

# Assignment

Assignment # : 1, 2, 3

Topic : Algorithm, Flowchart, Pseudocode

## Level 1: Easy

1. Write an algorithm to convert kilograms to grams

✓ANSWER:

• ANALYSIS:

One kilogram is equal to 1000grams, i.e.  $1\text{kg} = 1000\text{gm}$ . So for converting kg into gm, we need to multiply the value of the gram by 1000, then the value arrive in gm.

➤ ALGORITHM:

Step1: start

Step2: display the two fields kg and gm

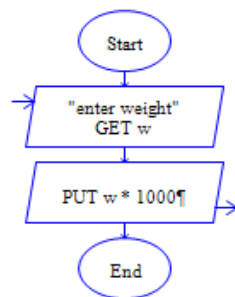
Step3: input the value to kg

Step4: multiply the given value (kilograms) by 1000 or  $\text{kg} \times 1000$

Step5: print the value of g

Step6: stop

• FLOWCHART:



- PSEUDOCODE:

```
READ A
COMPUTE A=A*1000
PRINT A
```

2. If a five-digit number is input through the keyboard, write an algorithm to calculate the sum of its digit.

✓ANSWER:

- ANALYSIS:

Get a five digit values from user, and it will be divided by 10 each time, and the remainder will be last digit and then update the number by its quotient .and sum up the digits

- ALGORITHM:

Step1: start

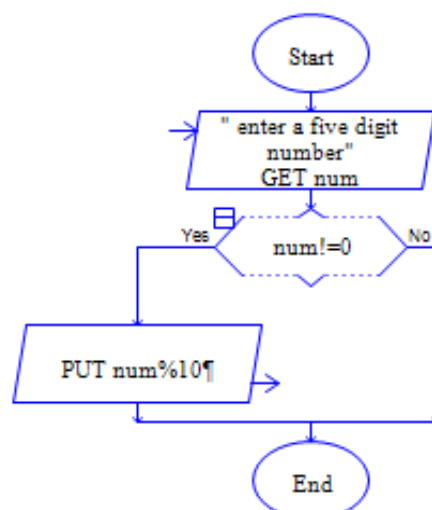
Step2: enter a five digit numbers

Step3: if the number is not equal to 0, then  $\text{sum} + \text{num} \% 10$ .

Step4:  $\text{num} / 10$

Step5: stop

- FLOWCHART:



- PSEUDOCODE:

READ A

SET sum =0

COMPUTE A= A%10

PRINT A

3. If the selling price of 15 items and the total profit earned on them is input through the keyboard, write an algorithm to find the cost price of one item.

✓ANSWER:

- ANALYSIS: to find the cost price of one item by selling the 15 items. Get a value from user to enter the amount of total items and store the value to variable name called i. then divide the amount entered by user i.e. (i/15) and print the value.

➤ALGORITHM

Step1: start

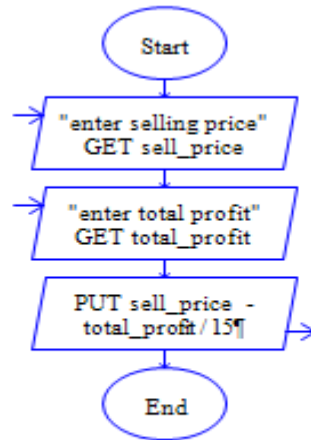
Step2: input the value to variable I

Step3: then I divisible by 15 (I /15)

Step4: print the value

Step5: stop

- FLOWCHART:



- PSEUDOCODE:

READ sell\_price, total\_profit

COMPUTE cost price = sell\_price – total\_profit / 15

PRINT cost price

4. Write an algorithm to check whether the given number is divisible by 5.

✓ANSWER:

- ANALYSIS:

A number is divisible by 5. If its remainder is 0, check the number if  $\text{num} \% 5 == 0$ . And print the value If it divisible the output will be divisible by 5, otherwise it will not divisible by

➤ALGORITHM:

Step1: start

Step2: enter a number to the variable num.

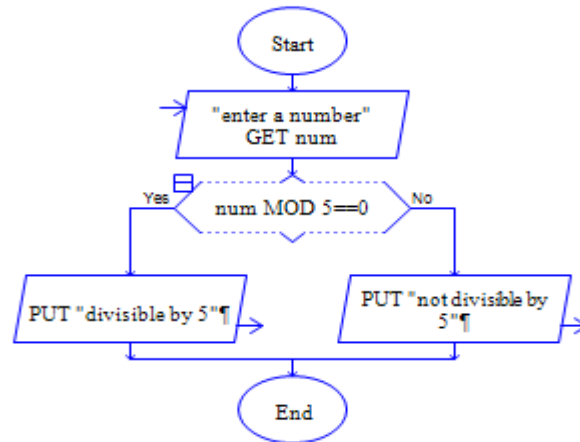
Step3: check whether the number is divisible by 5 ( $\text{num} \% 5 == 0$ ) if the number is not divisible by 5 then go to step6

Step4: if divisible by 5 go to step 5

Step5: print the value

Step6: stop

- FLOWCHART:



- PSEUDOCODE:

```
READ A
SET A= A%5==0
IF A = A
PRINT "number is divisible by 5"
ELSE
PRINT "not divisible by 5"
```

5. Write an algorithm to calculate your age.

✓ ANSWER:

- ANALYSIS: calculate the age from current date to your birthdate,

Enter the current date and your DOB to the variable called I and j. then subtract the both variables (i-j).and print the age.

➤ALGORITHM:

Step1: start

Step2: enter current date month year and your DOB to the variable i and j

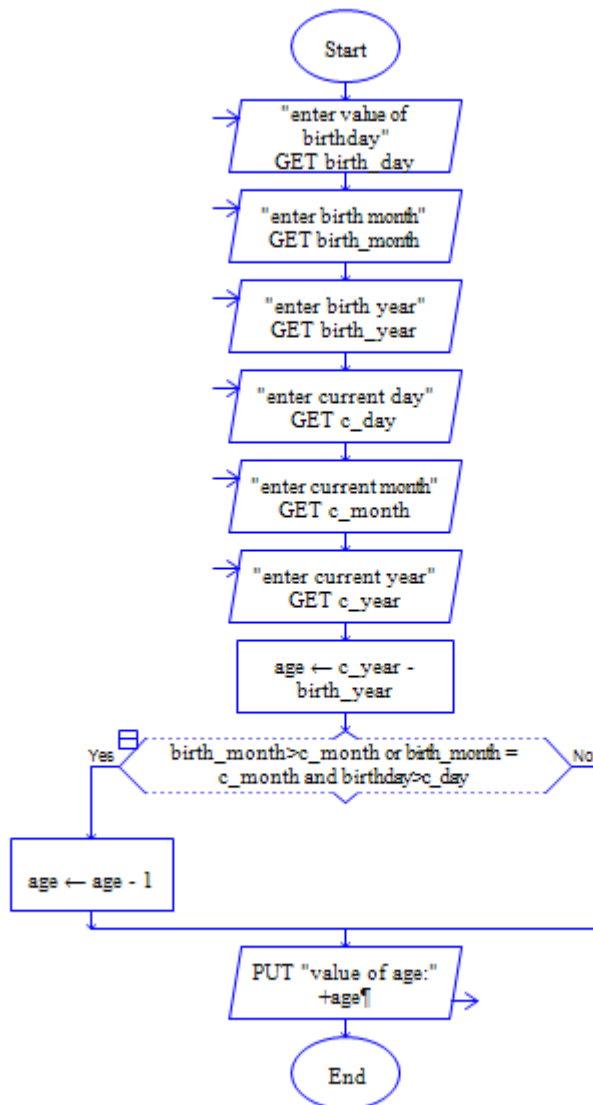
Step3: then subtract I and j (i-j) to find the number of years elapsed

Step4: store the result to the variable age

Step5: print the age

Step6: stop

- FLOWCHART:



- PSEUDOCODE:

READ: birth\_day, birth\_month, birth\_year, c\_day, c\_month, c\_year.

COMPUTE AGE = c\_year – birth\_year

IF birth\_month > c\_month || birth\_month = c\_month && birth\_day > c\_day

ELSE

SET AGE = AGE -1

PRINT "value of age" + age

6. Given the following array, write the algorithm to find the minimum value in the array.  
Array = [9, 3, 0, 44, 26, 5, 67, 45, 89, 10]

✓ANSWER:

- ANALYSIS: the array has given, we have to check the minimum value from the given array. Assign 1<sup>st</sup> element as minimum value and loop through the each element from an array to starting to second and find the current element and print the minimum value.

➤ALGORITHM:

Step1: start

Step2: let array=[9,3,0,44,26,5,67,45,89,10] is given

Step3: assign the 1<sup>st</sup> element as minimum value

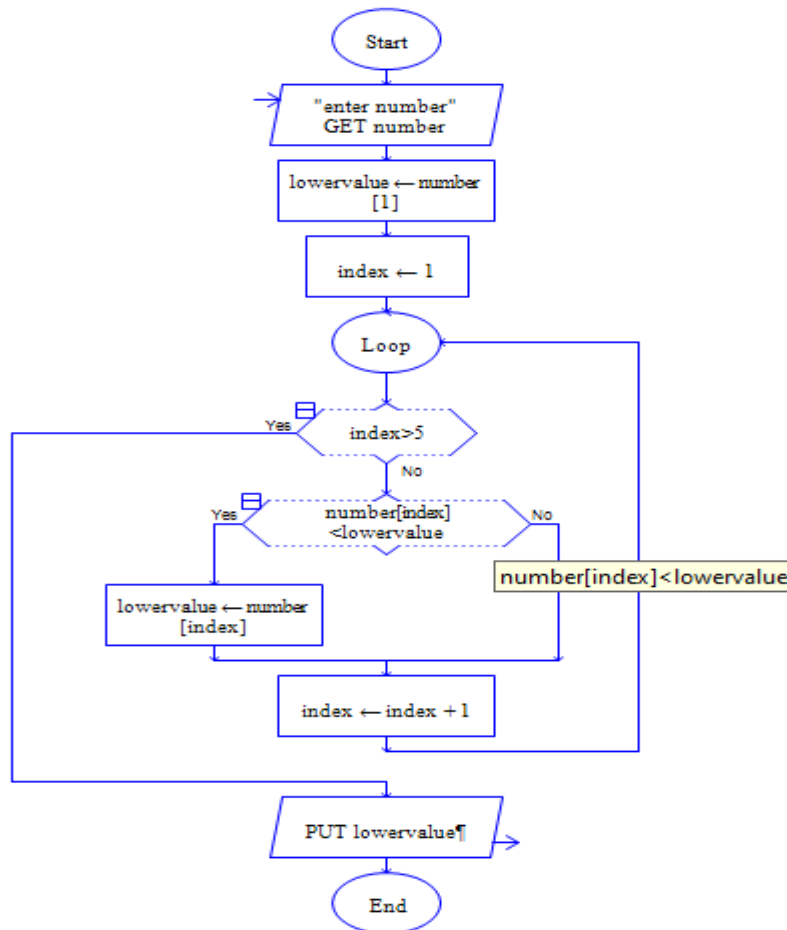
Step3: loop through the each element from an array to starting to second.

Step4: if the current element is less than current minimum value, then update the minimum value to current element

Step5: print the current element

Step6: stop

• FLOWCHART:



• PSEUDOCODE:

Array =[9,3,0,44,26,5,67,45,89,10]

SET Min=0

IF num < Min

ELSE

INCREMET I = num+1;

PRINT "min as minimum value"

7. A consumer consumes 500 watts per hour daily for one month. Write the algorithm to calculate the total energy bill of that consumer if the per unit rate is 7.

✓ ANSWER:

- ANALYSIS: calculate the total power bill consumed by user from day and month. Power consumes 500watts per hour and per unit the rate is 7, to



multiply the watts consumed by an hour to day and month.

convert consumed watts to kilowatts by divide 1000. And multiply total kilowatts into 7 to find the rate of per unit.

➤ ALGORITHM:

Step1: start

Step2: declare a variable  $l = 500$  (power consumed by the consumer watts per hour)

Step3: multiply  $l * 24$  ( $500 * 24$ ) i.e. the total power consumed by one day to multiply the power consumed by an hour, assign a value to k variable.

Step4: then multiply the power consumed by one day to one month i.e. ( $k * 30$ )

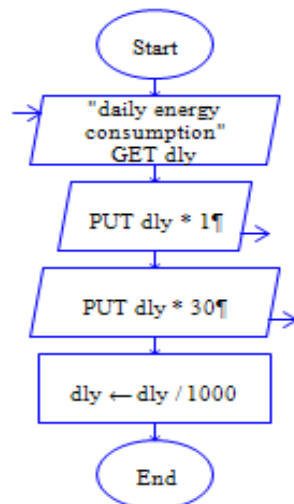
Step5: convert the total power consumed to watts to kilowatts hours by dividing 1000 and assign to the variable total.

Step6: multiply total power  $kwh * 7$  i.e. ( $total * 7$ ) per unit rate

Step7: print the result in new variable called bill.

Step8: stop

• FLOWCHART:



• PSEUDOCODE:

READ rate\_per\_unit = 7

hours\_per\_day = 24

days\_in\_month = 30

SET watts\_per\_hour = 500

COMPUTE energy\_consumed = watts\_per\_hour \* hours\_per\_day \* days\_in\_month

PRINT total\_bill = energy\_consumed \* rate\_per\_unit

PRINT total \_ bill

8. Write the algorithm to find the next element of the series 4, 16, 64, ...

✓ ANSWER:

- ANALYSIS: the series is given 4, 16, 64..... to find the next element from this series, by multiply the series from 4 or using formula of nth term sequence. And print the value.

➤ ALGORITHM:

Step1: start

Step2: let j=4

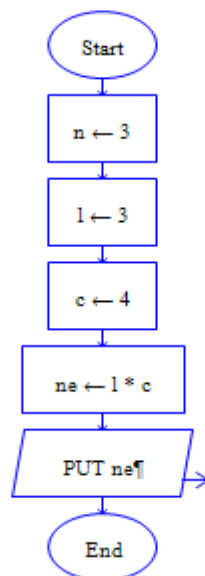
Step3: divide the second term by first term as per ratio of geometric series.

Step4: multiply the second number by 4. i.e. (16\*4) and store the value to variable k. or using the formula of nth term sequence i.e.( $a \cdot r^{n-1}$ )

Step5: print the value

Step6: stop

• FLOWCHART:



• PSEUDOCODE:

```
READ A= 4, 16, 64....  
COMPUTE A= A – 1  
READ B = A * 4  
PRINT B
```

### **Level 2: Medium**

1. A person from the USA wants to know his Body Mass index (BMI). He knows his weight in pounds and height in inches. The evaluator knows the formula for calculating BMI  $BMI = (\text{weight in kilograms}) / (\text{height in cm} * \text{height in cm})$ , 1 pound = 0.45 kilogram, and 1 inch = 2.5 cm. Write an algorithm to help the person in finding his BMI.

✓ **ANSWER:**

- ANALYSIS: to find the person BMI, first input the value in weight with pounds and height in inches, and convert them with multiply by 0.45 and 2.5. then calculate the square of height in centimeter and divide weight in kg by square of height in cm, and print the value.

➤ **ALGORITHM:**

Step1: start

Step2: input the values weight with pounds and height with inches

Step3: convert weight from pounds to kilograms by multiply 0.45 and height from inches to centimeter with 2.5.

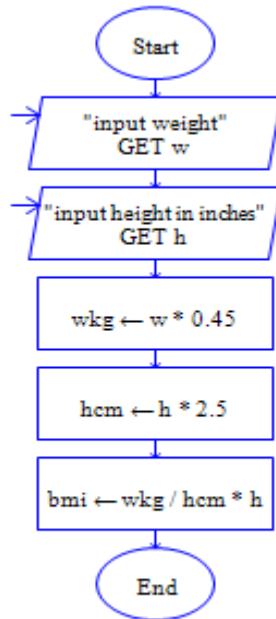
Step4: calculate the square of height in centimeters.

Step5: divide weight in kilograms in by square of height in centimeters

Step6: print the value

Step7: stop

- **FLOWCHART:**



- **PSEUDOCODE:**

PRINT "enter your weight in pounds"

READ weight\_ In\_ Pounds

PRINT "enter your height in inches"

READ height\_ In\_ inches

COMPUTE weight\_ In\_ Kilograms = weight\_ In\_ Pounds \* 0.45

COMPUTE height\_ In\_ Centimeters = height\_ In\_ Inches \* 2.5

COMPUTE BMI = weight\_ In\_ Kilograms / (height\_ In\_ Centimeters \* height\_ In Centimeters)

PRINT BMI

2. If a five-digit number is input through the keyboard, write an algorithm to obtain the sum of the first and last digits of this number.

✓ **ANSWER:**

- **ANALYSIS:** to find the sum of first and last digit of number, enter any 5 numbers and extract the numbers and store the two variables. And add the two variables, print the variable.

➤ ALGORITHM:

step1: start

step2: input any five digit number

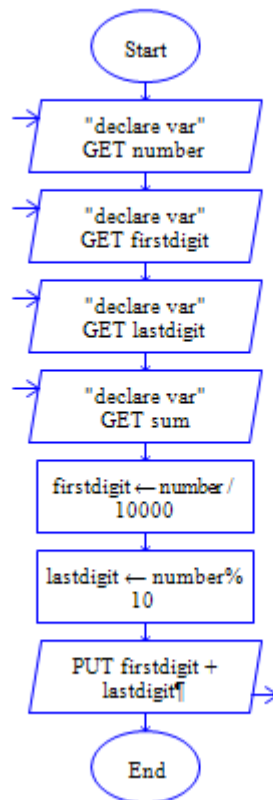
step3: extract the first digit number and store the variable and last digit number to another variable.

step4: add the two variables

step5: print the variable

step6: stop

• FLOWCHART:



• PSEUDOCODE:

READ number, first\_ Digit, last\_ Digit, sum

GET number

COMPUTE first\_ Digit = number / 10000

COMPUTE last\_ Digit = number % 10

CALCULATE sum = first\_ Digit + last\_ Digit

DISPLAY sum

3. A cloth showroom has announced a festival discount of 5% on the purchase of items, based on the total cost of the items up to Rs.2000. Write an algorithm to input the total cost and compute and display the amount to be paid by the customer after availing the discount.

✓ **ANSWER:**

- **ANALYSIS:** a showroom announced a festival discount, 5% on total cost of 2000rs, to find the total cost and amount paid by customer, and calculate the discount amount and amount paid by customer after discount, and finally print the amount paid by customer.

➤ **ALGORITHM:**

Step1: start

Step2: declare 3 variables called a, b, c .i.e. total\_ cost, discount, amount\_ paid.

Step3: read the total\_ cost from user

Step4: if total\_ cost <=2000 then set discount to 5%

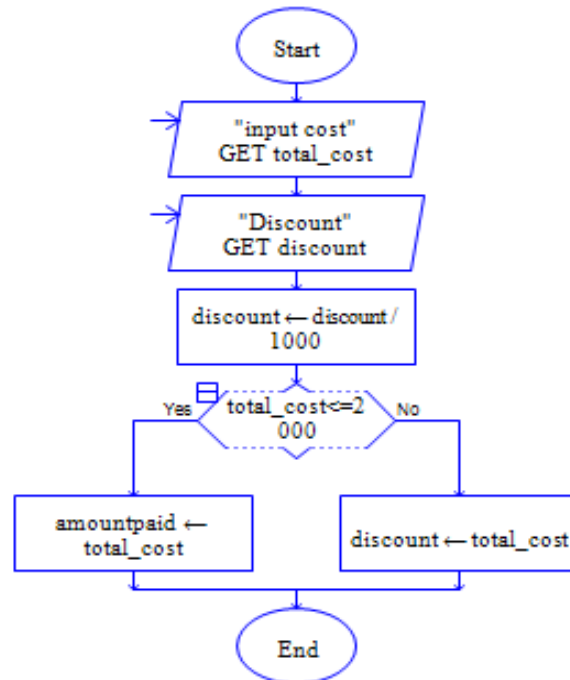
Step5: calculate the discount amount from  $\text{discount} = (\text{discount}/100) * \text{total\_cost}$

Step6: calculate the amount paid after discount using  $\text{amount\_paid} = \text{total\_cost} - \text{discount}$

Step7: print the amount\_ paid

Step8: stop

- **FLOWCHART:**



- **PSEUDOCODE:**

PRINT "Enter the total cost of the items:"

READ total\_Cost

IF total\_Cost ≤ 2000 THEN

COMPUTE discount\_Amount = total\_Cost \* 0.05

CALCULATE amount\_To\_Be\_Paid = total\_Cost – discount\_Amount

PRINT "Amount to be paid after discount: Rs." + amount\_To\_Be\_Paid

ELSE

PRINT "No discount applicable. Amount to be paid: Rs." + total\_Cost

ENDIF

4. Write an algorithm to print all the numbers from 1 to 100 that are divisible by 5 and divisible by 10.

- ✓ **ANSWER:**

- **ANALYSIS:** an algorithm of print all the numbers from 1-100, and that are



divisible by 5 and 10, print the value.

➤ ALGORITHM:

Step1: start

Step2: set a variable i=1

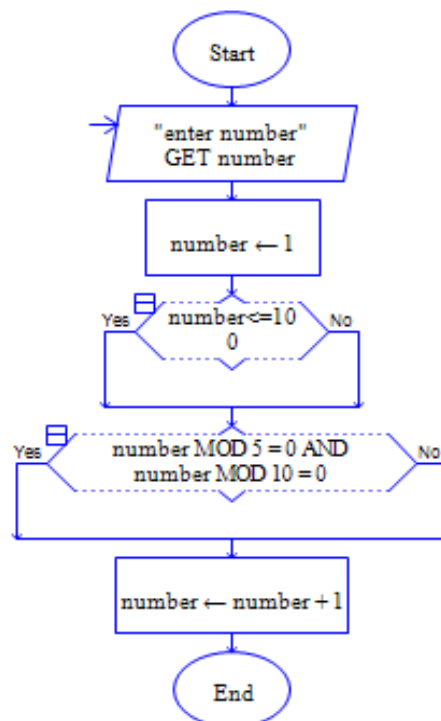
Step3: loop through the condition if i=0:i<100;i++;

Step4: then divisible I by 5 and 10. Print i.

Step5: increment I by 1 i++).

Step6: stop

- FLOWCHART:



- PSEUDOCODE:

```
FOR number = 1 TO 100
IF number is divisible by 5 AND number is divisible by 10
PRINT number
END IF
```

END FOR

5. If the ages of Ram, Shyam, and Hem are input from the user, write an algorithm to determine the youngest of the three.

✓ **ANSWER:**

- **ANALYSIS:** to find the youngest person from the program, whose age is less than or greater than from others, and find whose age is less than from others,

➤ **ALGORITHM:**

Step1: start

Step2: declare 3 variables R, S, H.

Step3: enter the age of ram in R, shyam in S, hem in H.

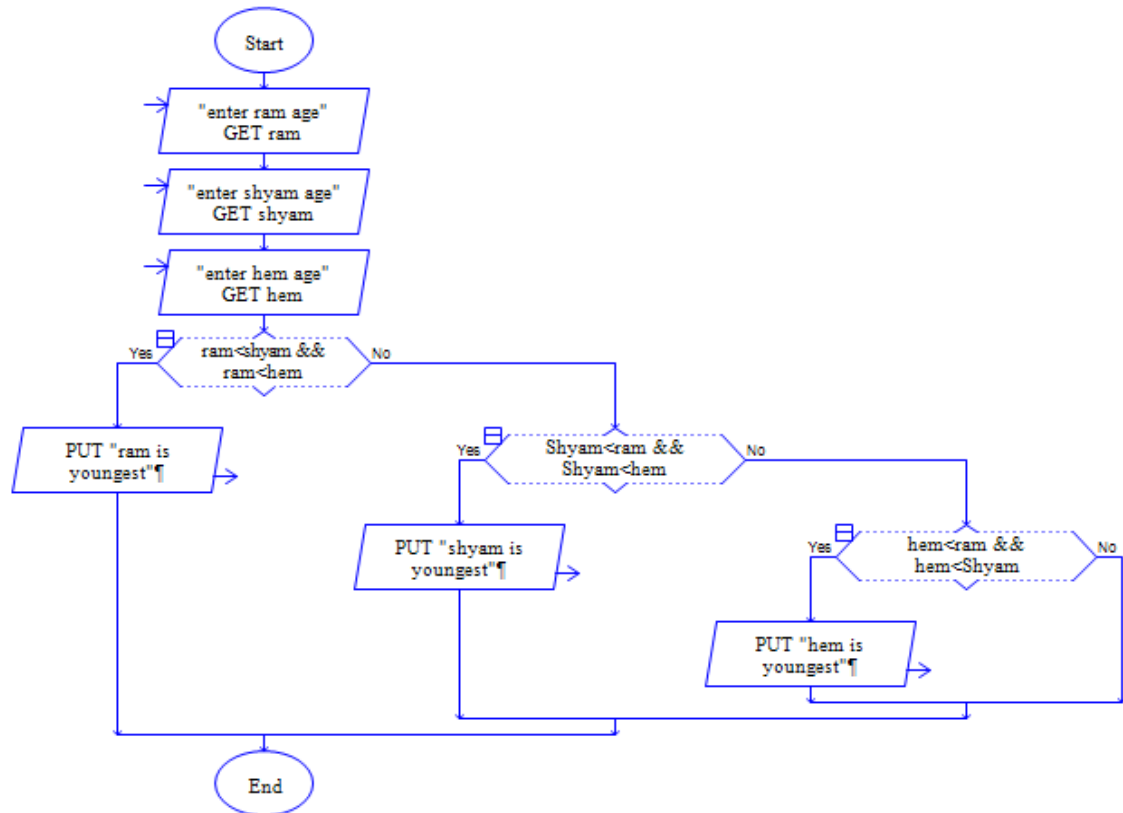
Step4: if  $(R < S) \ \&\& \ (R < H)$  ram is youngest

Step5: else if  $(S < R) \ \&\& \ (S < H)$  shyam is youngest

Step6: else if  $(H < R) \ \&\& \ (H < S)$  hem is youngest

Step7: stop

- **FLOWCHART:**



- **PSEUDOCODE:**

READ age Ram, age shyam, age hem

SET youngest = "Ram"

IF age Shyam < age Ram

SET youngest = "Shyam"

IF age Hem < age Shyam

SET youngest = "Hem"

PRINT youngest

6. Write an algorithm that reads the prices of a shop's products continuously until the user enters -1. The program should display the minimum price, the maximum, and the average of those within [5, 30] before it terminates. Assume that none of the product's costs more than \$100.

✓ **ANSWER:**

- **ANALYSIS:** to find the max-min price of the product from shop. Display the

maximum and minimum price of the product and total price.

➤ **ALGORITHM:**

Step1: start

Step2: declare a 3 variables called min\_ price, max \_ price, total\_ price, count to 0

Step3: initialize price=>-1

Step4: while (price<=-1) then go to step5.

Step5: read the price in product

Step6: if price= (5 && 30), go to step 7 and.

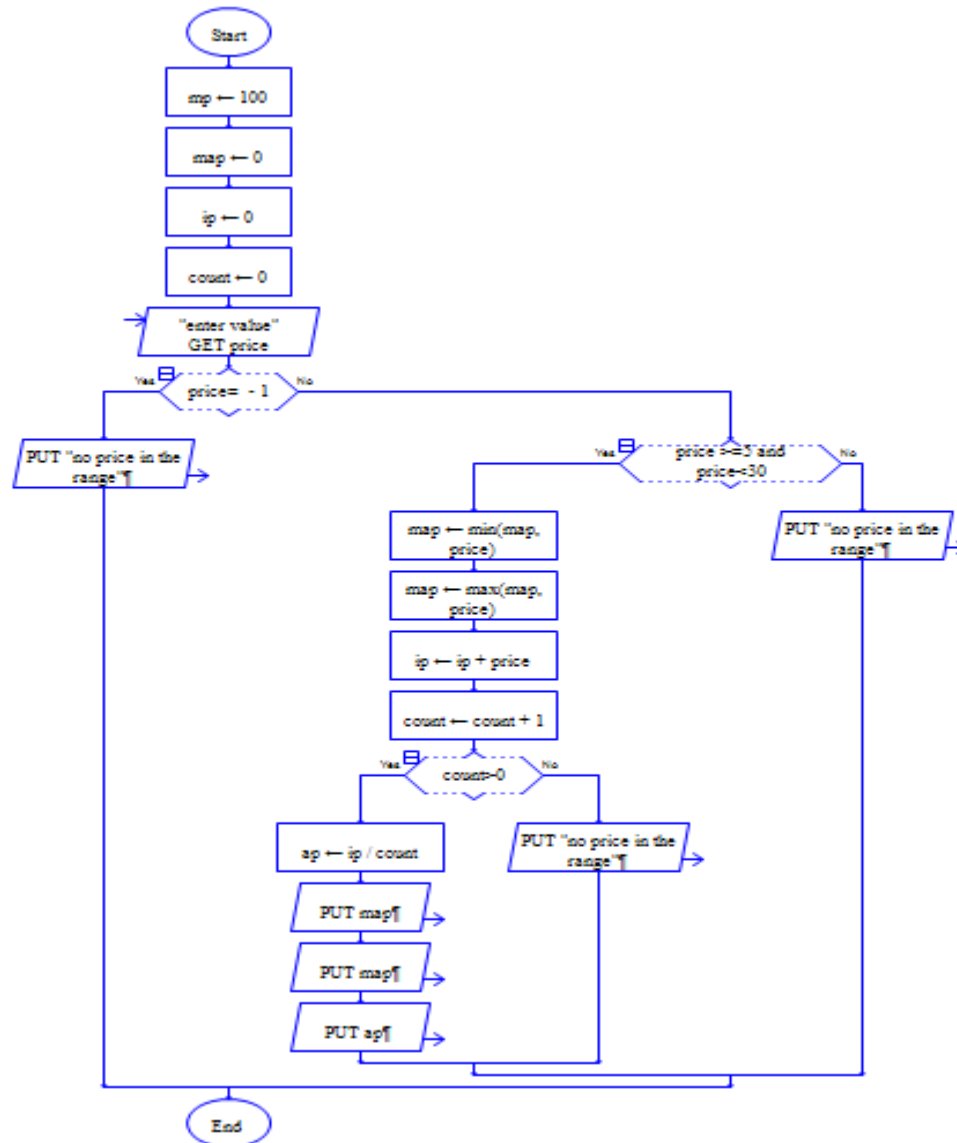
Step7: increment count by 1 (i++).

Step8: if count=>0, calculate average\_ price as total\_ price divide by count.

Step9: print the variables.

Step10: stop

- **FLOWCHART:**



- PSEUDOCODE:

SET count to 0

SET total to 0

SET min\_ price to 100

SET max\_ price

REPEAT UNTIL price ==-1

READ price from user

IF price>=5 & price<=30

Total =total + price

IF price<min\_ price

Min\_ price=price

ELSE

DISPLAY "no price entered within [5,30]"

7. Given an integer U denoting the amount of KWh units of electricity consumed, the task is to write an algorithm to calculate the electricity bill with the help of the below charges:

1 to 100 units – Rs. 10/unit

101 to 200 units – Rs. 15/unit

201 to 300 units – Rs. 20/unit

above 300 units – Rs. 25/unit

✓ ANSWER:

- ANALYSIS: to calculate the electricity bill from the above charges. And identify the charge bar in which it falls and then calculate the bill according to the charges mentioned above.

➤ ALGORITHM:

Step1: start

Step2: read the values of U

Step3: initialize bill amount B=0;

Step4: if  $u \leq 100$ , then  $B = u * 10$

Step5: else if  $u > 100 \ \&\& \ u \leq 200$  then  
 $B = 1000 + (u - 100) * 15$ ,

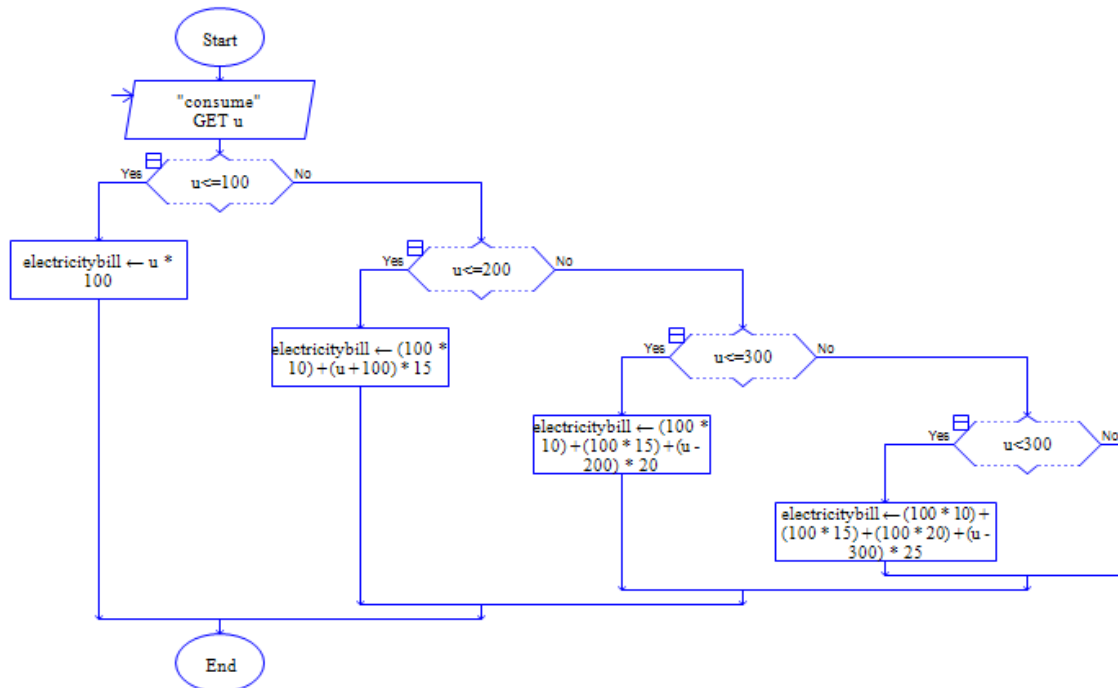
Step6: else if  $u > 200 \ \&\& \ u \leq 300$  then  
 $B = 2500 + (u - 200) * 20$

Step7: else if  $u > 300$ , then  $B = 4500 + (u - 300) * 25$

Step8: print the variable b.

Step9: stop

- FLOWCHART:



- PSEUDOCODE:

READ u

Initialize variables rate and bill\_  
amount to 0

IF  $u \leq 100$ , set  $\text{rate} = 0.75$  and

calculate bill\_ amount as  $u * \text{rate}$

ELSE IF  $u > 100$  and  $u \leq 200$ , set  
 $\text{rate} = 1.25$  && calculate bill\_ amount  
as  $(100 * 0.75) + (100 * 1.25) + (u -$   
 $200) * \text{rate}$

ELSE IF  $u > 300$ , set  $\text{rate} = 2.25$  and  
calculate bill\_ amount as  $(100 * 0.75)$   
 $+ (100 * 1.25) + (u - 300) * \text{rate}$

PRINT the bill\_ amount

8. The length L and breadth B of a rectangle are passed as input. Write the algorithm to calculate the perimeter of the rectangle and print the perimeter as the output. Both L and B are positive integers. Input Format: The first line denotes the length L. The second line denotes the breadth B.

✓ **ANSWER:**

- **ANALYSIS:** to calculate the perimeter of the rectangle and print the perimeter. the perimeter will be the sum of all sides of the rectangle, i.e.  $\text{Perimeter} = AB + BC + CD + DA \Rightarrow L + B + L + B \Rightarrow 2 * (L + B)$  Hence we can say that the perimeter of a rectangle can be calculated by the formula twice the sum of length and breadth.

➤ **ALGORITHM:**

Step1: start

Step2: declare 3 variables as L, B, P

Step3: input the values to variables

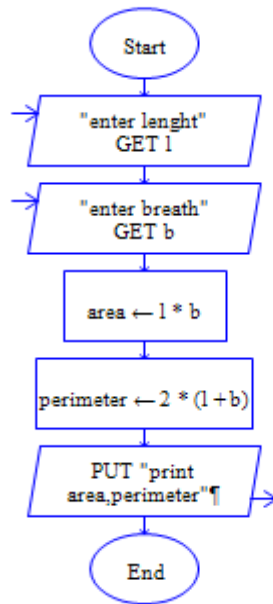
Step4: calculate  $P=2(L+B)$

Step5: print the values

Step6: stop

- **FLOWCHART:**





- PSEUDOCODE:  
READ L  
READ B  
CALCULATE perimeter =  $2 * (L + B)$   
PRINT perimeter

### Level 3: Hard

1. The cold faucet in the bath lets the water in at the rate of 12 liters per minute. The hot faucet fills the bath at the rate of 10 liters per minute. The plug hole lets the water out of the bath at the rate of 11 liters per minute. The bath holds a maximum of 550 liters. I turn both faucets on but forget to put the plugin. Write an algorithm to find how many minutes does it take for the bath to overflow?

✓ **ANSWER:**

- **ANALYSIS:** To determine how many minutes it takes for the bath to overflow, The rate at which water fills the bath is the combined flow rate of the cold faucet and the hot faucet, which is  $12 + 10 = 22$  liters per minute. The rate at which water drains from the bath is 11 liters per minute. maximum capacity of the bath is 550 liters. Let's use the following formula:  $\text{time} = (\text{bath Capacity} - \text{initial Water Level}) / (\text{fill Rate} - \text{drain Rate})$   $\text{time} = (550 - 0) / (22 - 11) = 550 / 11 = 50$  minutes.

➤ **ALGORITHM:**

Step1: start

Step2: set the total\_ water to 0

Step3: set time\_ elapsed to 0

Step4: while total\_ water < 550;

Step5: total\_ water + 12liters (cold faucet)

Step6: total \_water +10liters (hot faucet)

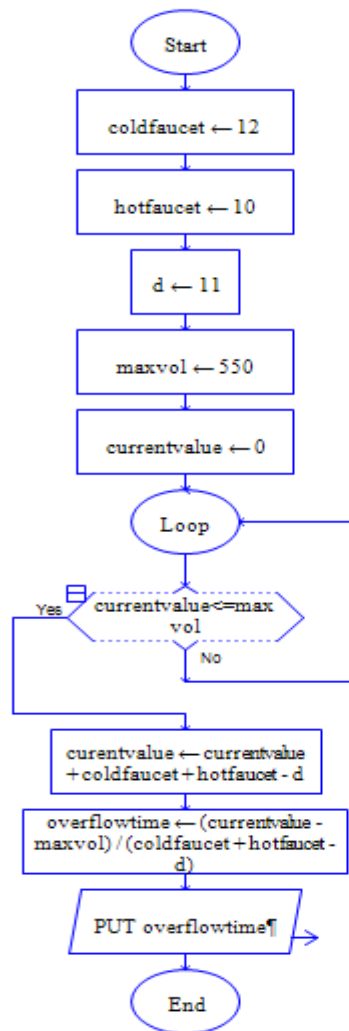
Step7: total\_ water -11liters (rate of plug hole)

Step8: time\_ lapsed + 1;

Step9: print the values

Step10: stop

- **FLOWCHART:**



- PSEUDOCODE:

Initialize variables

Cold\_ rate=12litres per minute

Hot\_ rate = 10 l per min

Outflow\_ rate=11 l per min

Max\_ capacity=550l

Current\_ level= 0litres

Time\_ lapsed = 0min

WHILE current\_ level<max\_ capacity

CALCULATE net\_ rate = cold\_ rate + hot\_ rate-outflow\_ rate

CALCULATE inflow\_ volume = net\_ rate\*1min

IF current\_ level + inflow\_ volume > max\_ capacity

CALCULATE  $\text{time\_remaining} = (\text{max\_capacity} - \text{current\_level}) / \text{net\_rate}$

Time\_lapsed += time\_remaining

BREAK

Current\_level += inflow\_rate

Time\_elapsed += 1 min

PRINT ("the bath will overflow after" time\_elapsed, \*minute)

2. A secret locker is set up by the Indian government for storing defense secrets. The locker can be opened if entered number is equal to the sum of the cube of its individual digits. Write an algorithm to check the same.

✓ **ANSWER:**

- **ANALYSIS:** to unlock the secret locker of indian government by sum of cube of its individual digits. The locker can be opened if entered number is equal to the sum of the cube of its individual digits.

➤ **ALGORITHM:**

Step1: start

Step2: input the number to be checked

Step3: initialize a variable sum to 0

Step4: if the number is 0.repeat the following steps

Step4.1: extract the last digit of the number

Step4.2: cube the extracted digit

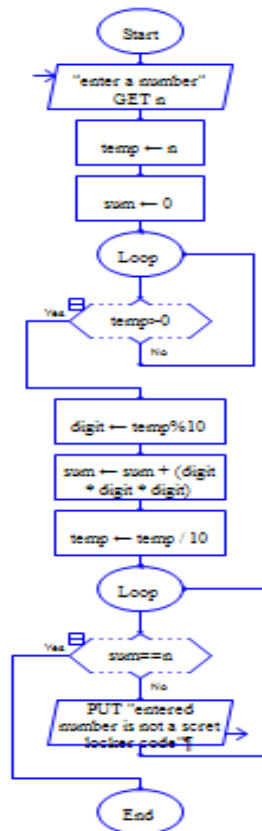
Step4.3: add cubed digit to the sum variable

Step4.5: remove the last digit from the number

Step5: if sum is equal to original number the locker has been opened. otherwise the locker can't be opened

Step6: stop

- **FLOWCHART:**



- PSEUDOCODE:

Input a number N

Sum = 0

Str\_N = convert N to string

FOR c in str\_N

Digit= convert c to integer

Sum += digit\*3

IF sum== N;

PRINT "the locker can be opened"

ELSE

PRINT "the locker can't be opened"

3. A store charges \$12 per item if you buy less than 10 items. If you buy between 10 and 99 items, the cost is \$10 per item. If you buy 100 or more items, the cost is \$7 per item. Write an algorithm to print the customer's name and total cost.

✓ **ANSWER:**

- **ANALYSIS:** to verify the customer's name and total cost. calculate the total cost based on the quantity of items purchased, incorporating the pricing structure that incentivizes larger purchases and balances profit considerations. with a quantity of 5 items, the price per item is \$12. Therefore, the total cost is  $5 * \$12 = \$60$ . In the second example, with a quantity of 50 items, the price per item is \$10, resulting in a total cost of  $50 * \$10 = \$500$ . In the third example, with a quantity of 150 items, the price per item is \$7, leading to a total cost of  $150 * \$7 = \$1050$ .

➤ **ALGORITHM:**

Step1: start

Step2: get customer name

Step3: get number of items bought

Step4: if number\_ of\_ items<10.then Set cost per item to \$12

Step5: if number\_ of\_ items between 10, 99 .then set cost per item to \$10

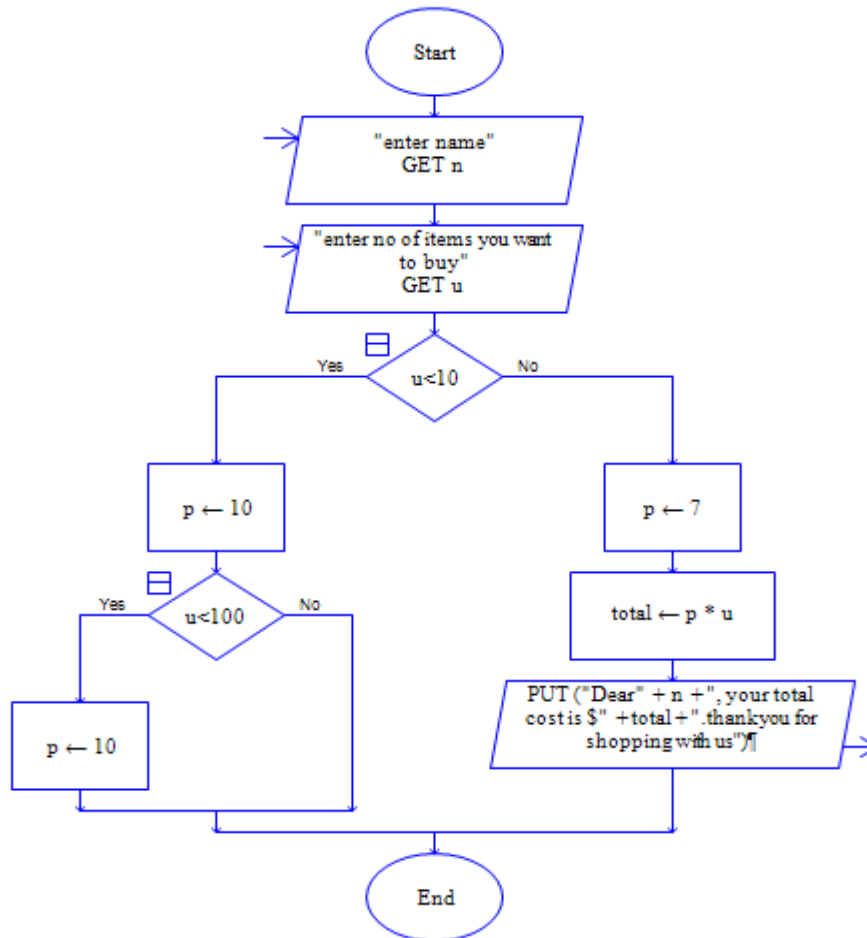
Step6: if number\_ of\_ items>=100. Then set cost per item to \$7.

Step7: calculate the total cost= number\_ of \_items\* cost per item

Step8: print the vales of customer name and total cost

Step9: stop

- **FLOWCHART:**



- PSEUDOCODE:

READ customer\_ name, num\_ items

IF num\_ items < 10 THEN

Total\_ cost = num\_ items \* 12

ELSE IF num\_ items ≥ 10 && num\_ items < 100 THEN

Total\_ cost = num\_ items \* 10

ELSE

total\_ cost = num\_ items \* 7

END IF

PRINT "customer name" + customer\_ name

PRINT "total cost" + total\_ cost

4. Given a start number and end number, you need to write the algorithm to display “ding” for every 5th number and “dong” for every 10th number.

Inputs: Starting number and Ending number

Outputs: Display “ding” for every 5th number and “dong” for every 10th number

✓ **ANSWER:**

- **ANALYSIS:** to display "ding" for every 5th number and "dong" for every 10th number between a given start number and end number: It will iterate through the numbers between the start and end numbers (inclusive) and print "ding" for every 5th number and "dong" for every 10th number.

➤ **ALGORITHM:**

Step1: start

Step2: input a number for starting number and store it in “start”

Step3: input a number for ending number and store it in “end”

Step4: each number check if it is divisible by 5 and 10

Step5: if it is divisible by 5 print “ding”

Step6: if it is divisible by 10 print “dong”

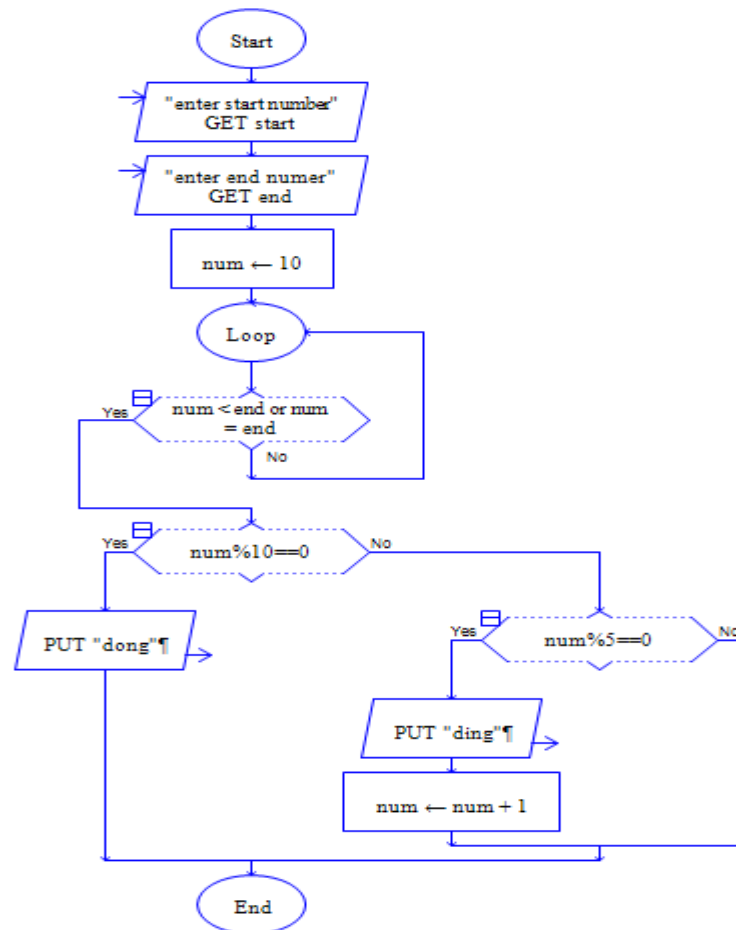
Step7: if not divisible by 5 and 10 print number itself

Step8: continue the loop until it reaches ending number

Step9: stop

- **FLOWCHART:**





- PSEUDOCODE:

```

READ start_num, end_num
FOR I in range(start_num, end_num+1);
IF i% 10==0
PRINT ("dong")
ELSE IF i%5==0
PRINT ("ding")
ELSE
PRINT i
  
```

5. In the city of Wonderland, there is a magic pond. Whenever someone dips in and out of the pond with flowers in hand, the number of flowers doubles. You need to write an algorithm to find out how many times someone needs to dip in and out of

the pond to get a minimum of 100 flowers. A person starts off with 1 flower.

✓ **ANSWER:**

- **ANALYSIS:** To find out how many times someone needs to dip in and out of the magic pond to get a minimum of 100 flowers. While flower\_ count is less than 100 Increment dip\_ count by 1 Double the value of.

➤ **ALGORITHM:**

Step1: start

Step2: declare a variable called “flowers” set value to 1 and “dips” to 0.

Step3: while (flowers<100) .go to step 3.1 and 3.2

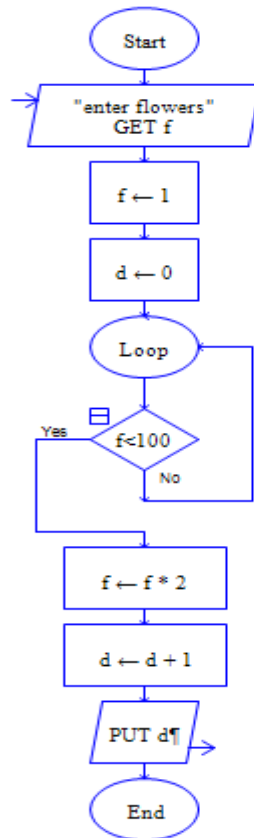
Step3.1: double the values of “flowers”

Step3.2: increment the value of ‘dips’ to 1. Dips++

Step4: print the “dips”

Step5: stop

- **FLOWCHART:**



- PSEUDOCODE:

Initialize the starting number of flowers and dips

Flowers = 1

Dips = 0

WHILE flowers < 100;

Flowers = flowers \* 2

INCREMENT dips = dips + 1

PRINT

## 6. Electricity bill calculator

- Calculate the bill for 30 days based on the given below data.
- There are 2 fans of 60W each. The usage of each fan is 6 hours per day.
- There are 3 lights of 40W each. The usage of each light is 8 hours per day.
- For the other electrical appliances, the total consumption per day is 3000W.
- Cost of 1 unit is Rs.6

✓ **ANSWER:**

- **ANALYSIS:** calculated the energy consumption for each appliance based on their power and usage per day. We then summed up the energy consumption for fans, lights, and other appliances to calculate the total energy consumption per day. Calculate the energy consumption for 30 days, we multiplied the total energy consumption per day by 30. The cost of 1 unit is given as Rs. 6. To calculate the electricity bill, we multiplied the total units consumed (219.6 kWh) by the cost of 1 unit.

➤ **ALGORITHM:**

Step1: start

Step2: calculate the energy consumed by fans per day .fan energy per day = fan wattage\* light usage hours \* num \_ fans.

Step3: light energy per day = = fan wattage\* light usage hours \* num \_ lights

Step4: other Appliances Energy Per Day = other\_ appliances\_ consumption.

Step5: calculate total energy consumed per day. ie. total Energy Per Day = fan Energy Per Day + light Energy Per Day + other Appliances Energy Per Day

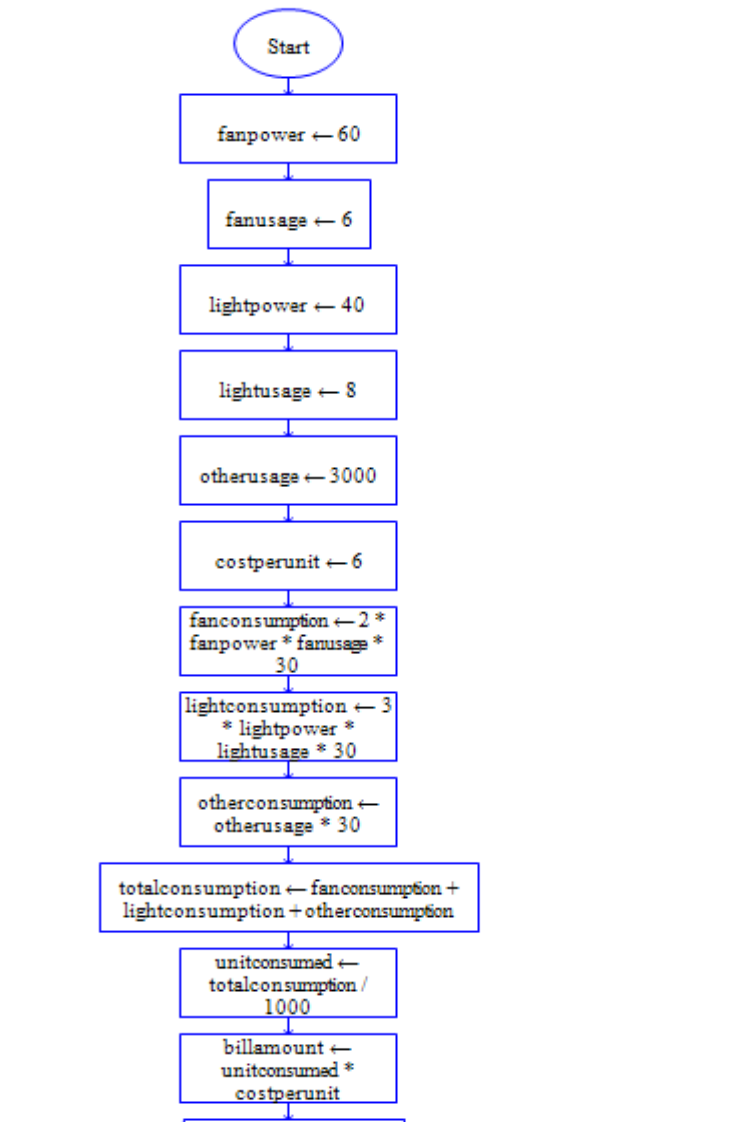
Step6: calculate the total energy consumed for 30 days. totalEnergyFor30Days = total Energy Per Day \* 30.

Step7: calculate the total cost total Cost = totalEnergyFor30Days \* COST\_PER\_UNIT

Step8: print the total cost.

Step9: stop

- **FLOWCHART:**



- PSEUDOCODE:

```
Fans_ power = 60 // watts
Fans_ usage = 6 // watts
Num_ fans = 2
Light_ power = 40 //watts
Num_ lights = 3
Other_ power = 3000/ watts
Num_ days = 30
Unit_ cost = 6// rs
```

```
CALCULATE total_ power = (fans_ power* num_ fans* fans_ usage) + (light_ power*
num_ lights*light_ usage)+ other_ power
```

```
Total_ energy = total_ power* num_ days/1000 //
Total_ cost = total_ energy * unit_ cost
PRINT "total energy consumption" + total_ energy + "kwh"
PRINT "total cost Rs." + total_ cost
```

7. A food delivery app is allowed to deliver food only at specified time slots. If the order is placed in the allowed time slot, the order can be confirmed to the user. If the order is outside the timeslot, it can be delivered only in the next time slot. If the user still wants to place the order accepting the delay, accept and confirm it.

Allowed time slots: 12 PM – 3 PM

✓ **ANSWER:**

- **ANALYSIS:** the steps for handling orders based on the allowed time slots. It checks the current time and determines whether the order can be confirmed immediately or if it needs to be scheduled for the next available time slot. It also gives the user the option to accept or decline the delay in delivery.

➤ **ALGORITHM:**

Step1: start

Step2: define a start and end time (start time: 12pm, end time: 3pm :)

Step3: get a current time, current\_time = current time

Step4: use prompt to place order

Step5: check the current time with the allowed time slots

Step5: if current\_time  $\geq$  start time inform the user that the order can only be delivered in the next time slot (12 PM - 3 PM)

Step6: if current\_time  $>$  end time inform the user that the order can only be delivered in the next day; s time slot (12 PM - 3 PM).

Step7: f the current\_time is within the allowed time slot, confirm the order to the user and proceed with the delivery process.

Step8: If the current\_time is outside the allowed time slot, ask the user if they are willing to accept the delay and place the order:

Step8.1: If the user confirms the order despite the delay, proceed to step 9.

Step8.2: If the user does not accept the delay, cancel the order.

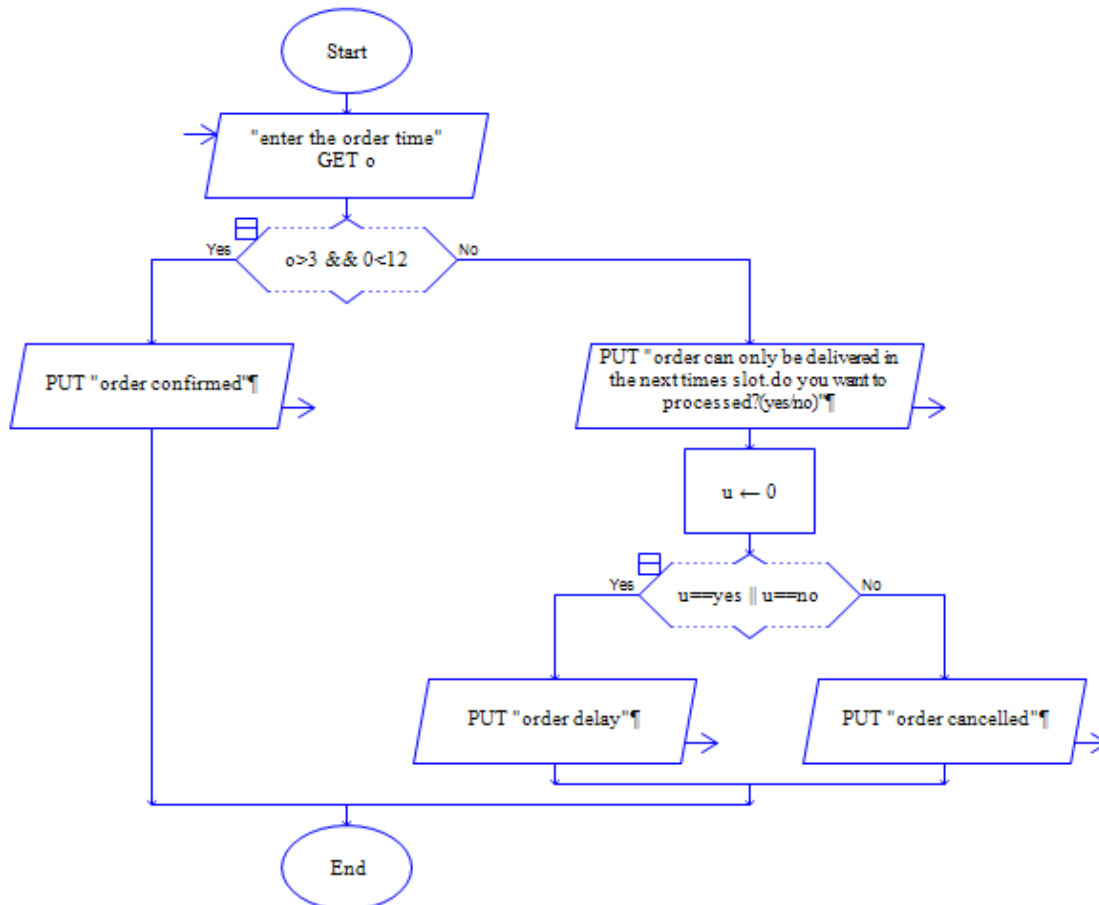
Step9: If the current\_time is before the start time, set the delivery time as the start time of the current day.

Step9.1: If the current\_time is after the end time, set the delivery time as the start time of the next day

Step10: confirm the order to user

Step11: stop

- FLOWCHART:



- PSEUDOCODE:

```

Start_time = 12pm
End_time = 3pm
IF order_time >= start_time and order_time <= end_time
ELSE
Next_allowed_time = allowed_start_time
IF order_time > allowed_end_time
Next_allowed_time += 24 hours
PRINT ("Sorry we can't deliver your order at this time")
User_response = prompt_user
IF user_response == "accept"
Confirm_order
ELSE
Cancel_order
  
```

8. In an E-commerce website, there is an offer coupon for books worth Rs. 500 as a special promotion. There is also a separate discount for books, and it is 10%. Apply the max discount between coupon offer and individual discount for books in the final invoice. The user purchases the below book. Write the algorithm to calculate the final bill amount to be paid by the user.

Harry potter book - 1 no. - Rs. 750

✓ **ANSWER:**

- **ANALYSIS:** calculates the final bill amount for the user's purchase, taking into account the offer coupon and the book discount. Calculation of the book discount: This step calculates the book discount amount based on the book price and the discount rate (10%). The book discount amount is  $(10/100) * \text{book price}$ . Calculation of the final bill amount with the coupon offer: If the coupon offer provides the maximum discount, this step deducts the coupon offer value from the book price to calculate the final bill amount. Calculation of the final bill amount with the book discount: If the book discount provides the maximum discount, this step deducts the book discount amount from the book price to calculate the final bill amount. Displaying the final bill amount to the user:

➤ **ALGORITHM:**

Step1: start

Step2: declare two variables book\_ price and coupon\_ offer

Step3: values to the variable Book's Price: Rs. 500

Coupon Offer: Rs. 500

Step4: input the number of books purchased number\_ of\_ books = get input from the user

Step5: calculate total price without discount i.e. total\_ price = books price\* number of books

Step6: then calculating discount amount for books (10% in total price) book\_ discount = total\_ price \* 0.1

Step7: if coupon\_ offer > book\_ discount set the maximum discount as Coupon Offer.

Step8: if coupon\_ offer <= book\_ discount set the maximum discount as book\_ discount.

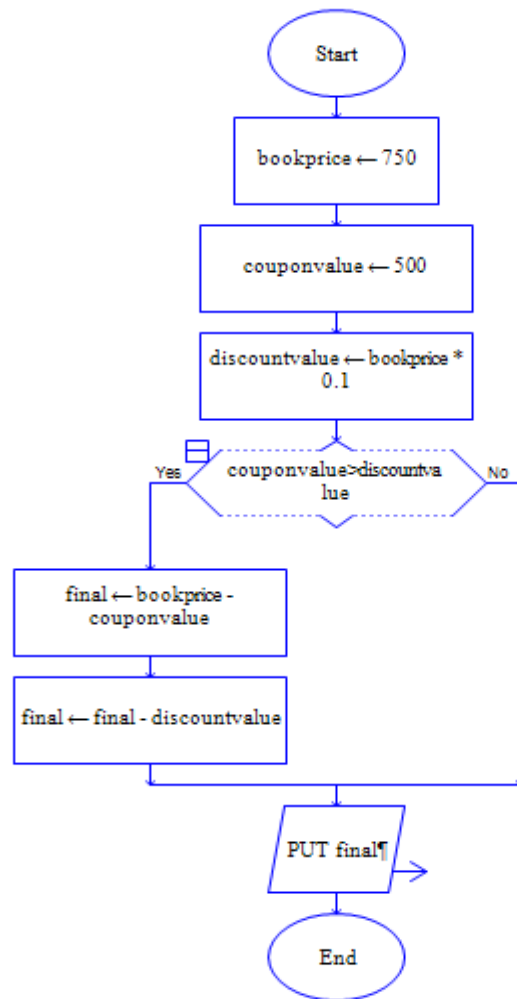
Step9: calculate final bill amount final\_ amount = total\_ price - max\_ discount

Step10: print the final\_ amount



Step11: stop

- FLOWCHART:



- PSEUDOCODE:

Initialize book price as Rs.750

IF coupon offer available THEN

(If yes apply coupon discount of Rs.500 to the book price)

CALULATE the individual book price

COMPUTE = discount\_ amount – book price

Compare discounts obtained from step 2&3 and choose maximum discount

PRINT final\_bill\_amount