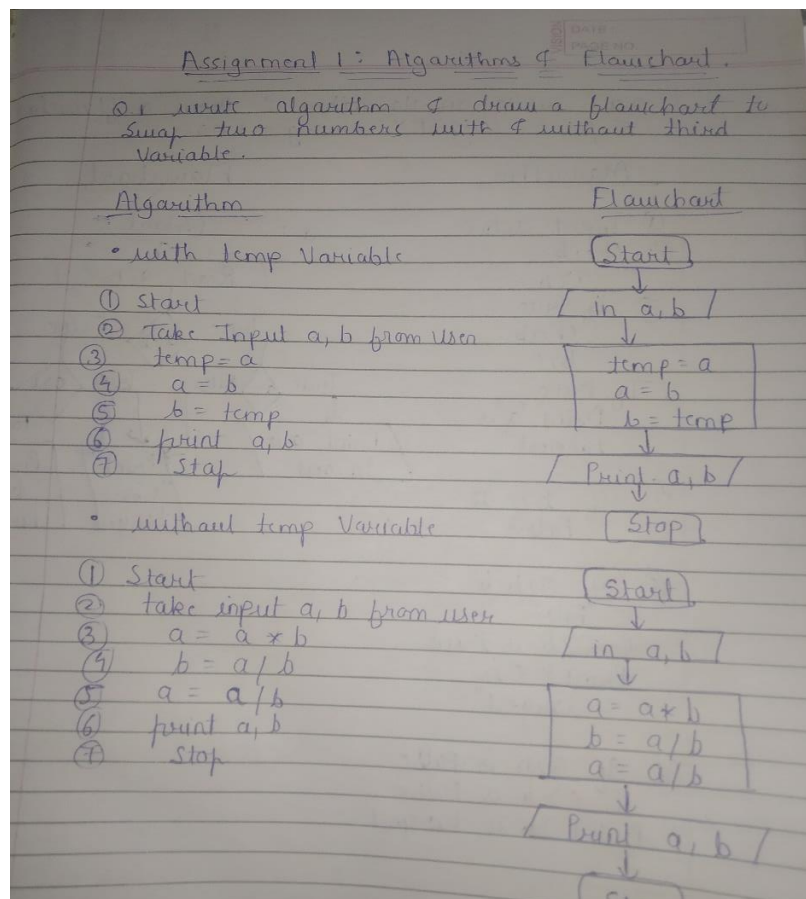# Assignment 1: Algorithm And Flowchart

Name: Harshal Atre Balkrishna
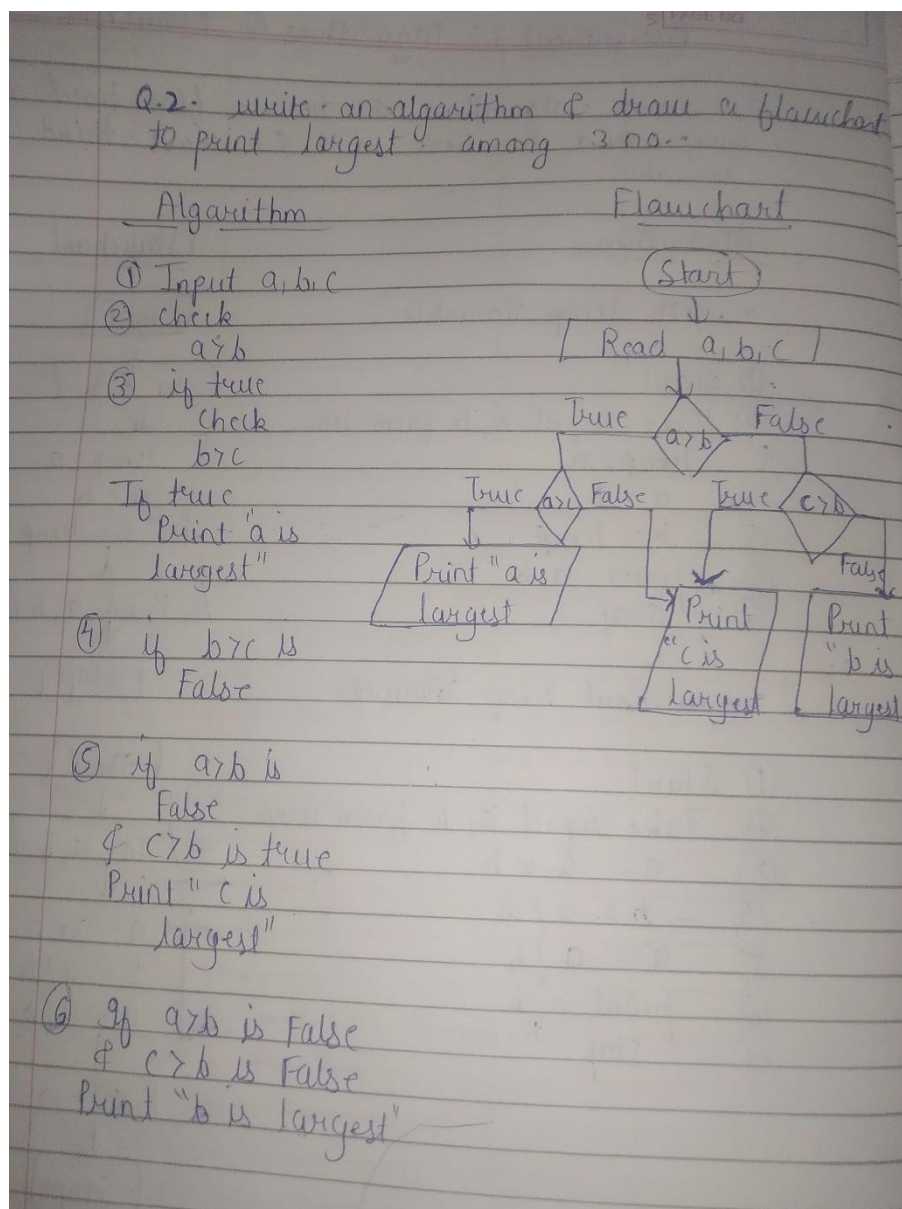
Roll NO. : A-76

1.Write an algorithm and design a flowchart to swap two numbers with and without using a temporary variable
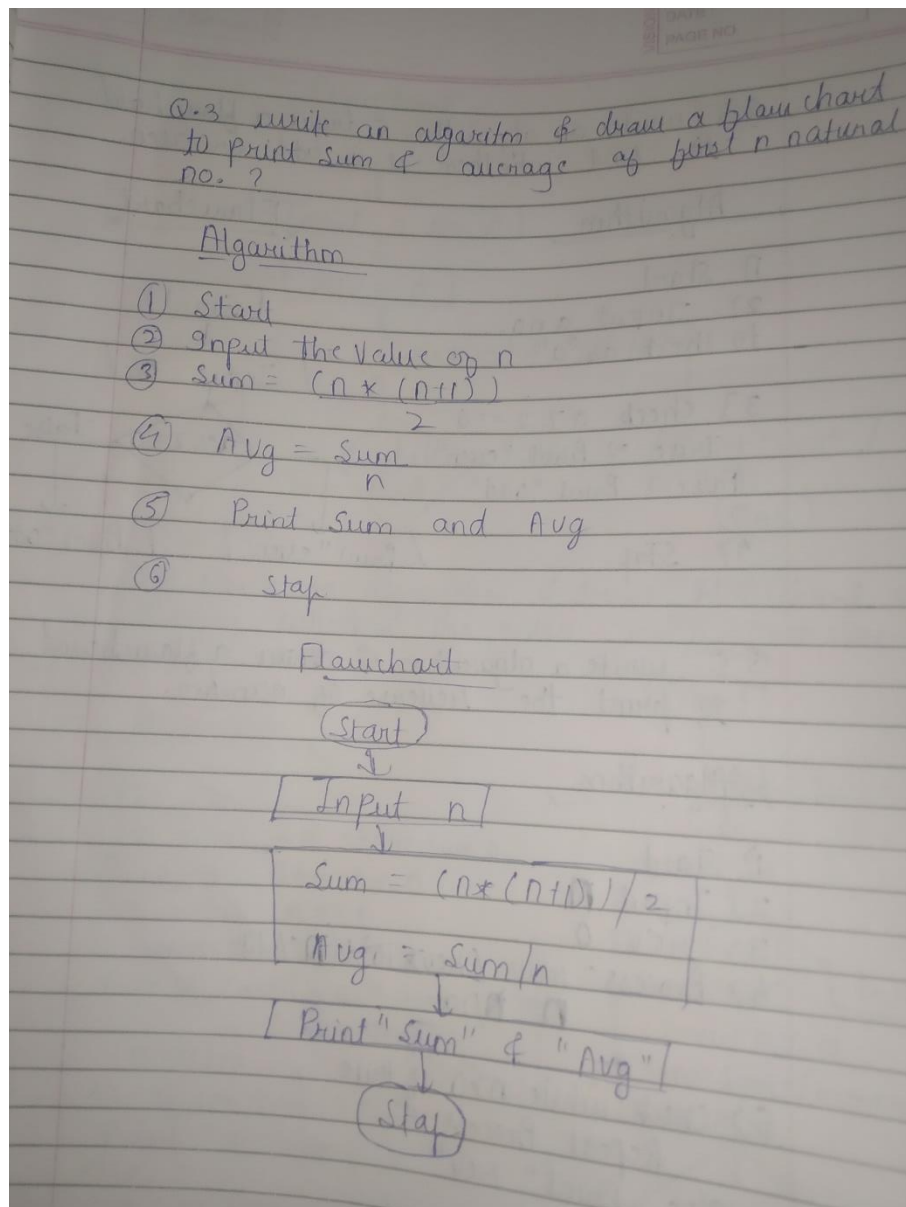
 Answer:

2. Write an algorithm and draw a flowchart to print the largest number among the entered three numbers.

Answer:

Q.2. write an algorithm & draw a flowchart to print largest among 3 no.

Algorithm

① Input a, b, c
② check
   a > b
③ if true
   check
   b > c
If true
   Print "a is
   largest"
④ if b > c is
   False
⑤ if a > b is
   False
  & c > b is true
  Print " c is
   largest"
⑥ if a > b is False
  & c > b is False
  Print "b is largest"

Flowchart

Start → Read a, b, c → (a > b) — True / False

True (a > c) False → Print "a is largest"

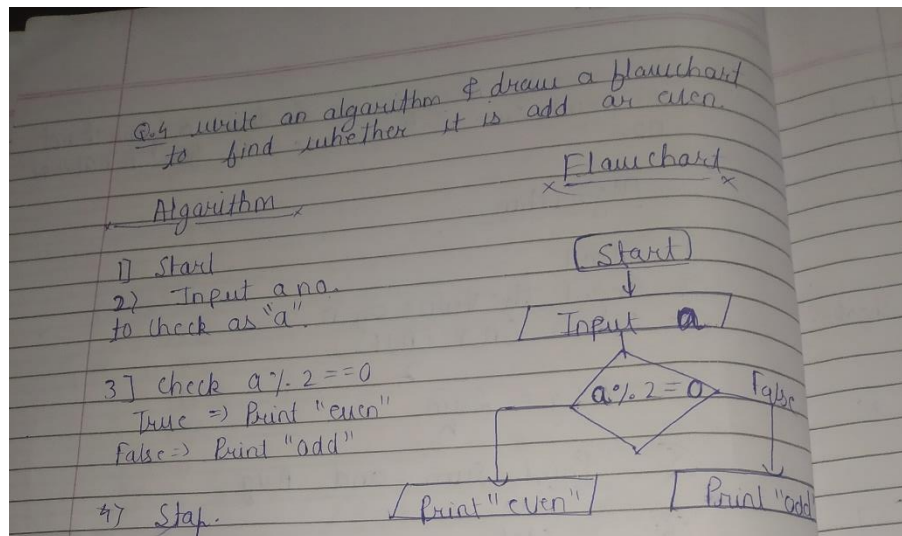True (c > b) False → Print "c is largest" / Print "b is largest"

3. Write an algorithm and draw a flowchart to print the sum and average of first n natural numbers.
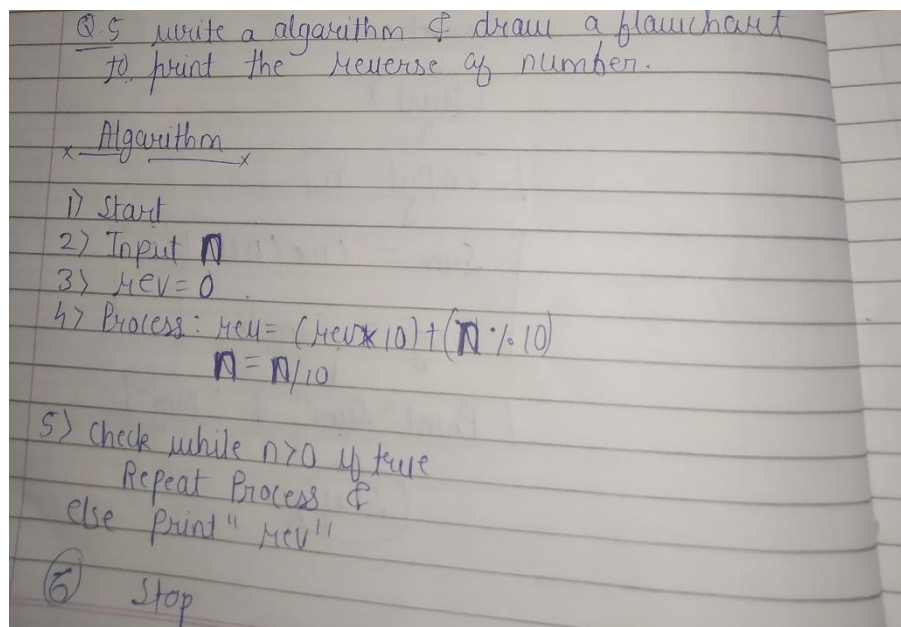
Answer:

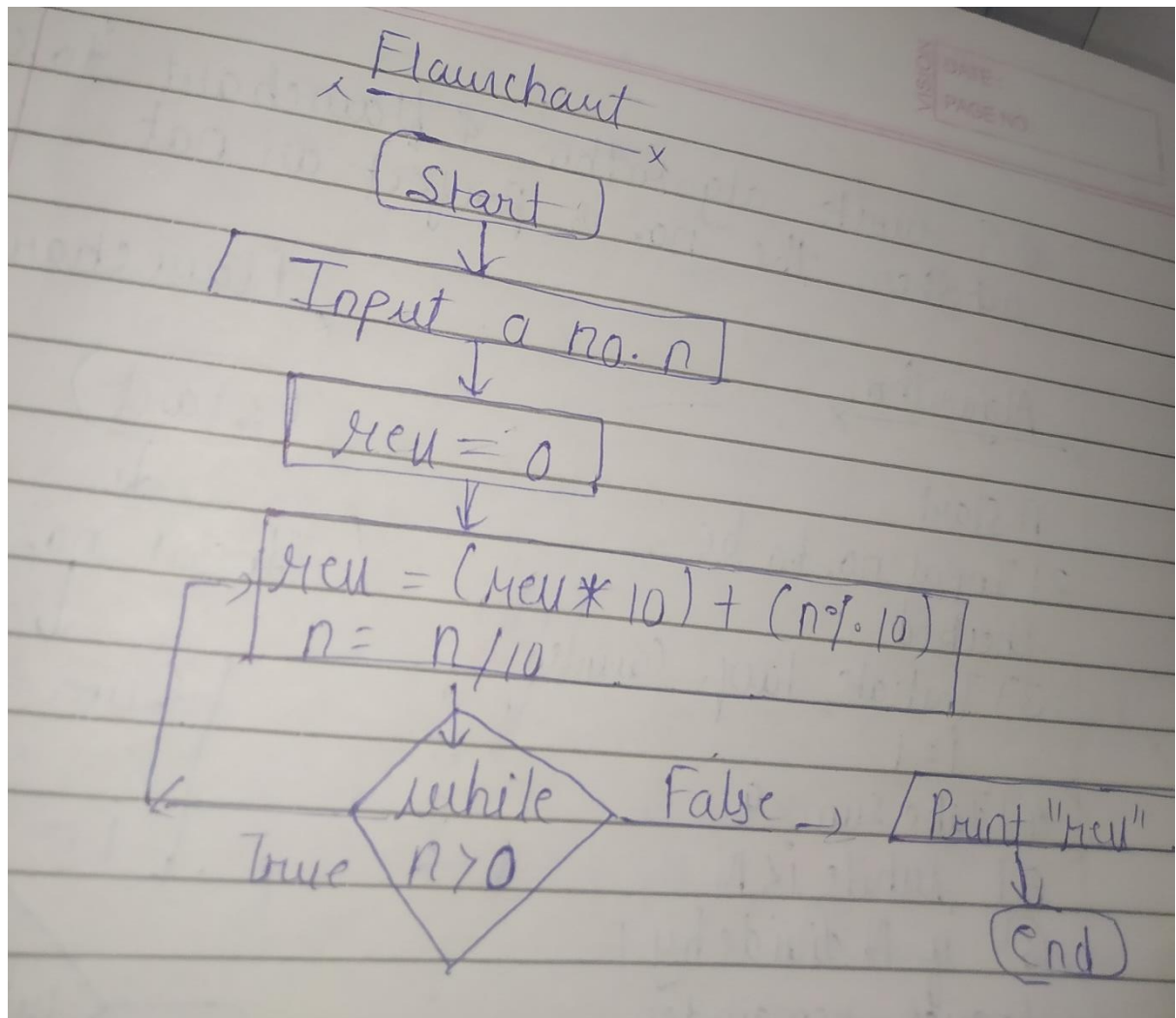**4. Write an algorithm and draw a flowchart to find whether a given number is odd or even**

Answer:

Q.4 Write an algorithm & draw a flowchart to find whether it is add or even.

Algorithm

1] Start
2) Input a no. to check as "a".

3] Check a%2==0
   True => Print "even"
   False => Print "odd"

4) Stop.

Flowchart

Start

Input a

a%2=0? → False

Print "even"

Print "odd"

5. Write an algorithm and draw a flowchart to print the reverse of a given number.

Answer:

Q.5 Write a algorithm & draw a flowchart to print the reverse of number.

Algorithm

1) Start
2) Input N
3) rev = 0
4) Process: rev = (rev×10)+(N%10)
              N = N/10

5) Check while N>0 if true
     Repeat Process &
   else Print "rev"

6) Stop

Flowchart

```
        Start

   Input a no. n

      rev = 0

   rev = (rev * 10) + (n % 10)
   n = n/10

        while        False      Print "rev"
   True  n>0

                                  End
```
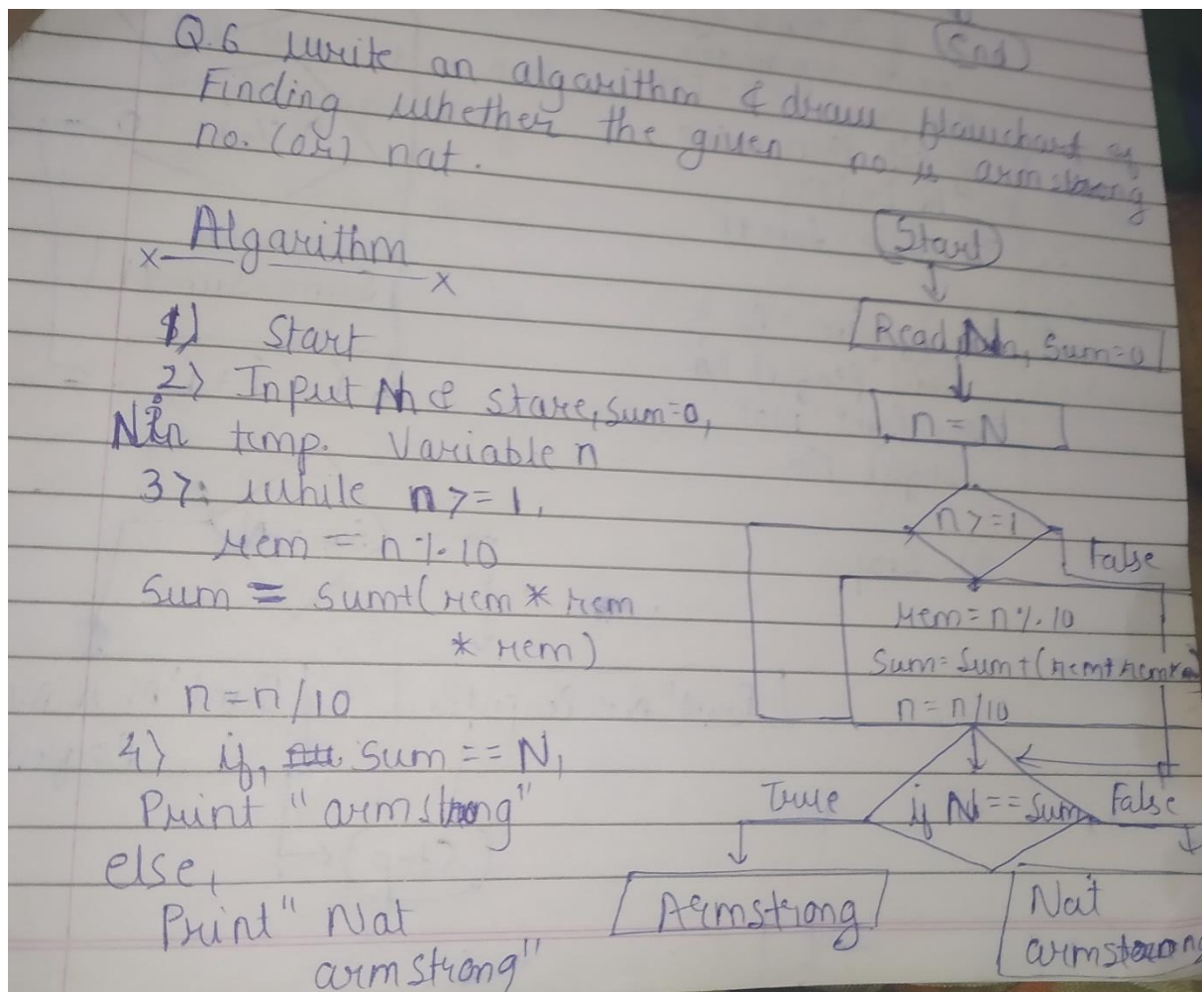
6. **Write an algorithm and draw a flowchart to find whether the given number is the Armstrong number or not. (Num =153 is Armstrong number as $1^3 + 5^3 + 3^3 = 153$).**

Answer:

Q.6 Write an algorithm & draw flowchart of Finding whether the given no. (or) nat.

x—Algorithm—x

1) Start
2) Input N & store, Sum=0, in temp. Variable n
3) while n>=1,
   Hem = n%10
   Sum = Sum+(Hem * Hem * Hem)
   n = n/10
4) if, Sum == N,
   Print "armstrong"
   else,
   Print "Nat armstrong"

Flowchart:

- End
- Start
- Read No, Sum=0
- n = N
- n>=1 ? → false
- Hem = n%10
- Sum = Sum+(Hem+Hemra)
- n = n/10
- if N == Sum → True / False
- True → Armstrong
- False → Nat armstrong

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7. Write an algorithm and draw a flowchart to check whether the given number is perfect number or not. The perfect number is one that equals to the sum of its divisors (excluding number itself). $28 = 1+2+4+7+14$; $6 = 1+2+3$.
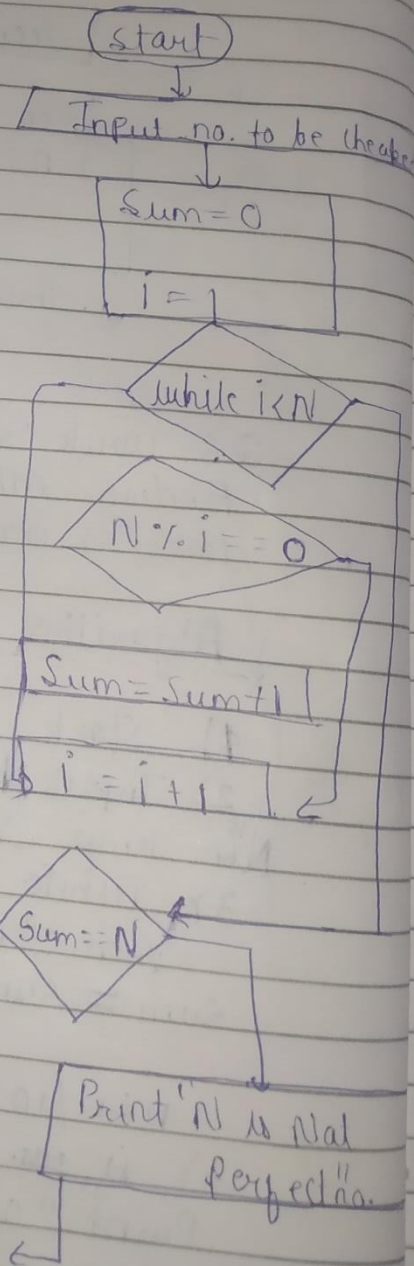
Answer:

Q ⑦ write algorithm & flowchart to check whether the no. is Perfect or nat.
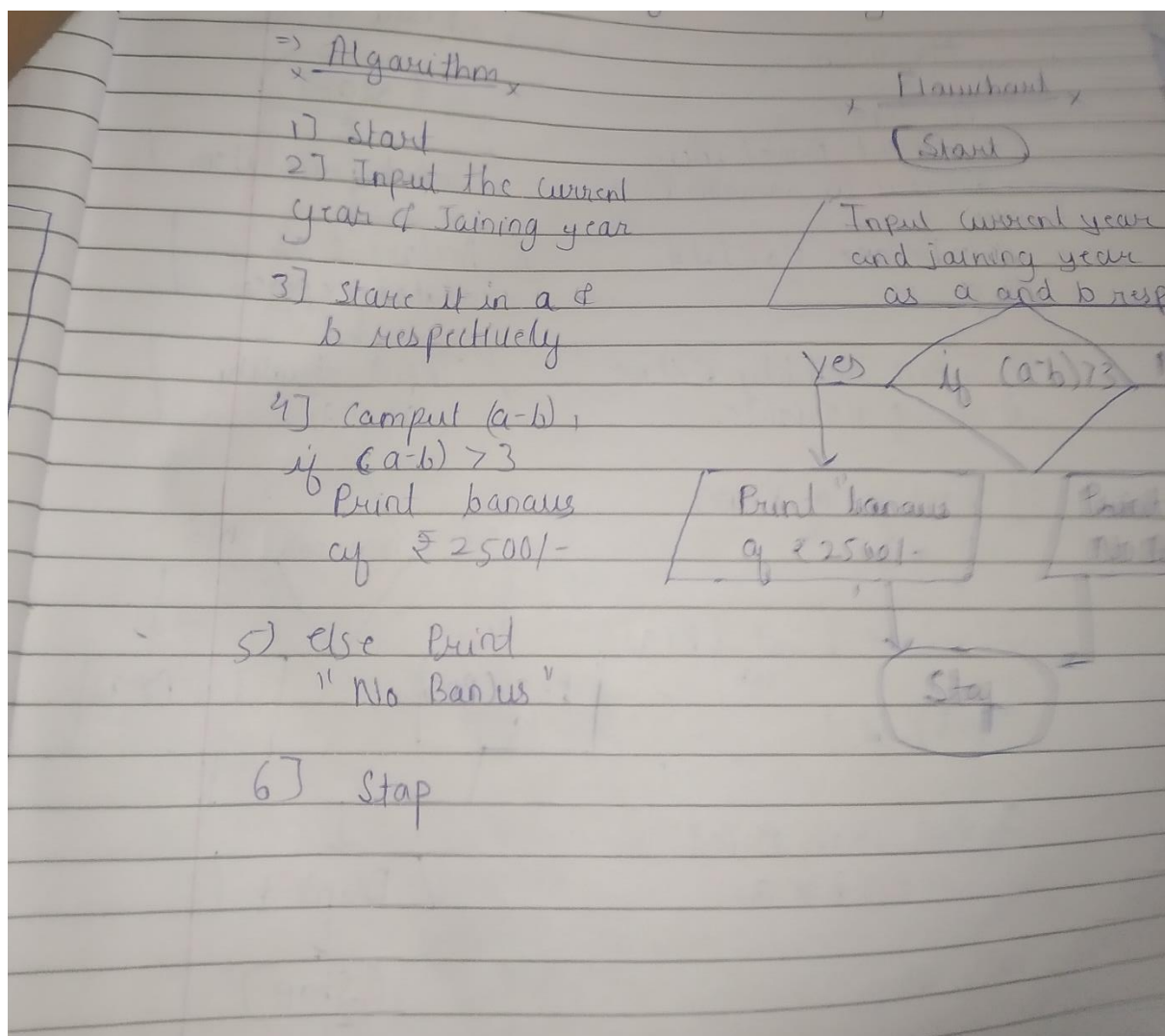
×—Algorithm—×

× Flow chart ×

1) Start

2] Input no. to be checked

3] Initiate loop Counter
   i = 1

4] Take sum = 0

5] while i < N

⑥ if N divide by i
leaves remainder
then print i & i = i + 1
if nat then move
to i = i + 1

7] Sum = Sum + i

8] If Sum = N
   Print "Perfect No".
else, Print "Nat
Perfect No.

9] Stop.

start

Input no. to be check

Sum = 0

i = 1

while i < N

N % i == 0

Sum = Sum + i

i = i + 1

Sum == N

Print "N is Perfect no"

Print "N is Nat Perfect no.

Stop

8. The current year and the year in which the employee joined the organization are entered through the keyboard. If the number of years for which the employee has served the organization is greater than 3, then a bonus of Rs. 2500/- is given to the employee. If the years of service are not greater than 3, then the program should do nothing. Write an algorithm and draw a flowchart for this problem.

Answer:

Algorithm:
1] Start
2] Input the current year & Joining year
3] Store it in a & b respectively
4] Compute (a-b),
   if (a-b) > 3
      Print bonus of ₹2500/-
5] else Print "No Bonus"
6] Stop

Flowchart:
Start → Input current year and joining year as a and b resp → if (a-b)>3 → yes → Print bonus of ₹2500/- ... → Stop

9. While purchasing certain items, a discount of 10% is offered if the quantity purchased is more than 1000. If the quantity and price per item are input through the keyboard, write an algorithm and draw a flowchart to calculate the total expenses.

Answer:
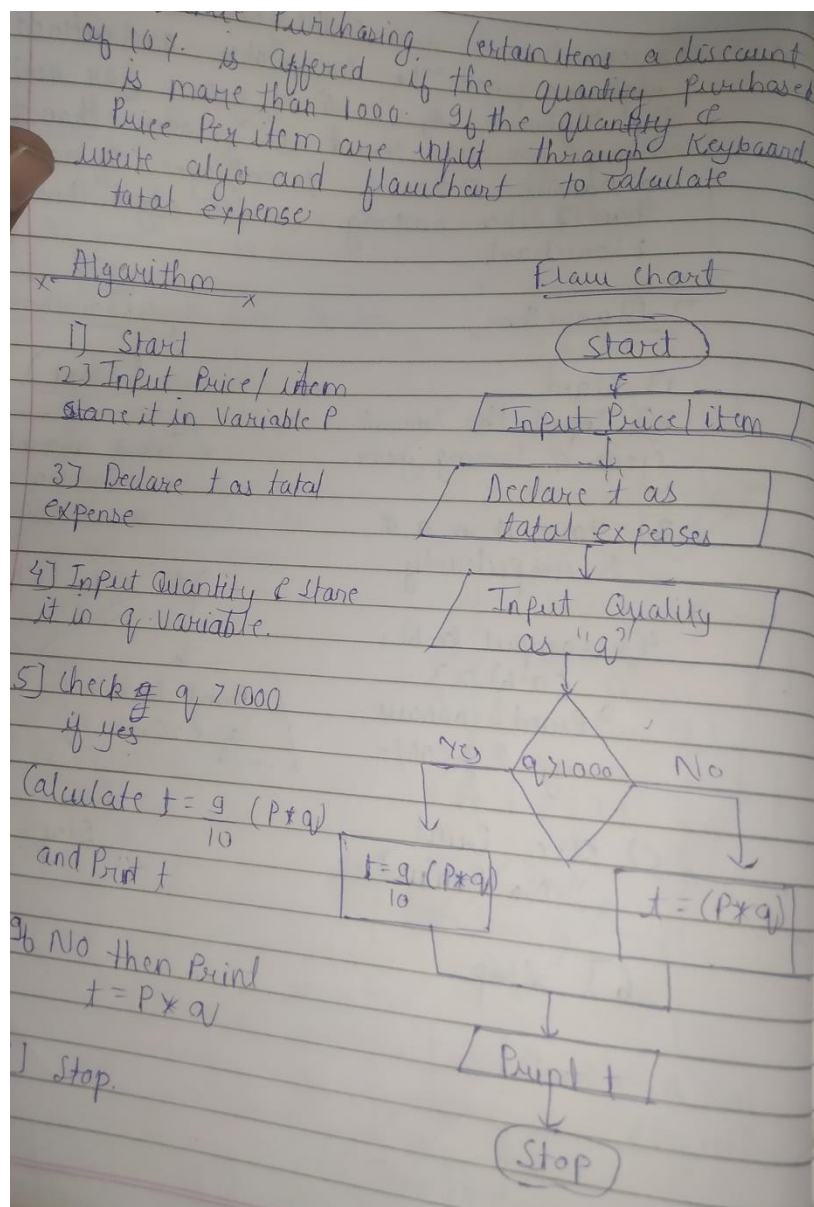
10. In a company an employee is paid as under: If his basic salary is less than Rs. 150000, then HRA = 20% of basic salary and DA = 95% of basic salary. If his salary either equal to or above Rs.150000, then HRA = Rs.25000 and DA = 87% of basic salary. If the employee's salary is input through the keyboard write an algorithm and draw a flow chart to find his gross salary. Note : GrossSalary = BasicSalary + HRA + DA

Answer: