some Text Here **

Here shows marking of paragraph opening tag and means marking of paragraph closing tag as shown in Figure 2.1 . Due to marking of each element, it is called a markup language.

Figure 2.1 Example of Tag in HTML

The latest version of HTML is 5 and it was released on 28 October 2014. HTML 5 was developed by W3C, i.e., World Wide Web Consortium (http://www.w3.org).

Covering all the features of HTML5 is beyond the scope of this book, so we will study some of the most commonly used tags in the following section.

2.2 Commonly used tags in HTML

There are lots of predefined tags in HTML but the most commonly used tags are given below.

1. HTML tag:

Every html document starts with this tag, so it is called the root tag. For example:

```
<html>
<head>
      <title> Write title here </title>
</head>
<body>
      Web page contents here
</body>
</html>
```

We can see that the whole document is enclosed with "html" tags as:

```
<html> Statements... </html>
```

2. Head tag:

"Head" tag is used to contain all the head element in the html file. It contains the title, style, meta, ... etc tag. It's written in <html> tag and before <body> tag. For Example:

```
<head> It has elements that describes the web page </head>
```

3. Body tag:

It is used to define the body of html document. It contains image, tables, lists, ... etc. For example:

```
<body> It contains information of your HTML page </body>
```

4. Title tag:

It is used to define the title of html document, it's mentioned in between <head> tag. For example:

```
<title> Name of the web page also knows as tab name</title>
```

5. Heading tags:

This tag is used to define the headings in an HTML document. There are a total of 6 heading tags. For example:

```
<h1>This is Heading 1 </h1>
<h2> This is Heading 2 </h2>
<h3> This is Heading 3 </h3>
<h4> This is Heading 4 </h4>
<h5> This is Heading 5 </h5>
<h6> This is Heading 6 </h6>
```

6. Paragraph tag:

In HTML document if we need to define paragraphs, we use paragraph tag i.e. <p>. it's written between <body> tag. For example:

```
<p> Paragraph mentioned here</p>
```

7. Bold tag:

This is an emphasis tag, it bolds the content in which the tags are used. For example:

```
<b> statements to be bold </b>
```

8. Italic tag:

To write in italic format we use italic tag i.e. <i>. For example:

```
<i> statements to be in italic format </I>
```

9. Underline tag:

This tag is used to underline the content. For example:

```
<u> Statements to be underlined</u>
```

10. Anchor tag:

This tag is used to link either two pages or link a specific area of the same page. For example:

```
<a href ="www.cs4schooling.com"> Click here to learn 9th class Computer Book </a>
```

11. List tag:

This is used to define list in HTML web page. For example:

```
<li> List 1</li>
<li> List 2</li>
```

12. Ordered List tag:

It is used to order a list. For example:

```
<ol>
        <li>List 1</li>
        <li>List 2</li>
</ol>
```

13. Unordered List tag:

It lists the content having no order. For example:

```
<ul>
        <li> List item 1</li>
        <li> List item 2</li>
        <li> List item 3</li>
        <li> List item 4</li>
</ul>
```

14. Comment tag:

If we want to write comments to enhance the readability of our code we use comment tag. For example:

```
<!--Comment written in this tag won't be executed-->
```

15. Center tag:

It will align the content to center. For example:

```
<center> Anything written here will be centered</center>
```

16. Font tag:

It is used to change the size, color and font-family of the content. For example:

```
<font face="Times New Roman">Font of this text will change</font>
```

17. Image tag:

It is used to show an image on an HTML web page. For example:

```
<img src="123.jpg" width="100" height="100" border="5">
```

18. Image tag:

It is used to define a table in an HTML document. We have <th>, <td> and <tr> tags used in <table> tag for "table heading", "table data" and "table row", respectively. For example:

```
<table style="width:100%">
      <tr>
            <th>Teacher name</th>
            <th>Subject</th>
            <th>Age</th>
      </tr>
      <tr>
            <td>Hassan</td>
            <td>Computer</td>
            <td>20</td>
      </tr>
</table>
```

Practicals

Practical 1

Create an html page which has head and body tags.

Code:

```
<!DOCTYPE html>
<html>
        <head>

        </head>
        <body>

        </body>
</html>
```

Basic Structure of HTML

Output:

Practical 2

Create an html page which has additional tags of title, paragraph and line break.

Code:

```
<!DOCTYPE html>
<html>
    <head>
        <title>Welcome!</title>
    </head>
    <body>
        <p>hi</p>
        </br>
        </p>
    </body>
</html>
```

Title, Paragraph and Linebreak

Output:

hi

bye

Practical 3

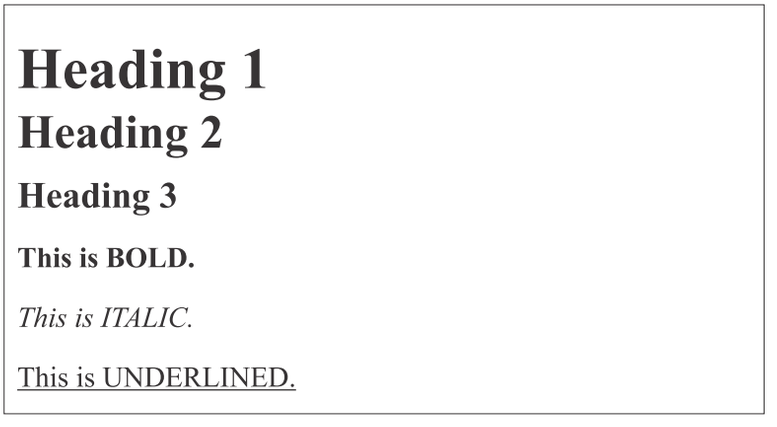
Create an html page which the additional functions of headings up to three levels, bold, italic, underline.

Code:

```
<!DOCTYPE html>
<html>
    <head>
        <title>Welcome!</title>
    </head>
    <body>
        <h1>Heading 1</h1>
        <h2>Heading 2</h2>
        <h3>Heading 3</h3>
        <p><b>This is BOLD</b></p>
        <p><i>This is ITALIC</i></p>
        <p><u>This is UNDERLINE</u></p>
    </body>
</html>
```

Headings and Text Formatting

Output:



Practical 4

Create an html page which the additional functions of font size, font face, font color.

Code:

```
<!DOCTYPE html>
<html>
    <head>
    </head>
    <body>
        <p><font size="10">Welcome class!</font></p>
        <p><font color="blue">Welcome class!</font></p>
        <p><font face="Arial Black">Welcome class!</font></p>
    </body>
</html>
```

Font Tag and attributes

Output:

Welcome class!

Welcome class!

Welcome class!

Practical 5

Create an html page which has additionally an image, alternative text, adjust height, width and border of the image.

Code:

```
<!DOCTYPE html>
<html>
    <head>
    </head>
    <body>
        <h2>HTML Image</h2>
        <img src="Curriculum.png" alt="Computer Education 2018 (VI - VIII)"
        width="500" height="333" border="5">
        </br>
    </body>
</html>
```

Img tag attributes

Output:

Practical 6

Create an html page which has additional functions of background / foreground colors and background image.

Code:

```
<!DOCTYPE html>
<html>
    <style>
        body {
            background-image: url('Curriculum.png');
        }
    </style>
    <body bgcolor="E6E6FA">
        <h3 style="color: orange">Foreground Colour</h3>
    </body>
</html>
```

Background and Foreground colors

Output:

Practical 7

Create an html page which has additional functions of un-ordered and ordered lists.

Code:

```
<!DOCTYPE html>
<html>
    <head>
    </head>
    <body>
        <h1>An unordered list</h1>
        <ul>
            <li>Math</li>
            <li>Physics</li>
            <li>Computer</li>
        </ul>
        <h1>An ordered list</h1>
        <ol>
            <li>Math</li>
            <li>Physics</li>
            <li>Computer</li>
        </ul>
    </body>
</html>
```

Unordered and ordered lists

Output:

An unordered list

- Math
- Physics
- Computer

An ordered list

1. Math
2. Physics
3. Computer

Practical 8

Create an html page which has additional functions of nested list and definition list.

Code:

```
<!DOCTYPE html>
<html>
    <head>
    </head>
    <body>
        <h2>A Nested List</h2>
        <ul>
            <li>School</li>
            <ul>
                <li>Subjects</li>
                <ul>
                    <li>Maths</li>
                    <li>Physics</li>
                    <li>Computer</li>
                </ul>
            </ul>
        </ul>
        <h2>A Definition List</h2>
        <dl>
            <dt>Maths</dt>
            <dd>Study of quantity, structure, space and charge</dd>
            <dt>Physics</dt>
            <dd>Study of matter, its motion and behaviour through space and
            time</dd>
            <dt>Computer</dt>
            <dd>Study of the theoretical foundations of information and
            computation</dd>
        </ul>
    </body>
</html>
```

Nested and definition lists

Output:

A Nested List

- School
  - Subjects
    - Maths
    - Physics
    - Computer

A Definition List

Maths
: Study of quantity, structure, space and change

Physics
: Study of matter, its motion and behavior through space and time

Computer
: Study of the theoretical foundations of information and computation

Practical 9

Create an HTML page which has multiple sections and a table of contents with anchors to different actions.

Code:

```
<!DOCTYPE html>
<html>
    <body>
        <h2 style="color: orange">Table of contents</h2>
        <table style="width: 100%">
            <tr>
                <th style="text-align: left">Topics</th>
            </th>
            <tr>
                <td><a href="#1">Maths</a></td>
            </tr>
            <tr>
                <td><a href="#2">Physics</a></td>
            </tr>
            <tr>
                <td><a href="#3">Computer</a></td>
            </tr>
        </table>
        <div id="1">Study of quantity, structure, space, and charge</div>
        <div id="2">Study of matter, its motion and behaviour through space and
        time</div>
        <div id="3">Study of the theoretical foundations of information and
        computation</div>
    </body>
</html>
```

Output:

HTML Tables and anchor tag

Table of contents

Topics

Maths

Physics

Computer

Study of quantity, structure, space and change

Study of matter, its motion and behavior through space and time

Study of the theoretical foundations of information and computation

Practical 10

Create a website with two web pages linked to each other. The links are in the text.

Code:

```
<!DOCTYPE html>
<html>
    <body>
        <h2>HTML Links</h2>
        <p><a href="50_2.html">Visit page 2</a></p>
    </body>
</html>
```

Web page 1

```
<!DOCTYPE html>
<html>
    <body>
        <h2>HTML Links</h2>
        <p><a href="50_1.html">Visit page 1</a></p>
    </body>
</html>
```

Web page 2

Output:

HTML Links

Visit page 1

HTML Links

Visit page 2

Note:

Note: **50_1.html** and **50_2.html** are the names of HTML files.

Practical 11

Create a website with two web pages linked to each other. The links are in the text.

Code:

```
<!DOCTYPE html>
<html>
    <body>
        <h2>HTML Links</h2>
        <p><a href="51_2.html">Visit page 2</a></p>
    </body>
</html>
```

Web page 1

```
<!DOCTYPE html>
<html>
    <body>
        <h2>HTML Links</h2>
        <p><a href="51_3.html">Visit page 3</a></p>
    </body>
</html>
```

Web page 2

```
<!DOCTYPE html>
<html>
    <body>
        <h2>Click to go to page 1</h2>
        <a href="51_1.html"><img src="Curriculum.png" width="100"
        height="100"></a>
    </body>
</html>
```

Web page 3

Output:

Practical 12

Create an HTML page which has a table with some specified number of rows and columns.

Code:

```
<!DOCTYPE html>
<html>
    <body>
        <h2>Basic HTML Table</h2>
        <table style="width: 100%">
            <tr>
                <th>Teacher name</th>
                <th>Subject</th>
                <th>Age</th>
            </tr>
            <tr>
                <td>Ali</td>
                <td>Math</td>
                <td>25</td>
            </tr>
            <tr>
                <td>Sana</td>
                <td>Computer</td>
                <td>22</td>
            </th>
            <tr>
                <td>Akbar</td>
                <td>Physics</td>
                <td>26</td>
            </th>
        </table>
    </body>
</html>
```

Output:

HTML Table

Basic HTML Table

Teacher name	Subject	Age
Ali	Math	25
Sana	Computer	22
Akbar	Physics	26

Practical 13

Create an HTML page which has a table with some specified number of rows and columns, but some of the cells are merged together using colspan and rowspan.

Code:

```
<!DOCTYPE html>
<html>
    <head>
        <style>
            table, th, td {
                border: 1px solid black;
                border-collapse: collapse;
                padding: 6px;
                text-align: center;
            }
    </style>
    </head>
    <body bgcolor="E6E6FA">
        <h1>HTML rowspan attribute</h1>
        <table style="width: 100%">
            <tr><th>Teacher name</th><th>Subject</th><th>Age</th></tr>
            <tr><td>Ali</td><td>Math</td><td>25</td></tr>
            <tr><td>Sana</td><td>Computer</td><td rowspan="2">22</td>
            </tr>
            <tr><td>Akbar</td><td>Physics</td></tr>
        </table>
        <h1>HTML colspan attribute</h1>
        <table>
            <tr><th>Name</th><th>Expense</th></tr>
            <tr><td>Milk</td><td>Rs 100</td></tr>
            <tr><td>Biscuit</td><td>Rs 20</td></tr>
            <tr><td colspan="2">Rs 120</td></tr>
        </table>
    </body>
</html>
```

Colspan and Rowspan

Output:

HTML rowspan Attribute

Teacher name	Subject	Age
Ali	Math	25
Sana	Computer	22
Akbar	Physics	

HTML colspan Attribute

Name	Expense
Milk	Rs 100
Biscuit	Rs 20
Sum: Rs 120	

Practical 14

Create an HTML page which has a table, and the border of the table is of a specified width and type.

Code:

```
<!DOCTYPE html>
<html>
    <head>
        <style>
            table, th, td {
                border: 1px solid black;
                border-style: dotted;
            }
    </style>
    </head>
    <body>
        <h1>HTML rowspan attribute</h1>
        <table style="width: 100%">
            <tr><th>Teacher name</th><th>Subject</th><th>Age</th></tr>
            <tr><td>Ali</td><td>Math</td><td>25</td></tr>
            <tr><td>Sana</td><td>Computer</td><td rowspan="2">22</td>
            </tr>
            <tr><td>Akbar</td><td>Physics</td></tr>
        </table>
    </body>
</html>
```

Table Border

Output:

HTML rowspan Attribute

Teacher name	Subject	Age
Ali	Math	25
Sana	Computer	22
Akbar	Physics	

Practical 15

Create a website which has multiple pages and all the components we have studied in previous chapters.

Code:

```
<!DOCTYPE html>
<html>
    <body>
        <h1>HTML Links</h1>
        <p><a href="42.html">Create an HTML page which has following
        additional tags - title paragraph - line break</a></p>
        <p><a href="43.html">Create an HTML page which has following
        additional functions - Headings up to three levels - Bold, Italic,
        Underline</a></p>
        <p><a href="44.html">Create an HTML page which has following
        additional functions - font size - font face - font color</a></p>
        <p><a href="45.html">Create an HTML page which has following
        additional functions - having and Image curriculum for Computer
        Education 2018 (VI - VIII) 20 - alternative text - adjust the height, width and
        border of the image</a></p>
        <p><a href="46.html">Create an HTML page which has following
        additional functions - Background / foreground colors - background
        image</a></p>
        <p><a href="47.html">Create an HTML page which has following
        additional functions - unordered list - ordered list</a></p>
        <p><a href="48.html">Create an HTML page which has following
        additional functions - nested list - definition list</a></p>
        <p><a href="49.html">Create an HTML page which has multiple sections
        and a table of contents. The table of contents has anchors to different
        sections.</a></p>
        <p><a href="50.html">Create a website with two web pages linked to each
        other. The links are in text.</a></p>
        <p><a href="51.html">Create a website with three interlinked web pages.
        At least one of the links must be an image.</a></p>
        <p><a href="52.html">Create an HTML page which has a table with some
        specified number of rows and columns.</a></p>
        <p><a href="53.html">Create an HTML page which has a table with some
        specified number of rows and columns, but some of the cells are merged
        together using colspan and rowspan.</a></p>
        <p><a href="54.html">Create an HTML page which has a table, and the
        border of the table is of a specified width and border type.</a></p>
    </body>
</html>
```

Output:

HTML links

Create an HTML page which has following additional tags – title paragraph – line break

Create an HTML page which has following additional functions – Headings up to 3 levels – Bold, Italic, Underline

Create an HTML page which has following additional functions – font size – font face – font color

Create an HTML page which has following additional functions – having an image curriculum for Computer Education 2018 (VI – VIII) 20 – alternative text – adjust the height, width and border of the image

Create an HTML page which has following additional functions – background / foreground colors – background image

Create an HTML page which has following additional functions – unordered list – ordered list

Create an HTML page which has multiple sections and table of contents. The table of contents has anchors to different sections.

Create a website with two webpages linked to each other. The links are in the text.

Create a website with three interlinked webpages.

Create an HTML page which has a table with some specified number of rows and columns.

Create an HTML page which has a table with some specified number of rows and columns, but some of the cells are merged together using colspan and rowspan.

Create an HTML page which has a table, and the border of the table is of a specified width and border type.

Note:

Note: **42.html, 43.html** etc. are the names of HTML files.

Practical 16

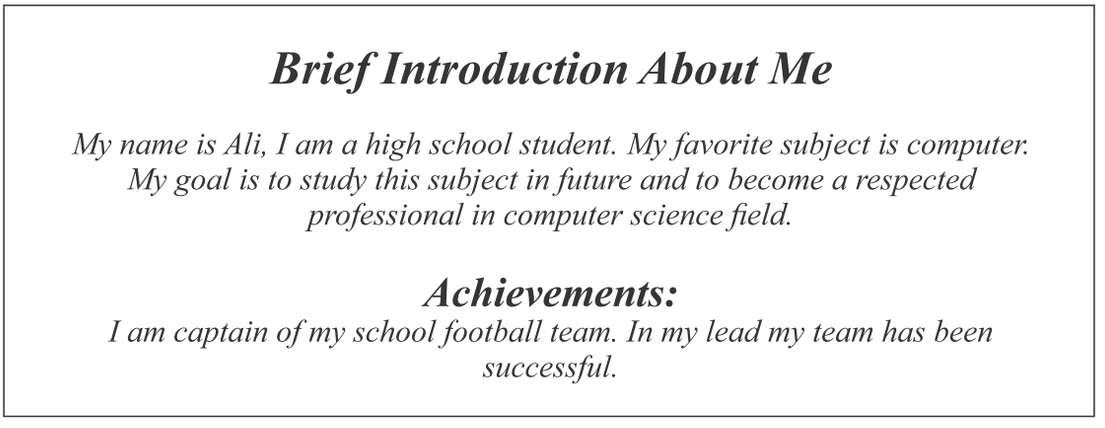
Create an HTML page in which you inaugurate yourself. Use paragraph, heading, img and other designing tags like bold, italic, br etc. to make it look tidy, also indicates your achievements.

Code:

```
<!DOCTYPE html>
<html>
    <head>
        <title>About me</title>
    </head>
    <body>
        <h1 align="center"><i>Brief Introduction About Me</i></h1>
        <p align="center"><i>My name is Ali. I am a high school student. My
        favourite subject is computer. My goal is to study this subject in future and
        to become a respected professional in computer science field.</i></p>
        <h1 align="center"><i>Achievements:</i></p>
        <p align="center"><i>I am captain of my school football team. In my lead
        my team has been successful.</i></p>
    </body>
</html>
```

HTML page with heading, paragraph, anchor tag and formatting

Output:



Practical 17

Create an HTML page in which you define list and nested list of classes of vertebrates, make ordered and unordered list.

Code:

```
<!DOCTYPE html>
<html>
    <head>
        <title>Vertebrates Classes</title>
    </head>
    <body>
        <h2>Vertebrates Classes</h2>
        <p>Vertebrates are animals that have a backbone or spinal column, also
        called vertebrae. These animals include fish, birds, mammals, amphibians,
        and reptiles.</i></p>
        <ul>
            <li>Fish</li>
            <li>Birds</li>
            <li>Mammals</li>
            <li>Amphibians</li>
            <li>Reptiles</li>
        </ul>
        <ol>
            <li>Fish</li>
            <li>Birds</li>
            <li>Mammals</li>
            <li>Amphibians</li>
            <li>Reptiles</li>
        </ol>
    </body>
</html>
```

HTML page with lists

Output:

Vertebrates Classes

Vertebrates are animals that have a backbone or spinal column, also called vertebrate. These animals include fish, birds, mammals, amphibians and reptiles.

- Fish
- Birds
- Mammals
- Amphibians
- Reptiles

1. Fish
2. Birds
3. Mammals
4. Amphibians
5. Reptiles

Practical 18

Create an HTML page that marketizes 3-4 products, and upon clicking the customer should see description.

Code:

```
<!DOCTYPE html>
<html>
    <head>
        <title>Product Page</title>
    </head>
    <body>
        <h1>List of Products</h1>
        <section style="float: left;">
            <a href="prd1.html"><img src="t-shirt.jpg" height="200"></a>
            <p>T-shirt</p>
        </section>
        <section style="float: left;">
            <a href="prd2.html"><img src="full-sleeve.jpg" height="200"></a>
            <p>Full-sleeve-shirt</p>
        </section>
        <section style="float: left;">
            <a href="prd3.html"><img src="jacket.jpg" height="200"></a>
            <p>a Jacket</p>
        </section>
    </body>
</html>
```

Output:

HTML Products Page

Practical 19

Create an HTML page that marketizes 3-4 products, and upon clicking the customer should see description. (Continued...).

Code:

```
<!DOCTYPE html>
<html>
    <head>
        <title>Product Page</title>
    </head>
    <body>
        <h1 align="center">T-shirt</h1>
        <section align="center">
            <img src="t-shirt.jpg" height="200"></a>
            <p>This is a T-shirt</p>
        </section>
    </body>
</html>
```

Product 1 description page

```
<!DOCTYPE html>
<html>
    <head>
        <title>Product Page</title>
    </head>
    <body>
        <h1 align="center">Full sleeves shirt</h1>
        <section align="center">
            <img src="t-shirt.jpg" height="200"></a>
            <p>This is a Full sleeves shirt</p>
        </section>
    </body>
</html>
```

Product 2 description page

Code:

```
<!DOCTYPE html>
<html>
    <head>
        <title>Product Page</title>
    </head>
    <body>
        <h1 align="center">Jacket</h1>
        <section align="center">
            <img src="jacket.jpg" height="200"></a>
            <p>This is a Jacket</p>
        </section>
    </body>
</html>
```

Product 3 description page

Output:

Practical 20

Create an HTML page which shows your marksheet in tabular form. Use proper editing styles to make it look neat and tidy.

Code:

```
<!DOCTYPE html>
<html>
    <head>
        <title>Student Marksheet</title>
    </head>
    <body>
        <h4>STUDENT MARKSHEET</h1>
        <table border="1">
            <tr>
                <td rowspan="2" valign="bottom">Roll no.</td>
                <td rowspan="2" valign="bottom">Name</td>
                <td rowspan="2" valign="bottom">Marks</td>
            </tr>
            <tr>
                <td>1<sup>st</sup> term</td>
                <td>2<sup>nd</sup> term</td>
                <td>3<sup>rd</sup> term</td>
            </tr>
            <tr>
                <td>1</td><td>Muhammad Umer</td><td>140</td><td>160</td>
                <td>175</td>
            </tr>
            <tr>
                <td>2</td><td>Qurat ul Ain</td><td>140</td> <td>160</td>
                <td>175</td>
            </tr>
            <tr>
                <td>3</td><td>Muhammad Basim</td><td>140</td>
                <td>160</td> <td>175</td>
            </tr>
        </table>
    </body>
</html>
```

HTML Table Marksheet

Output:

STUDENT MARKS SHEET

Roll No.	Name	Marks		
		1st term	2nd term	3rd term
1	Muhammad Umer	140	160	175
2	Qurat ul Ain	125	150	170
3	Muhammad Basim	130	145	165

Practical 21

Create multiple web pages and link them. All should have some kind of infomation.

Code:

```
<!DOCTYPE html>
<html>
    <head>
        <title>Page 1</title>
    </head>
    <body>
        <ul>
            <li><a href="multiple_pages1.html"> Go to Page 1</a></li>
            <li><a href="multiple_pages2.html"> Go to Page 2</a></li>
        </ul>
        <h2 align="center"> Page 1 Heading</h2>
        <p align="center"> This is page 1</p>
    </body>
</html>
```

Web page 1 with some information

```
<!DOCTYPE html>
<html>
    <head>
        <title>Page 2</title>
    </head>
    <body>
        <ul>
            <li><a href="multiple_pages1.html"> Go to Page 1</a></li>
            <li><a href="multiple_pages2.html"> Go to Page 2</a></li>
        </ul>
        <h2 align="center"> Page 2 Heading</h2>
        <p align="center"> This is page 2</p>
    </body>
</html>
```

Web page 2 with some information

Output:


Go to Page 1
Go to Page 2
Page 1 Heading
This is page 1


Go to Page 1
Go to Page 2
Page 2 Heading
This is page 2

Practical 22

Create an HTML web page that shows lahore zoo and upon clicking lion section it takes the use to lion section, use images plus formatting text and colours to make it look appealing.

Code:

```
<!DOCTYPE html>
<html>
    <head>
        <title>Lahore Zoo</title>
    </head>
    <body>
        <h1>Lahore Zoo</h1>
        <img src="lahore_zoo.jpg" width="25%">
        <p>Lahore Zoo in Lahore, Punjab, Pakistan, established in 1872, one of the
        largest zoos in Pakistan. It is currently managed by the Forest, Wildlife and
        Fisheries department of the Government of Pakistan.</p>
        <h1>Animals in Zoo</h1>
        <h2>
            <a href="#Lion">Lion</a>
            <a href="#Tiger">Tiger</a>
            <a href="#Monkey">Monkey</a>
        </h2>
        <section id="Lion">
            <img src="lion.jpeg" height="150">
            <p>This is a lion.</p>
        </section>
        <section id="Tiger">
            <img src="tiger.jpg" height="150">
            <p>This is a tiger.</p>
        </section>
        <section id="Monkey">
            <img src="monkey.jpg" height="150">
            <p>This is a monkey.</p>
        </section>
    </body>
</html>
```

Web page about Lahore Zoo

Output:

Lahore Zoo

Lahore Zoo in Lahore, Punjab, Pakistan established in 1872, one of the largest zoos in Pakistan. It is currently managed by Forest, Wildlife and Fisheries Department of the Government of Pakistan.

Animals in Zoo

Lion Tiger Monkey

This is a Lion

This is a Lion

This is a Tiger

This is a Monkey

Practical 23

Create a HTML web page which shows heading of animals and on clicking it anchors to that particular section it indicates at least 4-5 animals.

Code:

```
<!DOCTYPE html>
<html>
    <head>
        <title>Title of the document</title>
        <style>
            body {
                height: 100px;
                text-align: justify;
            }
            h2 {
                color: #1c87c9;
            }
            section {
                color: white;
                background: #1c87c9;
            }
        </style>
    </head>
    <body>
        <h1>Animals Names</h1>
        <h2><a href="#Lion">Lion</a></h2>
        <h2><a href="#Tiger">Tiger</a></h2>
        <h2><a href="#Horse">Horse</a></h2>
        <h2><a href="#Dog">Dog</a></h2>
        <h2><a href="#Cat">Cat</a></h2>
        <section id="Lion"><p>This is a lion</p></section>
        <section id="Tiger"><p>This is a tiger</p></section>
        <section id="Horse"><p>This is a horse</p></section>
        <section id="Dog"><p>This is a dog</p></section>
        <section id="Cat"><p>This is a cat</p></section>
    </body>
</html>
```

Link anchor tag to id

Output:

Animals Names

Lion

Tiger

Horse

Dog

Cat

This is a lion

This is a tiger

This is a horse

This is a dog

This is a cat

Practical 24

Create a HTML web page which uses following tags: head, title, body, paragraph, heading, image, linking tag.

Code:

```
<!DOCTYPE html>
<html>
    <head>
        <title>Tags Exercise</title>
    </head>
    <body>
        <h1>Different Flowers</h1>
        <img src="flowers.jpg">
        <p>A flower cannot blossom without sunshine.</p>
        <a href="https://unsplash.com/images/nature/flower">Find more
        Flowers</a>
    </body>
</html>
```

Web page

Output:

VIVA QUESTIONS AND ANSWERS

Short Questions and Answers

1) What is HTML?

Ans: HTML stands for Hyper Text Markup language and used to create web pages in a website.

2) What is the file extension for an HTML webpage?

Ans: The extension of HTML file is .htm or .html.

3) What do you mean by "paired tags" in an HTML?

Ans: The tags which consist of both start and end tags along with some contents between them.

4) What do you mean by singular tags in HTML?

Ans: The tags having no end tags are called singular tags.

5) For which purpose do we use the "<br>" tag in HTML?

Ans: The <br> tag is used to insert a line break in the paragraph in an HTML file.

6) Why do we use the " " attribute in a paragraph of an HTML file?

Ans: is used to insert space in the text in an HTML file.

7) What is an ordered list in HTML?

Ans: An ordered list keeps each item with an order number.

8) What is an unordered list in HTML?

Ans: In an unordered list order of list items are not important.

9) What is a definition list in HTML?

Ans: It is used when we have to show some terms and their description.

10) What is a nested list in HTML?

Ans: It is the list which contains another list.