

#### (4) Flow Chart and Pseudocodes -

# Flow Chart - Diagrams to represent solution of problem.

[ problem → small parts → logically arrange ]

Example - Tea

- > start
- > Boil with water
- > Gas stove on
- > Sugar, Tea leaves, milk
- > Boil
- > Gas stove off
- > Exit

#### # Flowchart components -

- 1) Start / Exit :- oval

start

Exit

- 2) Input / Output :- Parallelogram

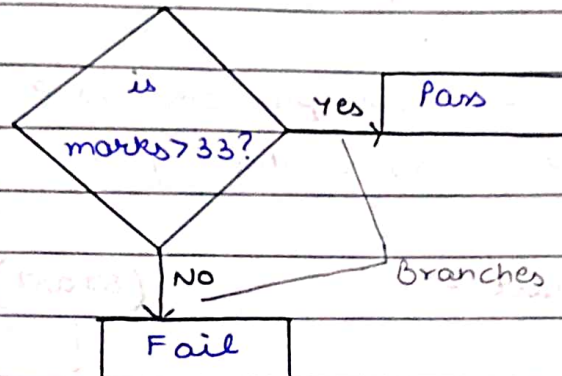
Read N

Print "Hi"

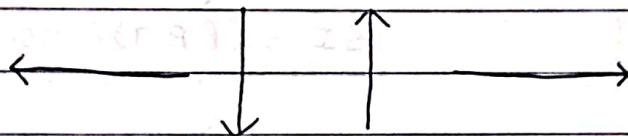
- 3) Process :- Rectangle

name = "Sharda"

4) Decision :- Diamond



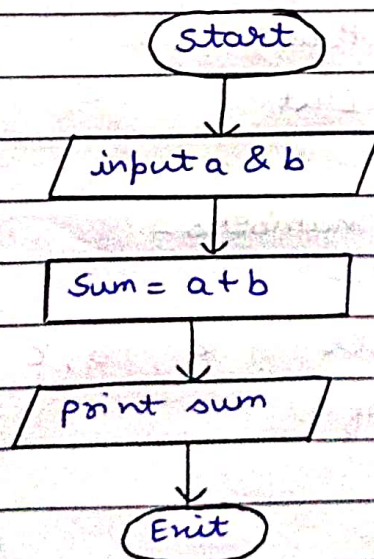
5) Arrows



# Sum of 2 numbers -

Input - First, a second, b

Output - sum of a &amp; b



- 1.) Start
- 2.) Input numbers, a and b
- 3.) calculate sum a and b
- 4.) Print sum
- 5.) Exit

"Pseudo code"

alternate/  
fake  
code

"Flowchart"

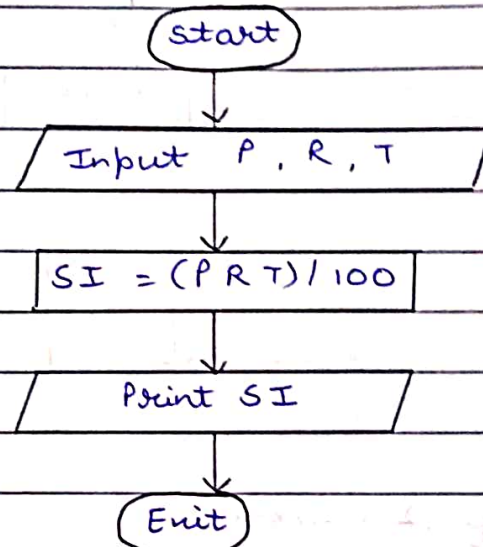


# Calculate simple interest -

Input - Principal amount  $P$ , Rate  $R$ , Time  $T$

Output -  $SI = P \times R \times T / 100$

Flowchart -



Pseudocode - 1) Start

2) Input,  $P, R, T$

3) calculate  $(P \times R \times T) / 100 = SI$

4) Print  $SI$

5) Exit

# Find max of 3 numbers -

Input - 3 number ;  $a, b, c$

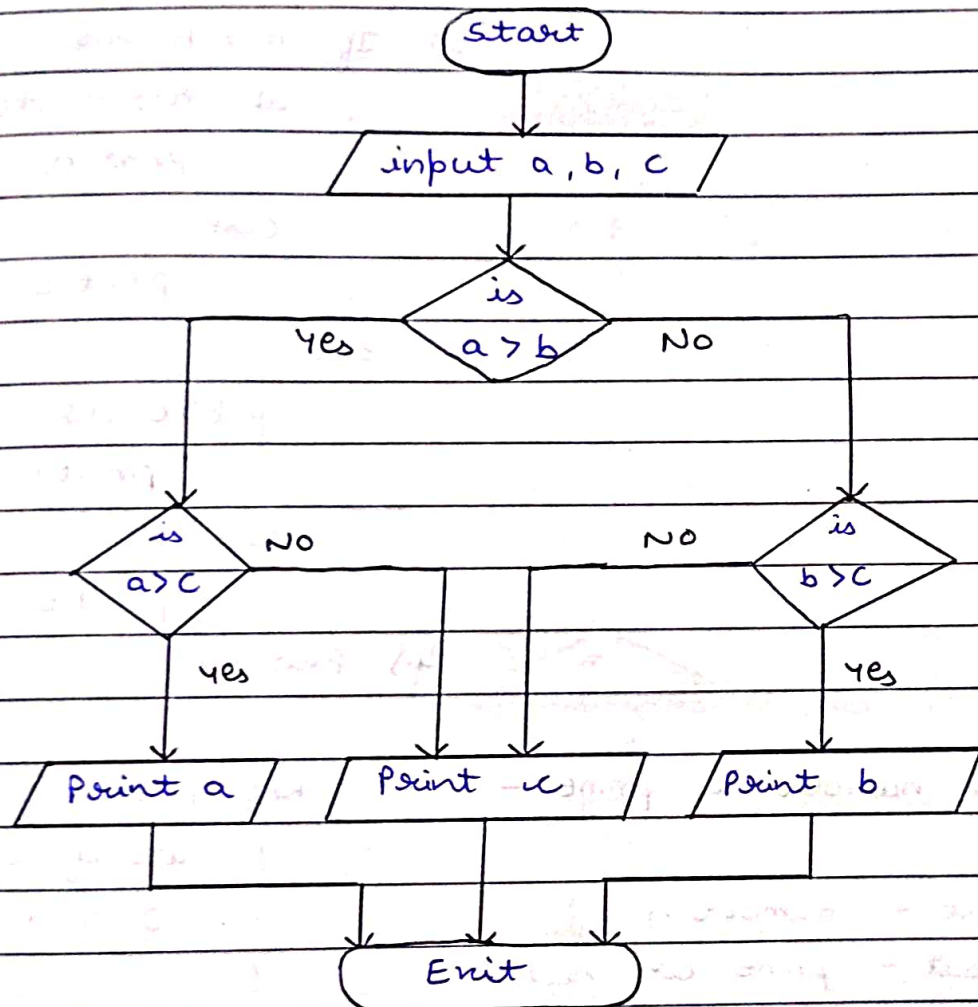
Output - max of 3

assume =  $a = 10$

$b = 15$

$c = 4$

Flowchart -



Pseudocode - 1.) start

2.) input , a, b, c

3.) If  $a > b$  do,  $a > c$  do print a  
else print c4.) Else  $b > c$  do  
print b  
else  
print c

5.) exit



2.) Input  $a, b, c$

3.)  $\neg (a > b) \rightarrow da$

```
if a > c do
|   print a
```

else

```
print c
```

else

if  $b > c$  do

```
print b
```

else

```
print c
```

#### 4.) Exit

no. divisible by 1 or  
itself like 2, 3,

5, 7, 11, 13 etc

Output - prime or not

or

$$1 \times 6 = 6 = 6 \mid 6$$

Not prime

$$6 = 2 \times 3 = 6/2$$
$$6 = 3 \times 2 = 6/3$$
$$b = (n) = 2 \longleftrightarrow (n-1)$$

(div)

$$n \mid \text{div} = \text{rem} = 0$$
$$2 \longleftrightarrow 5$$

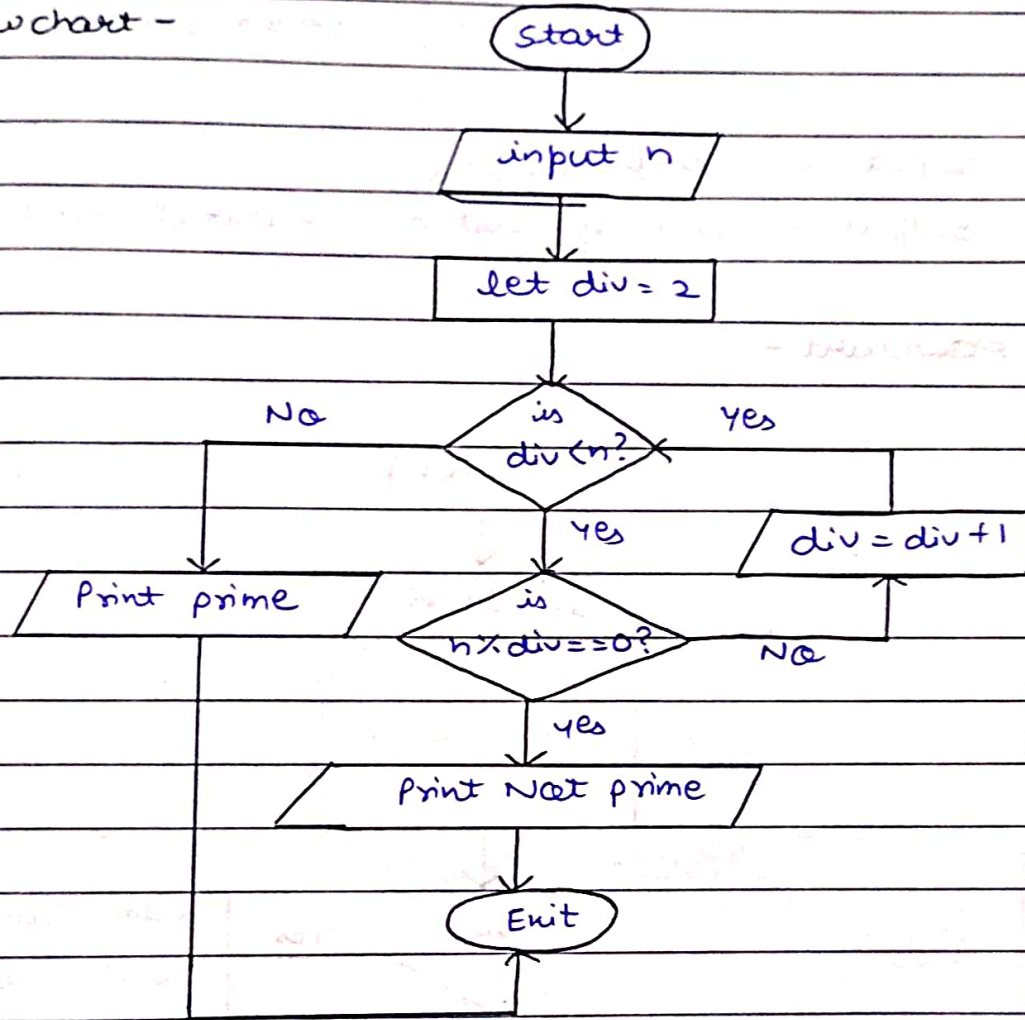
2, 3, 4, 5

4

$$6/2 = \text{gem} = 0$$
$$613 \div 1000 = 0$$

modulus = % or modulus (remainder)  
 $n \% div == 0$

Flowchart -



Pseudocode - 1.) start

2.) Input n

$n = 9$

3.) Let div = 2

$div = 2$

4.) while div < n do

$2 < 9$

if  $n \% div == 0$  do

$9 \% 2 \neq 0$

print "not prime"

$2 + 1 = 3$

exit

$3 < 9$

else

$9 \% 3 == 0$

div = div + 1

Not Prime

5.) Print Prime

6.) Exit



# Sum of First  $n$  natural numbers-

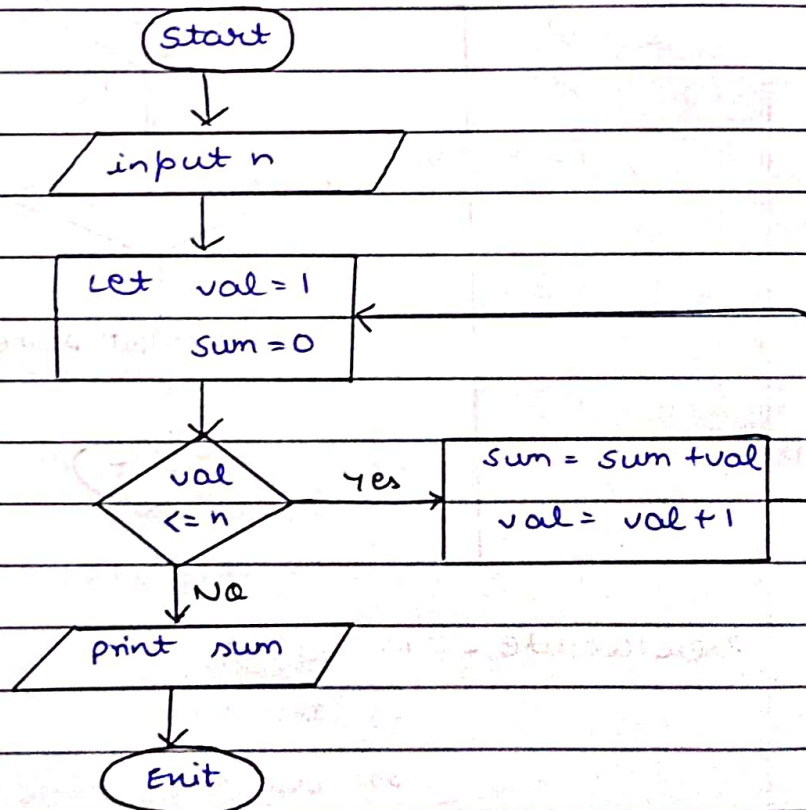
Example =  $n = 4$  ,  $1 + 2 + 3 + 4 = 10$

$n = 5$  ,  $1 + 2 + 3 + 4 + 5 = 15$

Input - number,  $n$

output - sum of list  $n$  , natural numbers

Flowchart -



Pseudocode - 1.) Start

2.) Input  $n$

3.) Let  $val = 1$  ,  $sum = 0$

4.) while  $val \leq n$  do

$sum = sum + val$

$val = val + 1$

5.) Print  $sum$

6.) End

## " Flowchart Questions "

# calculate area of circle -

Pseudocode - 1.) start

$$\text{area} = \pi r^2$$

2.) Input,  $r$ 

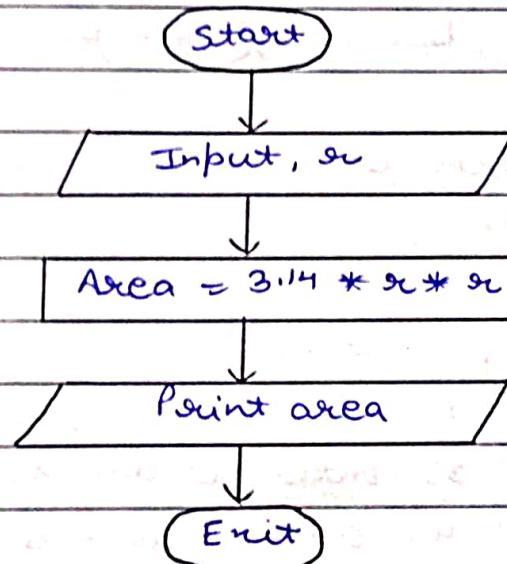
$$= 3.14 \times r \times r$$

3.) Area =  $3.14 * r * r$ 

4.) Print area

5.) Exit

Flowchart -



# Flowchart to find greatest from 2 number

Pseudocode - 1.) start

2.) Input,  $a, b$ 3.) If  $a > b$  doprint  $a$ 

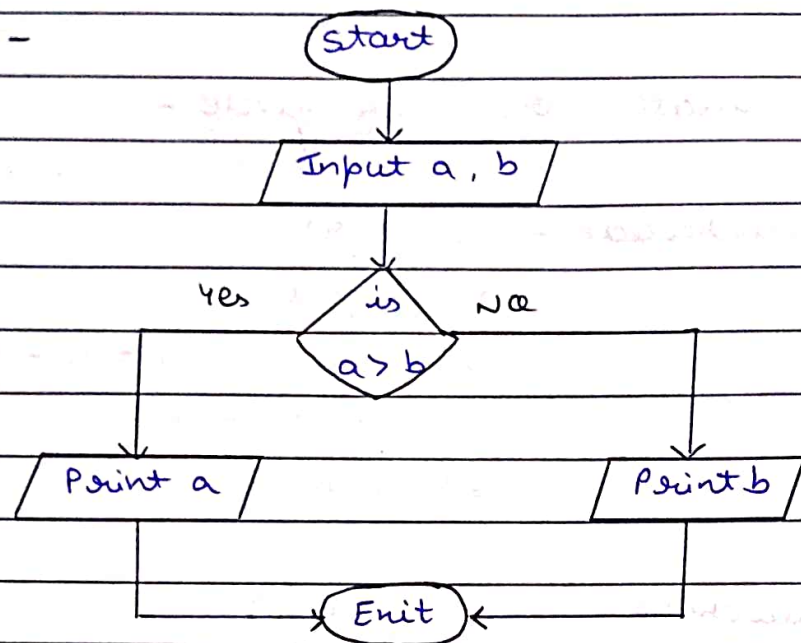
else

print  $b$ 

4.) Exit



Flowchart -



# Flowchart for calculating average from 25 exam scores.

Pseudocode - 1.) Start

2.) Let  $sum = 0$ ,  $c = 0$

3.) Enter exam score,  $S$

4.)  $sum = sum + S$

$c = c + 1$

4.) while  $c \neq 25$  do

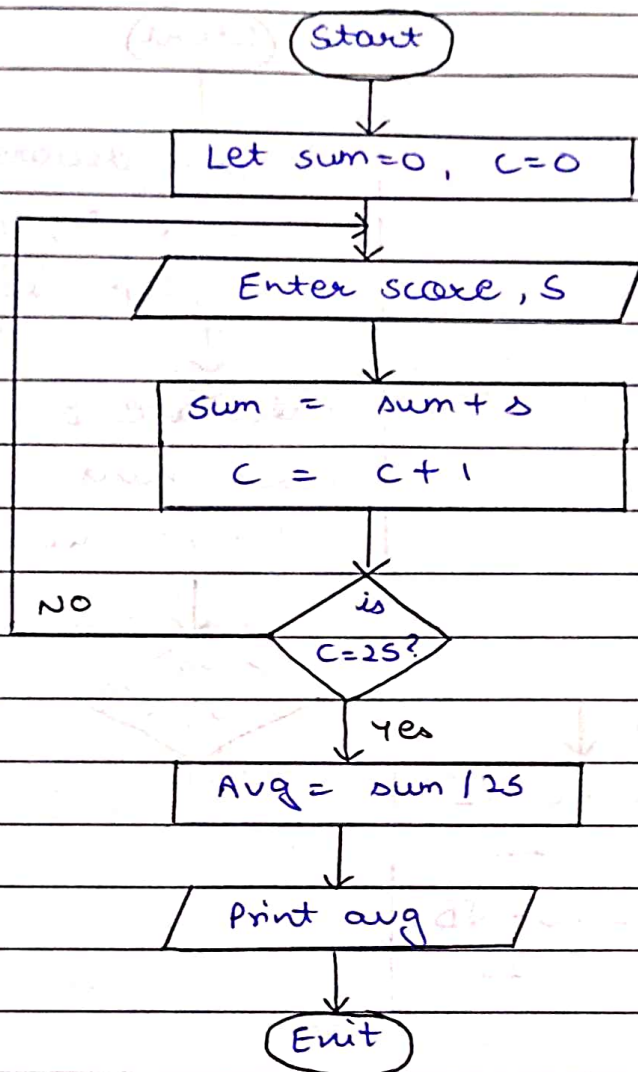
print  $avg = sum / 25$

5.) print  $avg$

6.) Exit

on next page

Flowchart -

# Find roots of quadratic equation  $ax^2 + bx + c = 0$ 

$$d = b^2 - 4ac$$

$$d = 0$$

$$\left. \begin{matrix} x_1 \\ x_2 \end{matrix} \right\} = \frac{-b \pm \sqrt{D}}{2a}$$

$$d > 0$$

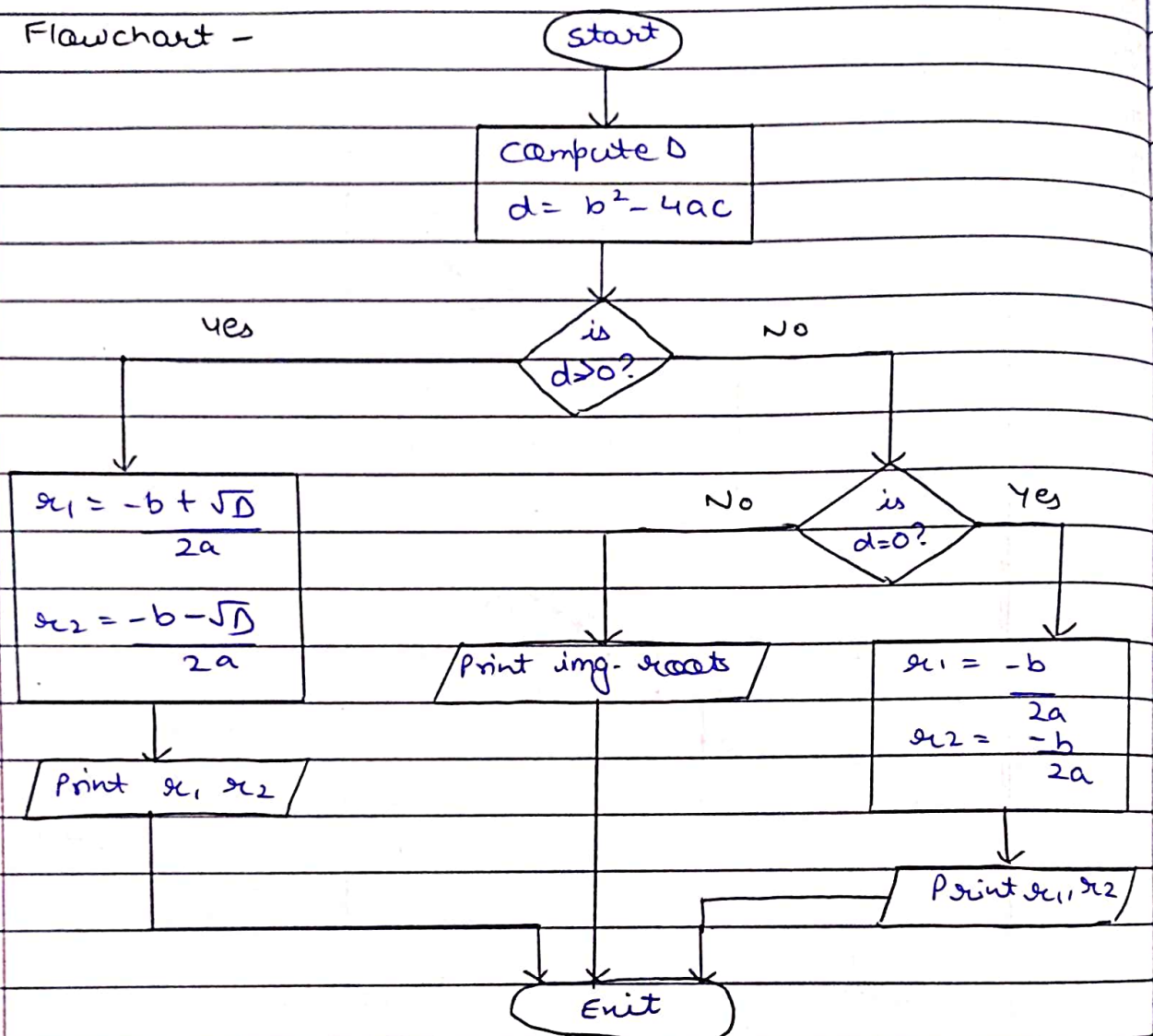
$$x_1, x_2 = \frac{-b \pm \sqrt{D}}{2a}$$

$$d < 0$$

$$x_1, x_2 = \frac{-b \pm \sqrt{D}}{2a}$$



Flowchart -



Pseudocode - 1) start

2) compute  $D = b^2 - 4ac$ 3) If  $D > 0$  do
$$x_1 = \frac{-b + \sqrt{D}}{2a}, \quad x_2 = \frac{-b - \sqrt{D}}{2a}$$

↓  
else

if  $d = 0$ 

$$x_1 = x_2 = \frac{-b}{2a}$$

↓  
else

print img. roots

4) Exit