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Reg. No.: 21BCE2236

Class Assessment – 1

Q1. Construct PAC, write pseudocode and draw flow chart for swapping two number.

INPUT	PROCESSING	OUTPUT	SOLUTION ALTERNATIVES
1) Input A=10 2) Input B=20	1) Declare new variable C 2) Set C=A Set A=B Set B=C 3) Print A, B	1) A=20 2) B=10	1) We can calculate by the following steps as well. i) A = A + B ii) B= A - B iii) A =A - B

Pseudocode: 1) Start

2) Input integer A

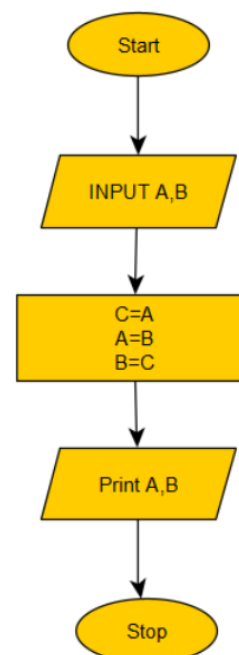3) Input integer B

4) C = A

5) A = B

6) B = C

7) Print A

8) Print B

9) End

Q2. Construct PAC, write pseudocode and draw a flow chart to find whether the given number is even or odd number.

INPUT	PROCESSING	OUTPUT

Case 1:
 Input A=10
 	
Case 2:
 Input A=33
 	
Case 3:
 Input A=0
	1) If A=0:
	      Print ("A is Zero")
	2) Else:
	     If A%2=0:
	       Print ("A is Even")
	     Else:
	       Print ("A is Odd")
		Case 1:
		 Output "A is an even no."
		
		Case 2:
		Output "A is not an even no."
		
		Case 3:
		 Output "A is zero"

Pseudocode:

   1) Start

   2) Input integer A

   3) If A=0:

      Print ("A is Zero")

   6) Else:

      If A%2=0:

         Print ("A is Even")

      Else:

         Print ("A is Odd")

   7) End
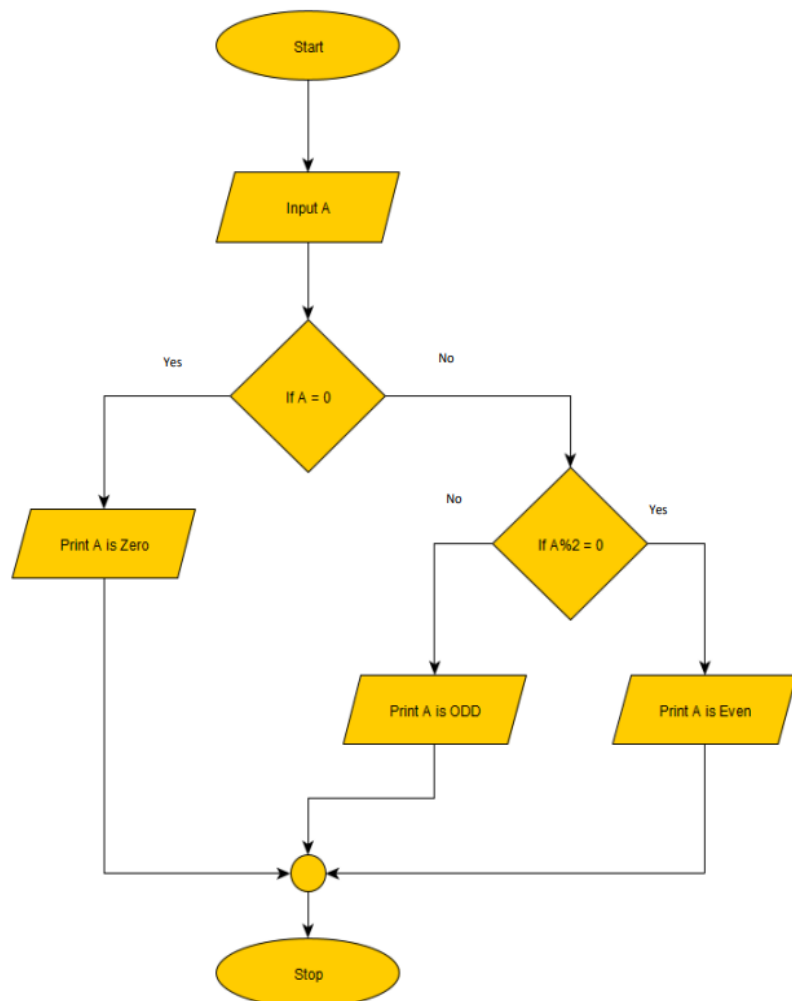
Q3. Construct PAC, write pseudocode and draw a flow chart to depict the steps for withdrawing money from an ATM. Allow the users to withdraw cash only in Thousands and Hundreds. Eg. 1400 is a valid and 1350 is invalid

INPUT	PROCESSING	OUTPUT

Case 1:
 Input A=0
 	
Case 2:
 Input A= -100
 	
Case 3:
 Input A=1350
 	
Case 4:
 Input A = 1400
	1) If A≤0:
	        Print ("Please enter an valid amount to withdraw.")
	2) Else:
	        If A%100=0:
	          Print ("Valid amount!! You can Withdraw this amount now")
	        Else:
	          Print ("Sorry!! You can only withdraw amount in 100s or 1000s currency.")
		Case 1:
		 Output "Please enter an valid amount to withdraw."
		
		Case 2:
		Output "Please enter an valid amount to withdraw.."
		
		Case 3:
		 Output "Sorry!! You can only withdraw amount in 100s or 1000s currency."
		
		Case 4:
		Output "Valid amount!! You can Withdraw this amount now"

Pseudocode:

1) Start

2) INPUT A

3) If A≤0:

    Print ("Please enter a valid amount to withdraw.")

4) Else:

    If A%100=0:

        Print ("Valid amount!! You can

        Withdraw this amount now")

    Else:

        Print ("Sorry!! You can only

   withdraw amount in 100s or

        1000s currency.")

5) End
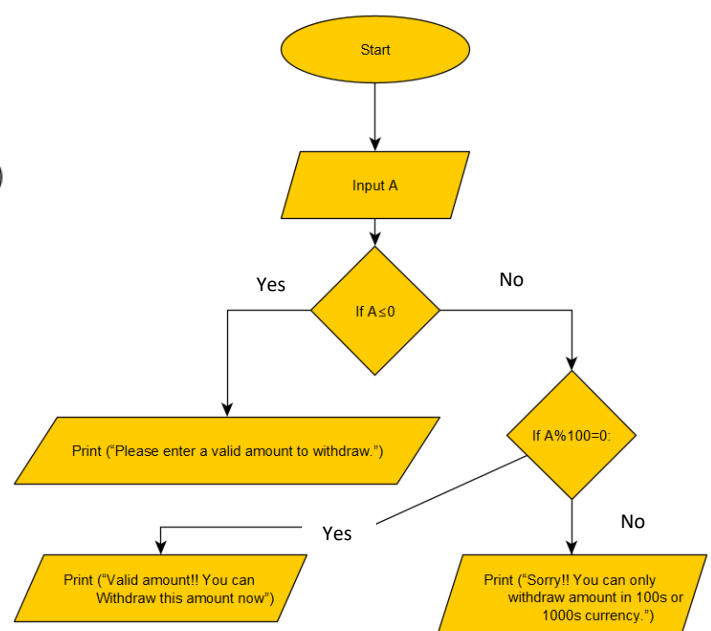
Q4. Construct PAC, write pseudocode and draw a flow chart to check whether the given number is a three-digit number or not.

INPUT	PROCESSING	OUTPUT	ALTERNATIVE SOLUTIONS

Case 1:
Input A=10
 	
Case 2:
Input A=331
 	
Case 3:
Input A=1012
	If A<100:
	    Print ("A is not a 3-digit no.")
	2) Else:
	    If A≥1000:
	      Print ("A is not a 3-digit no.")
	    Else:
	      Print ("A is a 3-digit no.")
		Case 1:
		Output "A is not a 3-digit no."
		
		Case 2:
		Output "A is a 3-digit no."
		
		Case 3:
		Output "A is not a 3-digit no."
			If (A>=100 and A<1000):
			
			  print ("A is a 3-digit no.")
			
			else:
			  print ("A is not a 3-digit no.")

Pseudocode:

1) Start

2) INPUT a no. A

3) If A<100:

    Print ("A is not a 3-digit no.")

4) Else:

    If A≥1000:

        Print ("A is not a 3-digit no.")

   Else:

        Print ("A is a 3-digit no.")

5) End
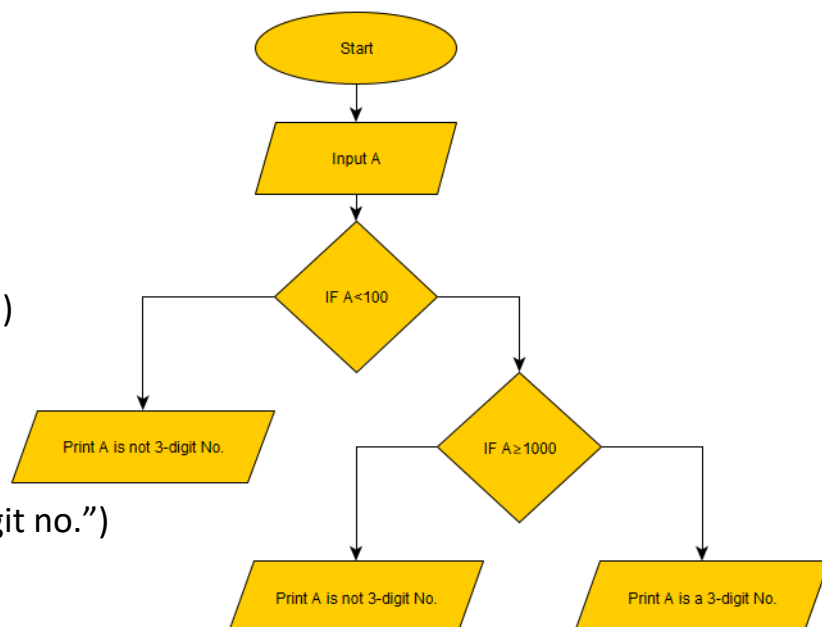
Q5. Construct PAC, write pseudocode and draw a flow chart to generate the pay slips of N

employees working in ABC Company. Input for the process will be the basic pay of the

employees. Gross salary is calculated as Basic Pay + HRA + DA. HRA is fixed as 30% of Basic

pay and DA as 80% of Basic pay.

INPUT	PROCESSING	OUTPUT	ALTERNATIVE SOLUTIONS

Name, Bacis Pay(BP)
 	
Eg: Name = Harsh
 	
BP= 20000
	1) i=0
	2) Input N
	3) while i≤N:
	    Input Name
	    Input BP
	    HRA=0.3*BP
	    DA=0.8*BP
	    TP=BP+HRA+DA
	    Print Name
	    Print "Salary is" TP
	    i=i+1
		Name: Harsh
		
		Salary is 42000
			1) i=0
			2) Input N
			3) For I in range (0,N+1):
			    Input Name
			    Input BP
			    HRA=0.3*BP
			    DA=0.8*BP
			    TP=BP+HRA+DA
			    Print Name
			    Print "Salary is" TP
			    i=i+1

Pseudocode:

1) Start

2) i=0,

3) while i≤N:

    Input Name

    Input BP

    HRA=0.3*BP

    DA=0.8*BP

    TP=BP+HRA+DA

    Print Name

    Print "Salary is" TP

    i=i+1

4)End
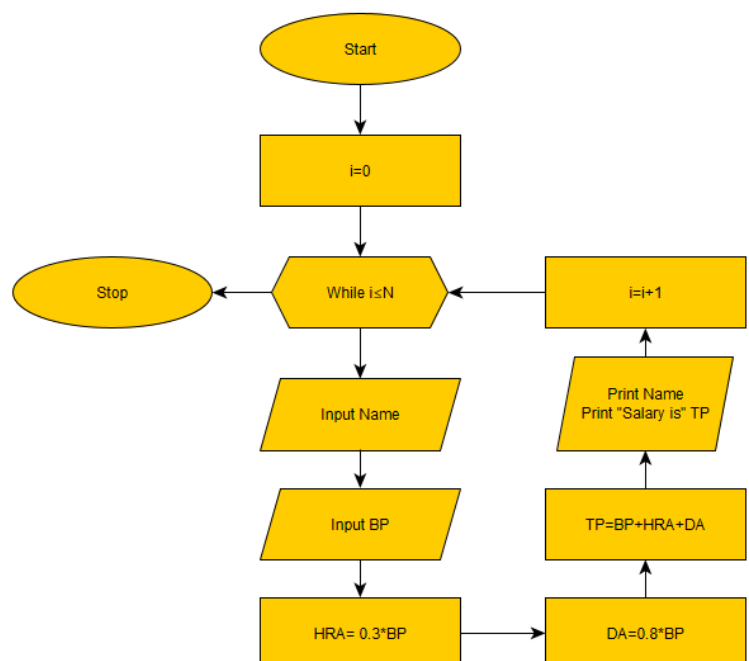
Name : Harsh Vardhan Shukla
Reg. No.: 21BCE2236

Class Assignment – 1

Q1. Write an algorithm and pseudo code and flow chart for swapping two numbers.

Sol:

Pseudocode: 1) Start
                  2) Input integer A
                  3) Input integer B
                  4) C = A
                  5) A = B
                  6) B = C
                  7) Print A
                  8) Print B
                  9) End

Algorithm:

1) Initiate the program
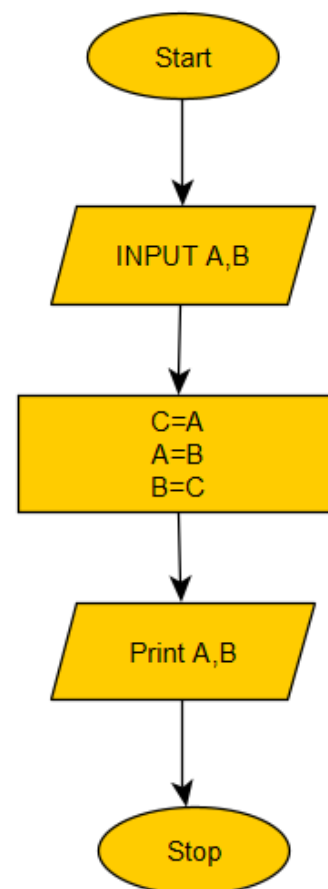
2) Declare new variable A, B and C

3) Read two no. A, B

4) Put C=A

5) Put A=B

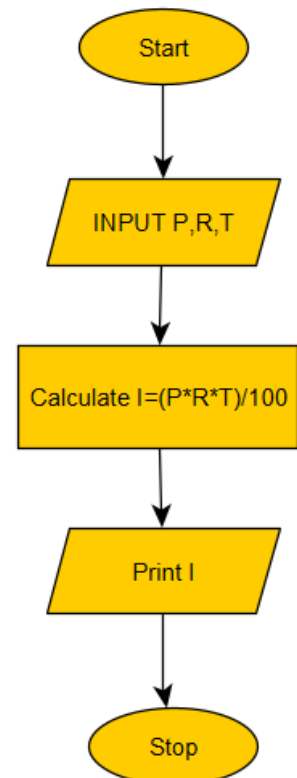6) Put B=C

7) Print A, B

8) End / Terminate the program

Q2. Write an algorithm, pseudo code and flow chart for simple interest calculation.

Sol:

Pseudocode: 1) Start
2) Input integer P
3) Input integer R
4) Input integer T
5) S=(P*R*T)/100
6) Print S
7) End

Algorithm:

1) Initiate the program

2) Declare new variable P, R and T

3) Read P, R and T

4) Put S = (P*R*T)/100

5) Print S

6) End / Terminate the program

Start

INPUT P,R,T

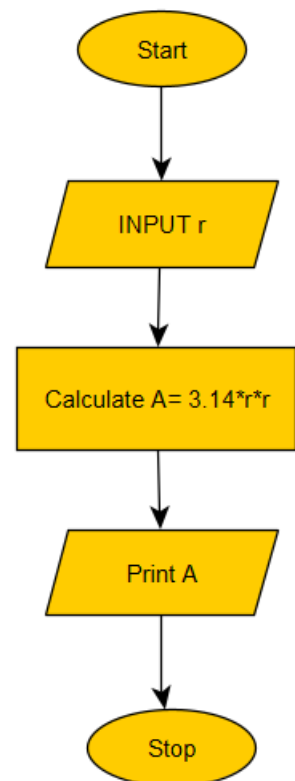Calculate I=(P*R*T)/100

Print I

Stop

Q3. Write an algorithm, pseudo code and flow chart for computing the area of the circle with radius given.

Sol:

Pseudocode: 1) Start
            2) Input integer r
            3) A=3.14*r*r
            6) Print A
            7) End

Algorithm:

1) Initiate the program

2) Declare new variable r and A

3) Read r

4) Put A = 3.14*r*r

5) Print A

6) End / Terminate the program
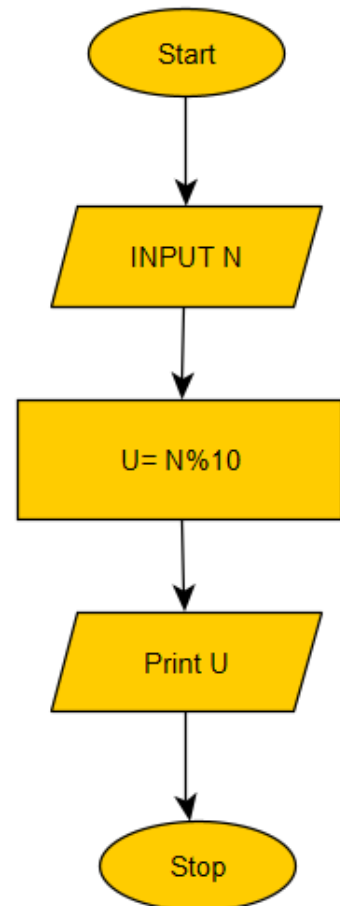
4. Write an algorithm, pseudo code and flow chart for extracting the unit digit of a given number.

Sol:

Pseudocode: 1) Start
          2) Input integer N
          3) U=N%10
          6) Print U
          7) End

Algorithm:

1) Initiate the program

2) Declare new variable N and U

3) Read N

4) Put U = N%10

5) Print U

6) End / Terminate the program
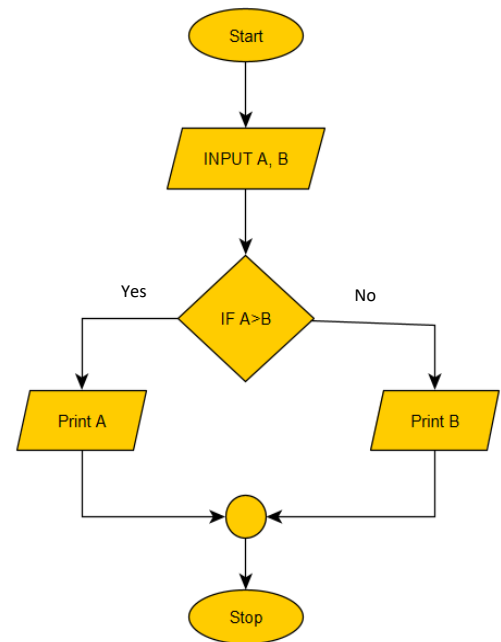
⍰5. Write an algorithm, pseudo code and flow chart for calculating largest of two given numbers.

Sol:

Pseudocode: 1) Start

          2) Input integer A,B

          3) If A>B:

                Print A

          4) Else:

                Print B

          5) End
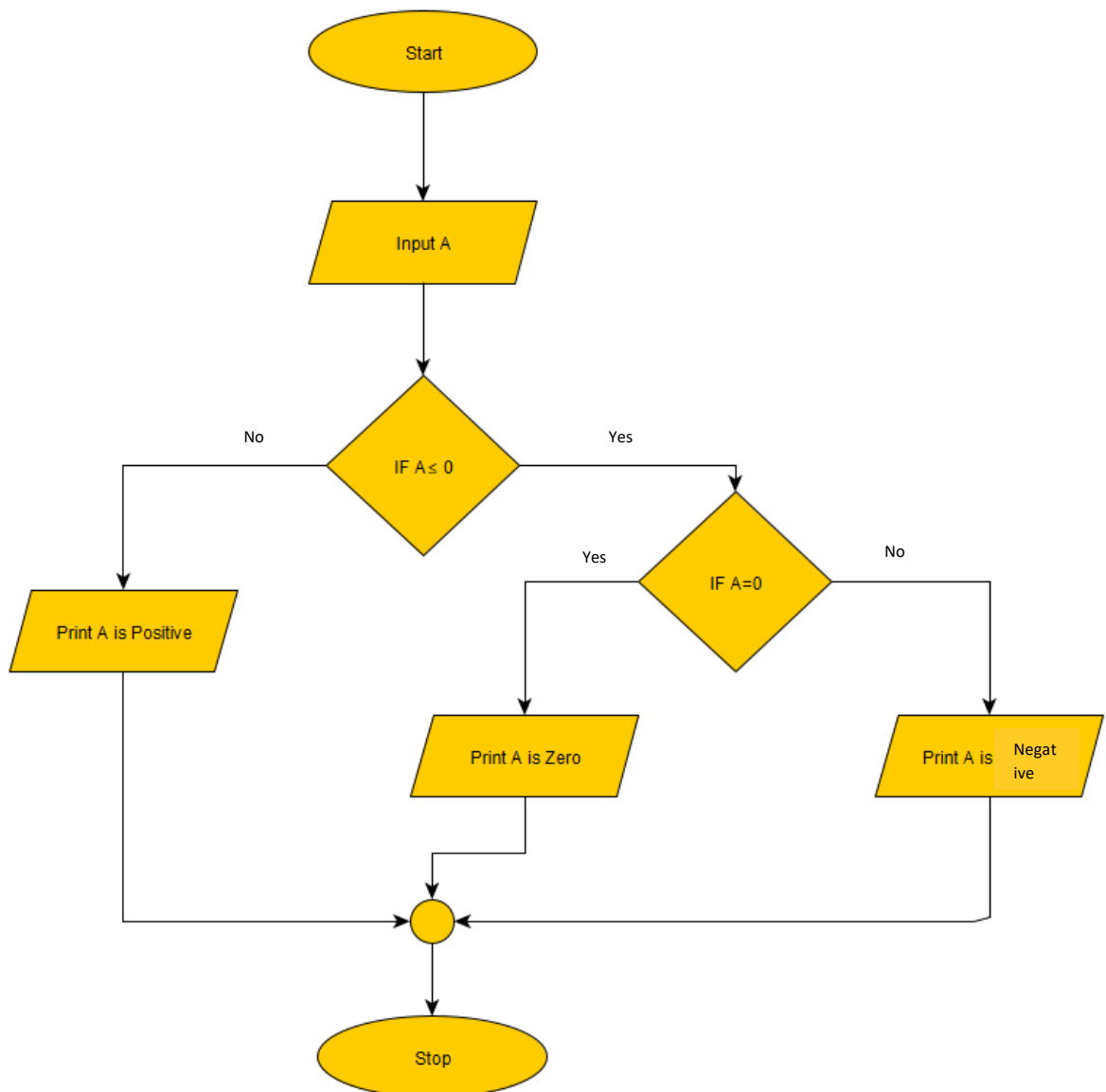
Algorithm:

1) Initiate the program

2) Declare new variable A and B

3) Read A, B

4) If A is greater and B ;

       Print A

  Or else:

       Print B

5) Print U

6) End / Terminate the program

Q6. Write an algorithm, pseudo code and flow chart for determining whether a given integer number is positive or negative.

Sol:

Pseudocode:

    1) Start

    2) Input integer A

    3) If A ≤ 0:

        If A= 0:

            Print ("A is Zero.")

        Else:

            Print ("A is Negative")

    4) Else:

            Print ("A is Positive")

    5) End

Algorithm:

1) Initiate the program

2) Declare new variable A

3) Read A

4) If A is lesser than or equal to 0:

        IF A=0:

            Print A is 0

        Else:

            Print A is Negative

 5) Or else:

    Print A is Positive

6) End / Terminate the program

7. Write an algorithm, pseudo code and flow chart for determining if a number is odd or even.

Sol:
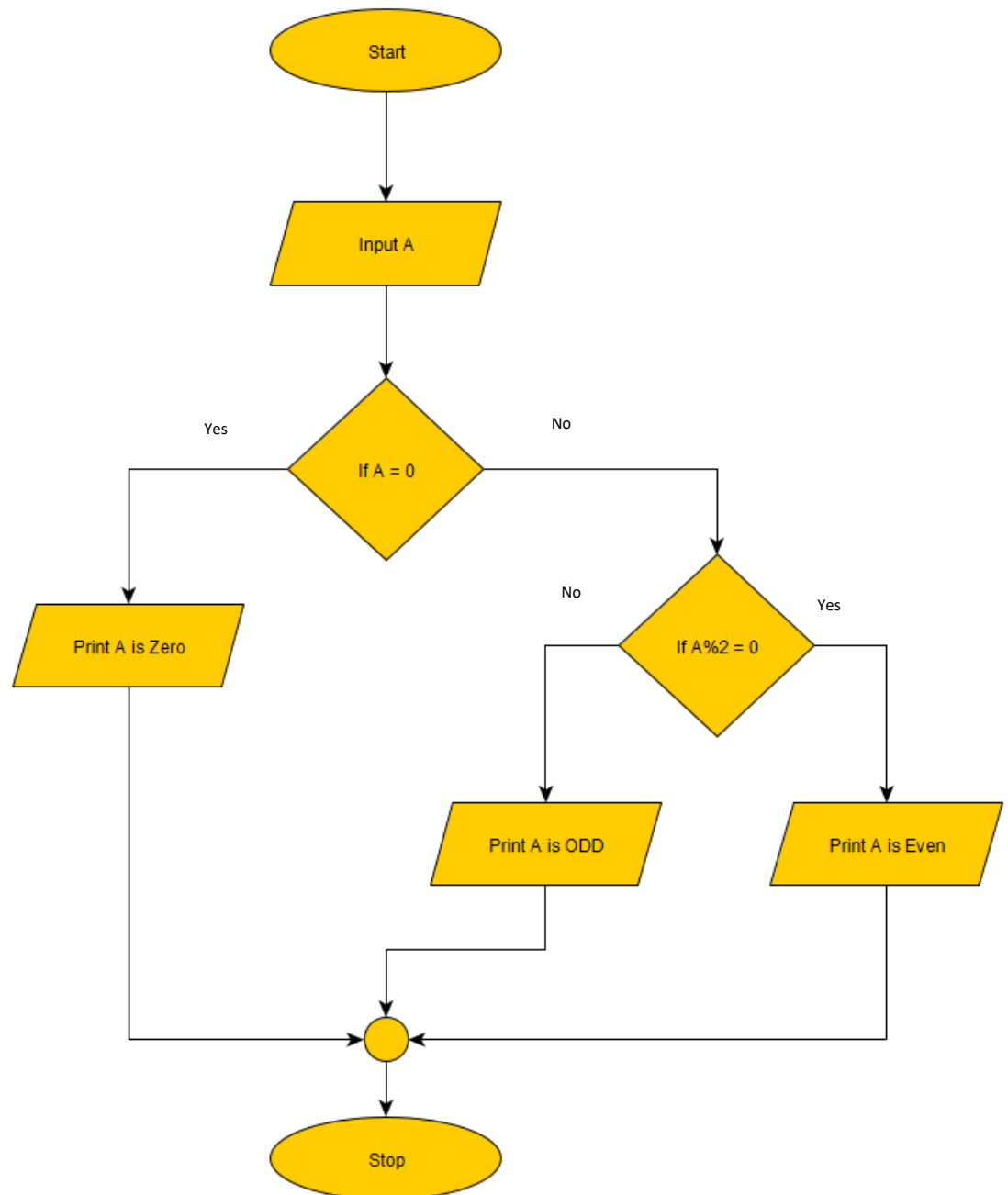
```
                          ┌─────────┐
                          │  Start  │
                          └────┬────┘
                               │
                          ┌────▼────┐
                          │ Input A │
                          └────┬────┘
                               │
              Yes          ╱───▼───╲          No
         ┌───────────────◄ If A = 0 ►───────────────┐
         │                ╲───────╱                 │
         │                                          │
    ┌────▼────────┐                    No      ╱────▼─────╲    Yes
    │ Print A is  │              ┌───────────◄ If A%2 = 0 ►───────┐
    │    Zero     │              │            ╲──────────╱        │
    └──────┬──────┘         ┌────▼────────┐              ┌────────▼──────┐
           │                │ Print A is  │              │ Print A is    │
           │                │    ODD      │              │    Even       │
           │                └──────┬──────┘              └────────┬──────┘
           │                       │                              │
           │                       └──────┐                       │
           │                          ┌───▼──┐                    │
           └─────────────────────────►│  ○   │◄───────────────────┘
                                      └───┬──┘
                                     ┌────▼────┐
                                     │  Stop   │
                                     └─────────┘
```

Pseudocode: 1) Start
              2) Input integer A
              3) If A=0:
                    Print ("A is Zero")

              6) Else:
                    If A%2=0:
                          Print ("A is Even")

                    Else:
                        Print ("A is Odd")
              7) End

Algorithm:

1) Initiate the program

2) Declare new variable A

3) Read A

4) If A is 0:
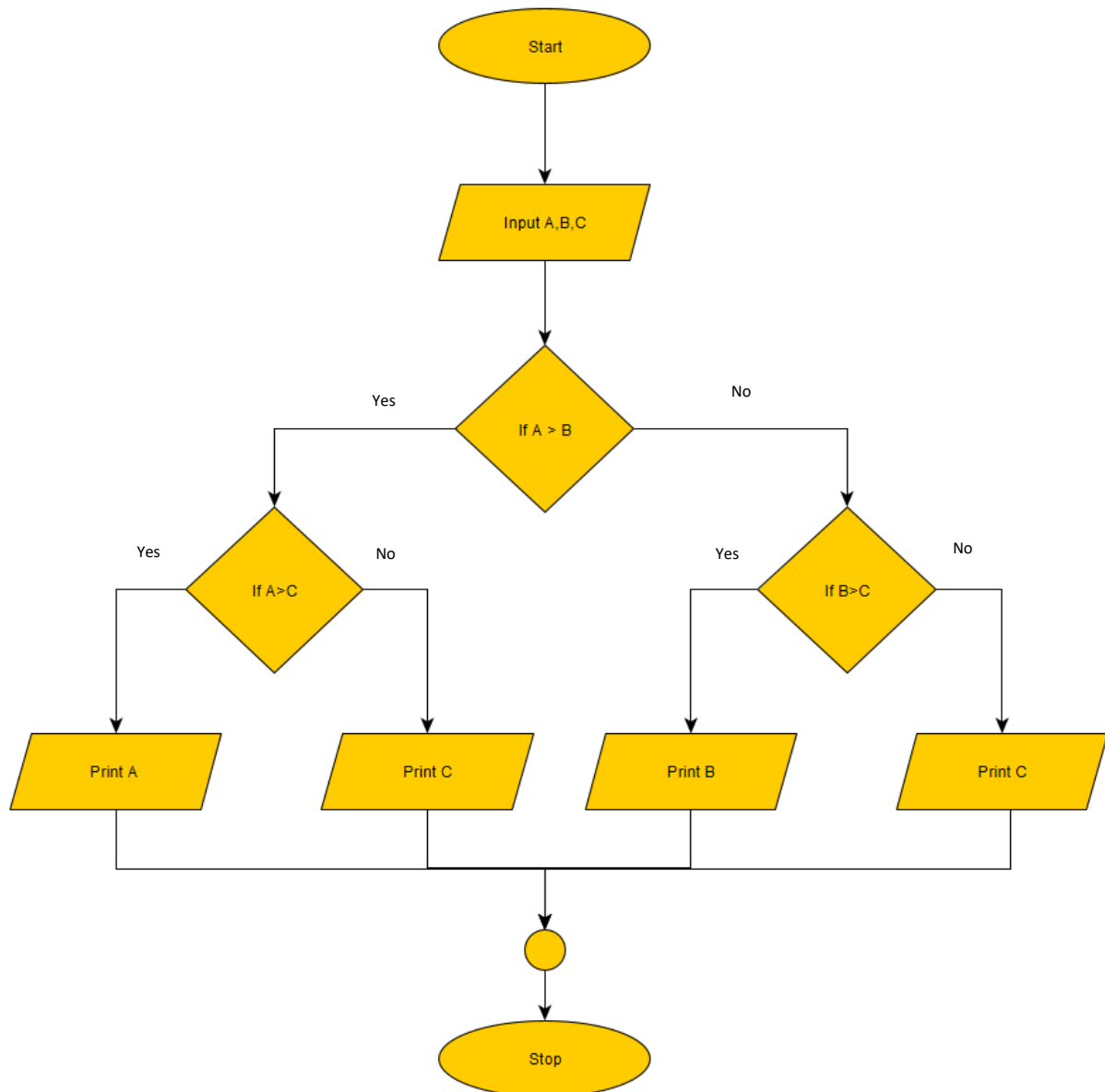
        Print A is ZERO

5) Else:

        IF A%2=0:

                Print A is Even

        Else:

                Print A is Odd

6) End / Terminate the program

Q8. Write an algorithm, pseudo code and flow chart for finding the largest of three given numbers.

Start

Input A,B,C

If A > B

Yes | No

If A>C

Yes | No

If B>C

Yes | No

Print A

Print C

Print B

Print C

Stop

Sol:

Pseudocode: 1) Start

2) Input integer A,B,C

```
            3) If A>B:
                      If A>C
                              Print A
                      Else
                              Print C
            4) Else if:
                      If B>C
                              Print B
                      Else
                              Print C
            5) End
```
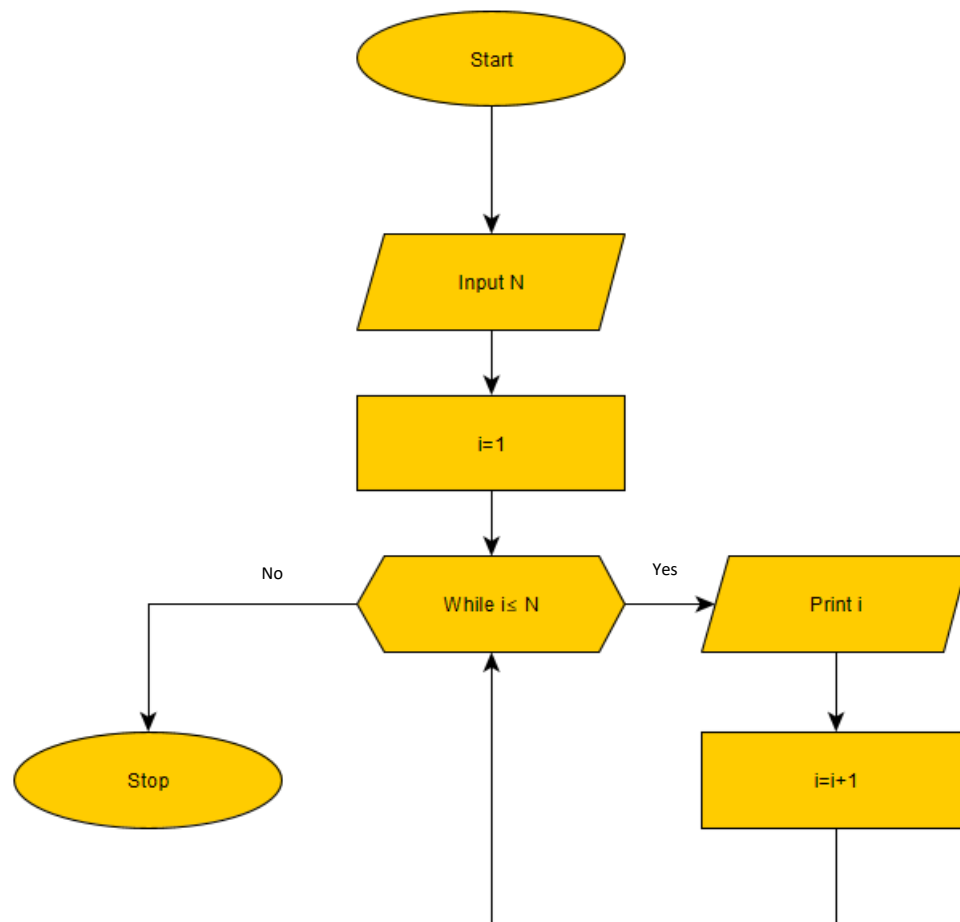
Algorithm:

1) Initiate the program

2) Declare new variable A and B

3) Read A, B

4) If A is greater and B ;

       Print A

  Or else:

       Print B

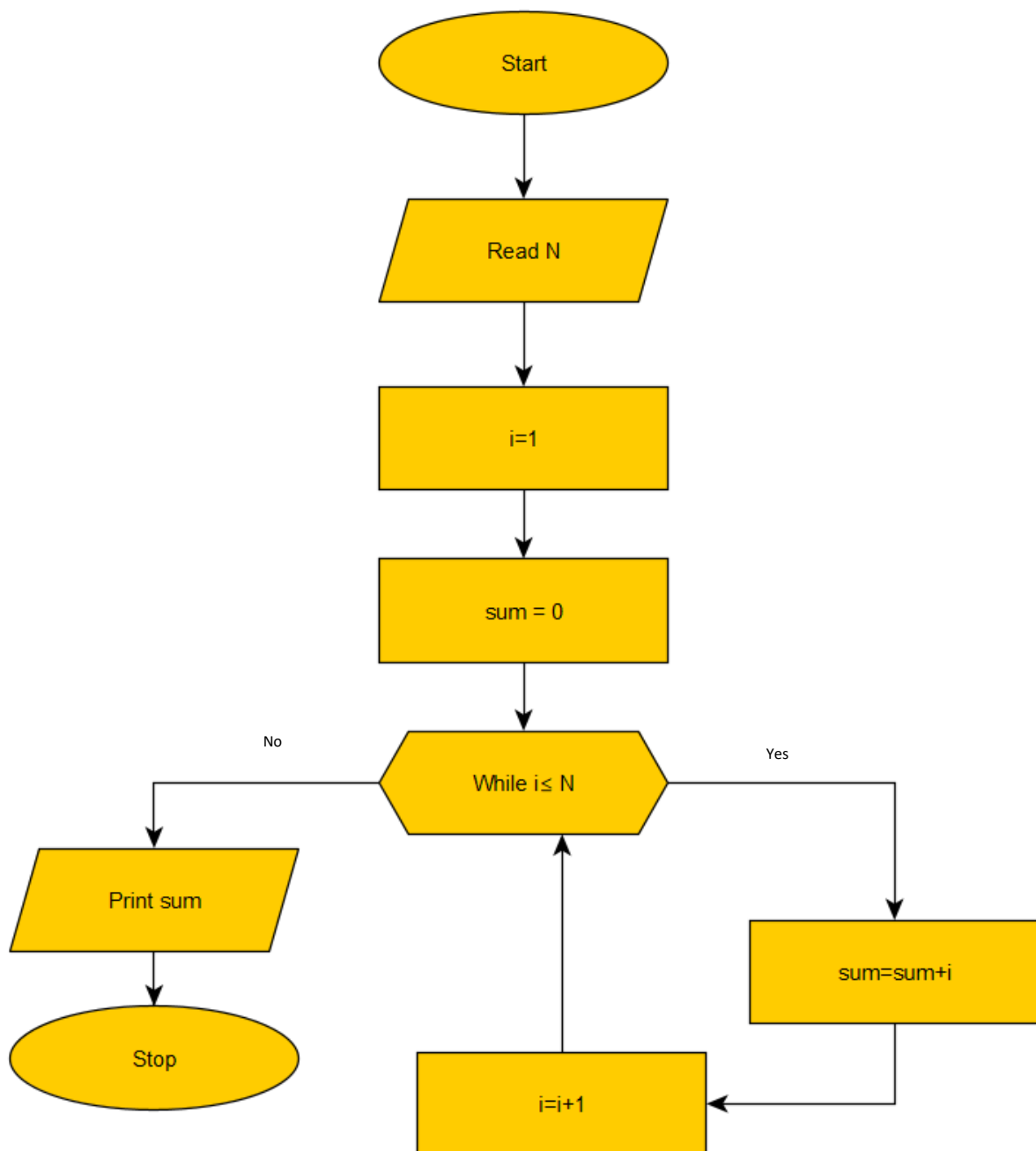5) Print U

6) End / Terminate the program

Q9. Write an algorithm, pseudo code and flow chart for printing first N natural nos.

Sol:

Pseudocode: 1) Start
  2) Input integer N
  3) i=1
  4) While i≤N:

  Print i
  I=i+1
  5) End

Algorithm:

1) Initiate the program

2) Input N

3) i=1

4) Repeat steps 5 and 6 until I ≤ N

5) Print i

6) i=i+1

7) End / Terminate the program

Q10. Design an algorithm for adding the test score as 26,49,98,87,62,75.

Sol:
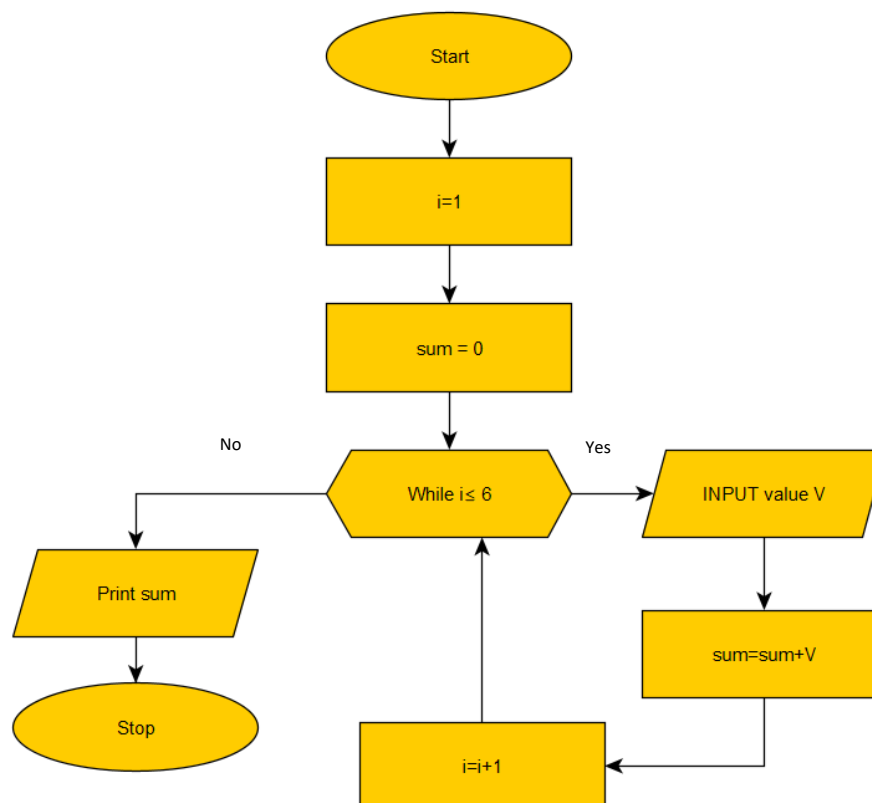
Psuedocode:1) Start
      2) i=1
      3) sum=0
      4) While i≤6:
            Input V
            sum=sum+V
            i=i+1
      5) Print sum
      6) End

Algorithm:

1) Initiate the program

2) Declare variable i as i=1

3) Declare variable sum as sum=0

4) Repeat steps 5, 6 and 7 until I ≤ 6

5) Input integer V

6) sum=sum+1

7) i=i+1

8) Print sum

9) End / Terminate the program

⬚II. Write an algorithm, pseudo code and flow chart for finding the sum of n natural nos

Sol:

Psuedocode:1) Start
                2)Input N
                3) i=1
                4) sum=0
                5) While i$\leq$N:
                          sum=sum+i
   i=i+1
            6) Print sum
            7) End

Algorithm:

1) Initiate the program

2) Read N

3) Declare variable i as i=1

4) Declare variable sum as sum=0

5) Repeat steps 6 and 7 until I $\leq$ N

6) sum=sum+i

7) i=i+1

8) Print sum

9) End / Terminate the program

Q12. Write an algorithm, pseudo code and flow chart for finding the Factorial of n natural nos

Sol:
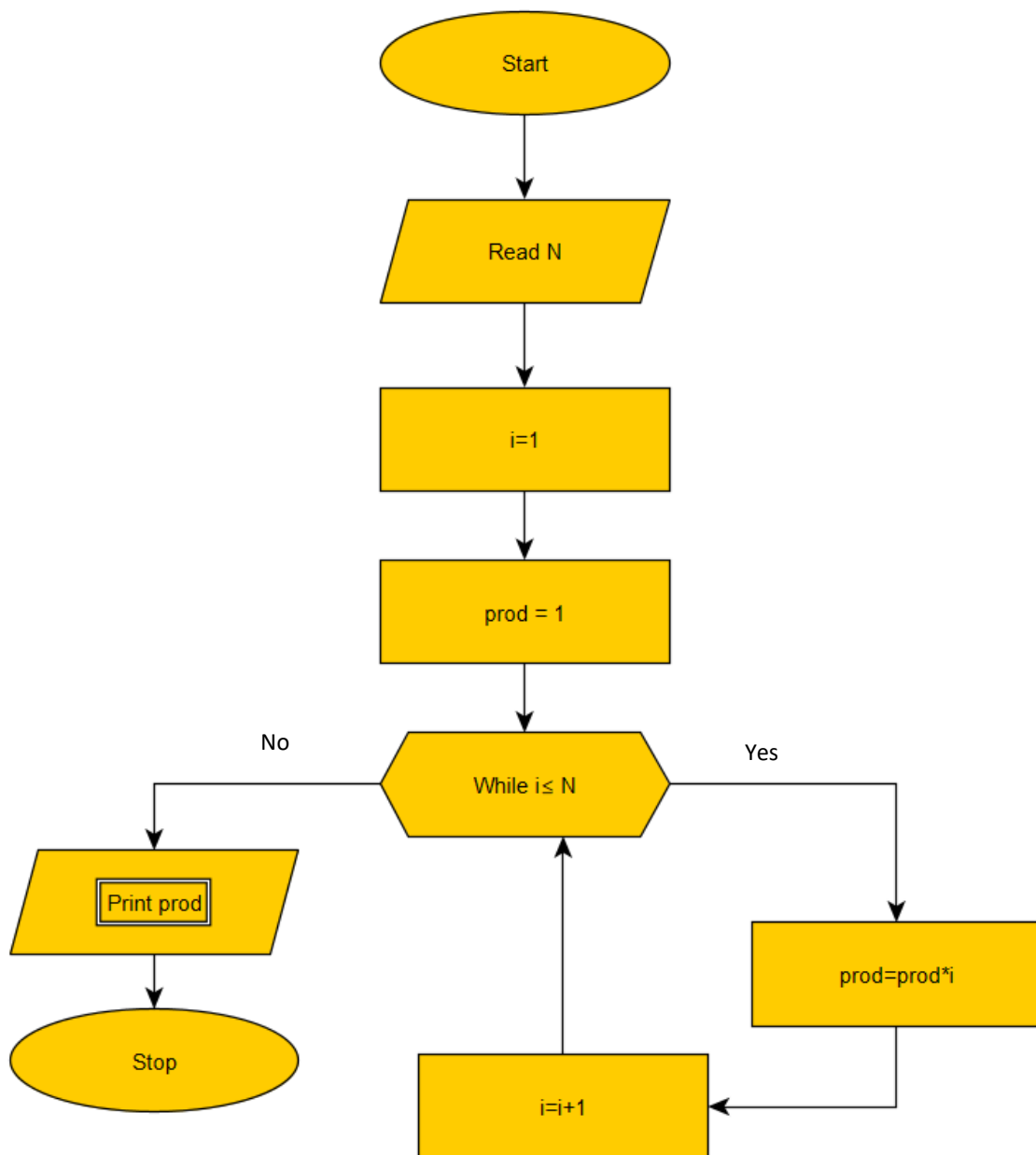
Psuedocode:1) Start
2)Input N
3) i=1
4) prod=1
5) While i≤N:
prod=prod*i
i=i+1
6) Print prod
7) End

Algorithm:

1) Initiate the program

2) Read N

3) Declare variable i as i=1

4) Declare variable prod as prod=1

5) Repeat steps 6 and 7 until i ≤ N

6) prod=prod*i

7) i=i+1

8) Print prod

9) End / Terminate the program

Q13.Write the pseudo code to print the grade obtained by a student using the following rules:

Marks   - Grade
above 75 - O
60-70   - A
50-60   - B
40-50   - C
less than 40 – D

Sol:
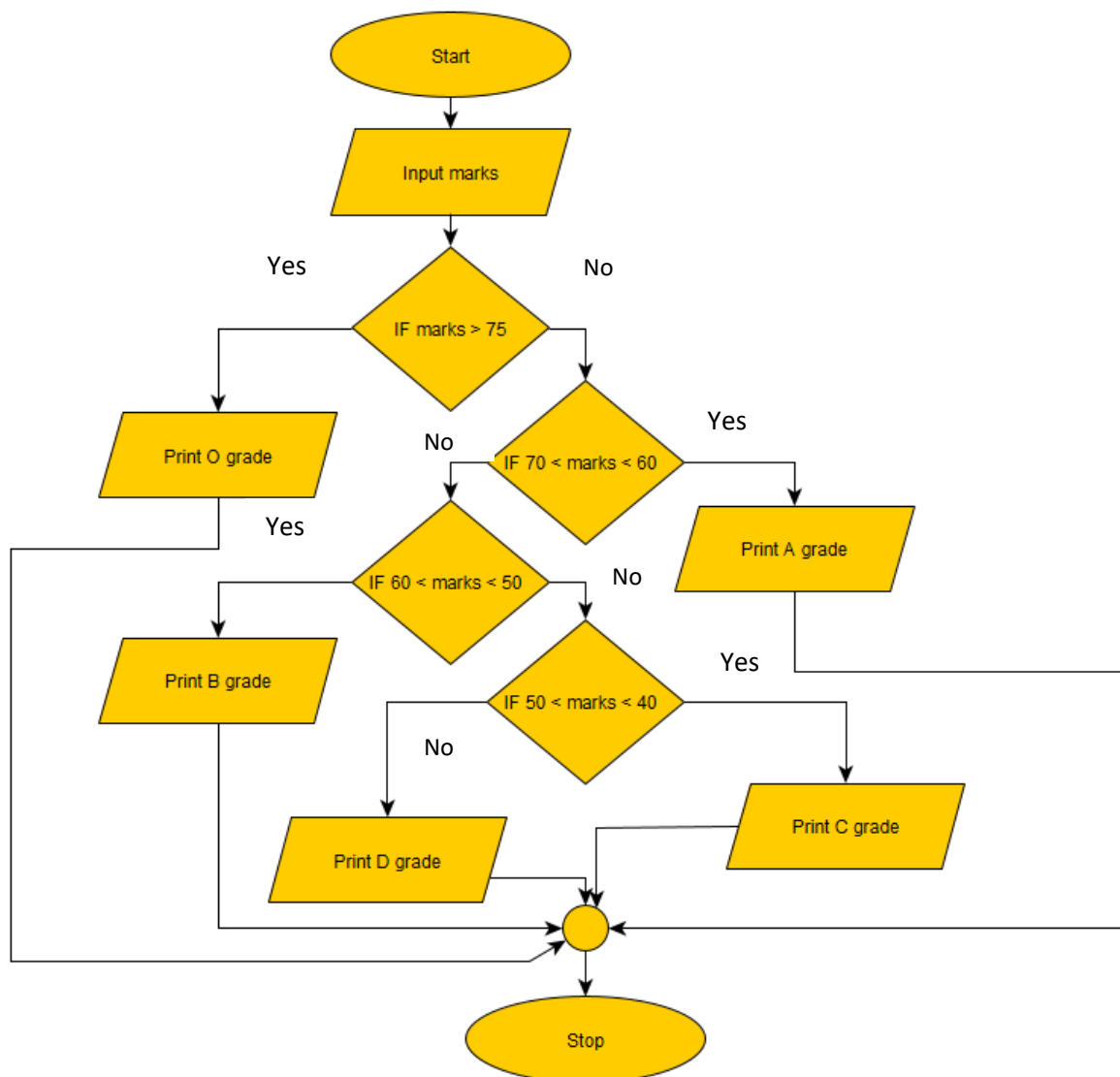
PseudoCode: 1) Start

2)Input marks

3) If marks >75

   Print O grade

4) Else If 70 < marks < 60

   Print A grade

5) Else If 60 < marks < 50

   Print B grade

6) Else If 50 < marks < 40

   Print C grade

7) Else

   Print D grade

8) End

Algorithm:

1) Initiate the program

2) Read Marks

3) if marks >75 ,print O grade
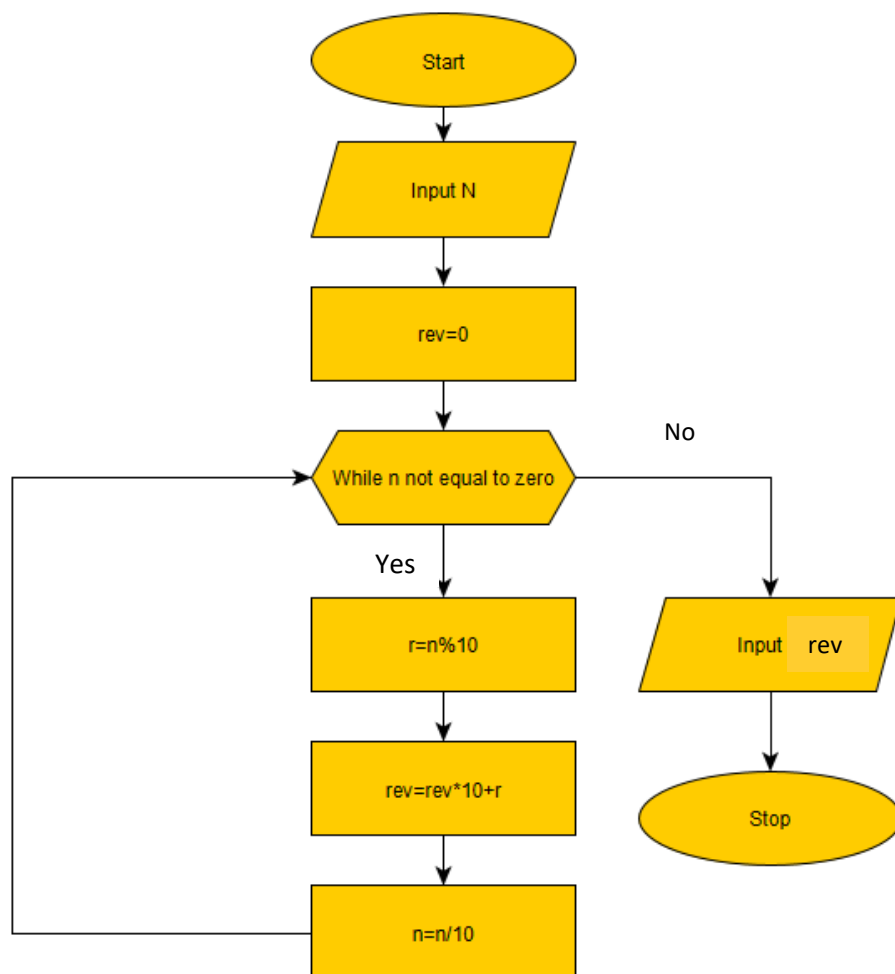
4) else If 70 < marks < 60 , print A grade

5) else If 60 < marks < 50 , print B grade

6) else If 50 < marks < 40 , print C grade

7) else print D grade

8) End / Terminate the program

Q4.Write the pseudo code to print the reverse of a no.

Psuedocode:1) Start

2)Input N

3) rev=0

4) While i!=N:

r=n%10

rev=rev*10+r

n=n/10

5) Print

6) End

Algorithm

1) start

2) read n

3) Set rev=0

4) repeat steps 5,6 & 7 unit n!=0

5) set r = n % 10

6) set rev = rev*10 + r

7) set n=n/10

8) print rev

9) stop

Q15.Write the pseudo code to add 2 no.s .

Sol:

Pseudocode: 1) Input A

2) Input B

3) S=A+B

4) Print S

5) End

Algorithm: 1) Read two integers A and B

2) Declare variable S

3) S= A+B

4) Print S

5) End