IDENTIFICATION AND SOLVING SIMPLE REAL-LIFE PROBLEMS AND DEVOLPING FLOWCHARTS FOR THE SAME

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FLOWCHART:

Flowchart is defined as the pictorial representation of the logic for the problem solving. The purpose of flowchart is making the logic of the program clear in a visual representation. Flowcharts are better way of communicating the logic of the system. With the help of flowchart , a problem can be analyzed in more effective way. Flowcharts are used for good program documentation , which is needed for various purpose .The flowcharts act as a guide or blue print during the system analysis and program devolpment phase .The flowchart helps in testing and debugging the program.

SYMBOLS USED IN FLOWCHARTS



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Serial number | Name of the symbol | Symbol | Type | Description |
| 1. | Terminal symbol |  | Oval | Represent the start and stop of the program |
| 2. | Input/Output |  | Parallelogram | Denotes either input or output operation |
| 3. | Process symbol |  | Rectangle | Denotes the process to be carried |
| 4. | Decision symbol |  | Diamond | Represents decision making and branching |
| 5. | Flow lines |  | Arrow lines | Represents the sequence of steps and direction of flow. Used to connect symbols. |

TOOLS USED FOR DRAWING FLOWCHARTS:

* GOOGLE DRAW - It’s a very good tool the flowcharts can be drawn very easily and the flowcharts are directly stored into the drive. But the page is limited to draw the flowchart.
* SMART DRAW - Smart draw is a very good tool to draw the flowcharts but we can’t save the flowcharts directly in the system and it cannot be used for free.
* CANVA - Canva is totally user friendly tool and we can use it for free without any subscription.
* DIAGRAMS.NET - In this tool the flowcharts can be saved easily but the output will not be that much precised.
* ZENFLOWCHART - The diagrams can be directly stored in the system and it has many good features to use. But in this tool only 20 shapes can be used for free but from 21st shape we need to pay and use it.

* LUCIDCHART - The flowcharts can be easily drawn using this tool and it has many features to use. But we need to pay for it.

EX N.O : 1-A

DATE : 29/11/2022

TITLE : Calculate Electricity Bill

AIM :

To draw flowchart and write algorithm for calculating electricity bill.

ALGORITHM :

Step : 1 start

Step : 2 get the no. of units consumed.

Step : 3 check the condition if n<=100

3.1 : if condition is true, display no current charge else goto step 4.

Step : 4 check condition if n<=200

4.1 : if condition is true , for 100 units no charge and to calculate energy charge for remaining units using formula 1.5 \* (n-100)

4.2 : the total charge is calculated by adding energy charge ,duty charge and fixed charge.

4.3 : display current bill for the month in 4.2 and goto stop

Step 5 : check condition if n<=50

5.1: if condition is true for 100 units no charge

5.2 : for units 101 to 500 , energy charge is calculated is calculated in 2 steps.

5.2.1 : for 101 – 200 units, energy charge 1=100\*2=200

5.2.2 : for remaining units calculate energy charge 2 for remaining units will be (n-200)\*3

5.3 : total energy charge is calculated by adding 5.2.1 and 5.2.2

5.4 : the total charge is calculated by adding energy charge, duty charge and fixed charge.

5.5 : display current bill for the month in step 5.4 and goto stop

Step 6 : check condition if n>500

6.1 : if condition is true for 100 units no charge

6.2 : for units 101, energy charge is calculated in 3 steps

6.2.1 : for 101 – 200 units , energy charge 1 = 100\*3.5=350

6.2.2 : for 201 – 500 units, energy charge = 1 300\*4.6=1380

6.2.3 : for remaining units calculate energy charge 2 for remaining units will be (n-500)\*6.6

6.3 : total energy charge is calculated by adding 6.2.1,6.2.2,6.2.3,6.2.3

6.4 : the total charge is calculated by adding energy charge , duty charge and fixed charge.

6.5 : display current bill for the month in 6.4 and goto stop

Step 7 : stop

FLOWCHART :

start

Get the no of consumed

If unit<=100

Energy charge = 100

Fixed charge = 0

Duty charge =0

stop

Display the current bill

Total charge+fixed charge+duty charge

Energy charge=0+(100\*3.5)+(300\*4.6)+(unit-500)\*6.6

Fixed charge=50

Duty charge=167.2

Energy charge=0+(100\*2)+(unit-200)\*3

Fixed charge=30

Duty charge=48

Energy charge =0+(unit-100)\*1.5

Fixed charge =20 , Duty charge = 18

If unit>500

If unit<=500

If unit<=200

break

PSEUDOCODE:

START

GET N

IF N<=100 THEN

PRINT”NO CHARGE”

IF N<=200 THEN

Energy=(N-100)\*1.5

FC=20,DC=18

Total =Energy+FC+DC

PRINT Total

IF N<=500 THEN

E1=100\*2

E2=(N-200)\*3

Energy=E1+E2

FC=30,DC=48

Total=Energy+FC+DC

PRINT Total

IF N>500 THEN:

E1=100\*3.5

E2=300\*4.6

E2=(N-500)\*6.6

Energy=E1+E2

FC=50,DC=167.2

Total=Energy+FC+DC

PRINT Total

STOP

RESULT: Thus the Algorithm ,Flow chart and Pseudocode are written for the given problem.

EX N.O: 1-B

DATE:29/11/2022

TITLE : CALCULATE WEIGHT OF STEEL BAR

AIM:

To draw flowchart and write algorithm for calculating electricity bill.

ALGORITHM:

Step 1 : start

Step 2 : get the value of no. of iron rods

Step 3 : initialize the values of i=1 ,total weight=0

Step 4: check if the value i is less than or equal n

4.1: if the condition is true,get the diameter of the rod and get the unit weight=D\*2/162

4.1.1: get the n.o of rods

4.1.2 : get the total weight. The total weight is calculated by multiplying n.o of rods, diameter of rod,weight of rod

4.1.3: add this weight to total weight and increment value of i

4.2: if condition is false,display total weight

Step 5 : stop

FLOWCHART:

start

stop

Display the total weight of rods

I=1-i

Total weight=total weight+weight

Weight=diameter\*unit weight+n.o of bars

Unit weight=D\*2/162

Get the n.o of rods of diameter d

If i=n

Intialize i=1

Total weight=0

Get the n.o of rods

PSEUDOCODE:

START

READ iron balls

COMPUTE i=1 weight=0

IF i<N THEN

READ Diameter

CALCULATE D^162

CALCULATE weight = No of iron balls Diameter “D”

CALCULATE Total weight = TW+W

ELSE

PRINT TW of the rod

STOP

. RESULT: Thus the Algorithm ,Flow chart and Pseudocode are written for the given problem

EX N.O: 1-C

DATE:29/11/2022

TITLE : CALCULATE WEIGHT OF MOTOR BIKE

AIM:

To draw the flowchart and algorithm for calculating the weight of motorbike.

ALGORITHM:

Step 1 : start

Step 2 : get the gross vehicle weight rating of the particular vehicle in a variable”GVWR”

Step 3: get the dry weight of vehicle in available “DW”

Step 4 : get the fuel weight in a variable “FW”

Step 5 : get the rider weight in a variable “RW”

Step 6 : get the passenger weight in a variable “PW”

Step 7 :calculate the total weight of the vehicle by adding the dry weight, fuel weight, rider weight and passenger weight.

Step 8 : get the load weight in a variable load.

Step 9 : calculate the load weight of vehicle by adding the total weight with the load.

Step 10: now calculate safe weight for the ride by subtracting the total vehicle weight from the GVWR.

Step 11: check the condition if the safe weight is greater than or equal to zero

11.1 : if the condition is true then display the message “you are appreciated for safe journey”.

11.2 : if the condition is false then ask rider to reduce the load weight for safe journey and goto step 8.

Step 12: stop

FLOWCHART:

For safe journey reduce the weight

Load weight = total weight+load

Safe weight = GVWR-load weight

If safe Weight>=0

You are appreciated for safe journey

stop

Get load

Total weight=DW+FW+RW+PW

Get PW

Get GVWR

Get RW

Get FW

Get DW

start

PSEUDOCODE:

START

GET GVWR

GET DW, FW, RW, PW

CALCULATE total

Weight = DW+FW+RW+PW

GET load

CALCULATE load weight = total

Weight +load

CALCULATE safe

Weight = GVWR+ Load weight

IF safe weight>=0 THEN

DISPLAY “You are appreciated for safe Load Happy Journey”

ELSE

DISPLAY “ For safe Journey Reduce the weight for better suspension”

STOP

RESULT: Thus the Algorithm ,Flow chart and Pseudocode are written for the given problem

EX N.O: 1-D

DATE:29/11/2022

TITLE: RETAIL SHOP BILLING

AIM:

To draw flowchart and write algorithm for calculating retail shop billing.

ALGORITHM:

Step 1 : start

Step 2: get the value bill no and bill date

Step 3: get the details of customers: Cname,Addr (address)and mobile

Step 4: get the n.o of items purchased as n

Step 5: initialize i=0,total =0

Step 6: check condition i<=n

6.1: if true get item details like name, price, count and discount

6.1.1: calculate the subtotal= count\*price -discount/100

6.1.2: add the value of subtotal to the total

6.1.3: increment the value of i by 1

6.2: if condition is false, get the value of GST

6.2.1: calculate total bill = total +GST/100

6.2.2: display total bill

Step 7 : stop

FLOWCHART:

start

Get the total no of items purchased in a variable n

stop

Print net price

Net price=total price+gst amount

Get amount =total price\*gst value

Get the GST value

Total=total+discount total

i=i+1

Discount total = sub total\*discount/100

Enter the discount of items

Sub total =no of items\*unit price

Get the item unit price, no of items

If i<=n

Initialize i =0

Total=0

Sub total=0

PSEUDOCODE:

START

GET Bill No , Bill Date

GET CName, Addr, Mobile

GET n

INTIALIZE i=0, total =0

IF i<=n THEN

GET Name, Price, Count and Disc

Sub total= Count\*Price-Disc/100

i=i+1

ELSE:

GET GST

Total bill= toal+GST/100

PRINT Total bill

STOP

RESULT: Thus the Algorithm ,Flow chart and Pseudocode are written for the given problem

EX N.O : 1- E

DATE:29/11/2022

TITLE: SINE SERIES

AIM:

To draw the flowchart and write algorithm for calculating sine series.

ALGORITHM:

Step 1: start

Step 2: get the value of x

Step 3: intialize the value of i=1 ,sine =0 and import math

Step 4: get the value of n

Step 5: check the value if i is less than N

5.1: if condition is true,convert x to radian and adding it to y

5.1.1: let that of s be (-1) to the power i

5.1.2: now calculate sine series using formula sine=sine+((y\*\*2\*i+1/math.factorial(2\*i+1))’s

5.1.3: increment value of i by 1

5.2: if condition is false,display sine

Step 6: stop

FLOWCHART:

start

Get the value of x

stop

Print sine

I=i+1

Sine=sine+((y\*\*2.0\*(+1)/math factorial (2\*i+1))\*s

S=(-1)\*\*i

Y=y+x\*(3.1416/180)

If i<n

Get the value of n

i=1,sine =0 import math

PSEUDOCODE:

START

INPUT X

INTIALIZE i=1 ,sine=0, import math

INPUT N

IF i<N THEN

Y= y+x\*(3.1416/180)

S= (-1)\*\*i

Sine= sine

((y\*\*2\*i+1))/math.factorial(2\*i+1))\*s

I=i+1

DISPLAY SINE

STOP

RESULT: Thus the Algorithm ,Flow chart and Pseudocode are written for the given problem

EX N.O :1-F

DATE:29/11/2022

TITLE: STUDENT GRADE ANALYSIS

AIM:

To draw the flowchart and write the algorithm for calculating student grade analysis.

ALGORITHM:

Step 1: start

Step 2: get the input n.o of students M1,M2,M3,M4,M5, student name, and roll n.o

Step 3: assign i = 0

Step 4: check for condition i<n

4.1: calculate total= M1+M2+M3+M4+M5

4.2: calculate Average = M1+M2+M3+M4+M5/5

Step 5: display student name,roll n.o, average

Step 6: check for condition avg>90 if true display “Grade A” goto step 10

Step 7: check for condition 90>A>80 if true display “Grade B” goto step 10

Step 8: check for condition 80>A>60 if true display “Grade C’ goto step 10

Step 9: check for condition 60>A>40 if true display “Grade D” else “Fail”

Step 10: stop

FLOWCHART:

start

Get the no of students

i=0

If i<n

stop

Total = M1+M2+M3+M4+M5

Avg = M1+M2+M3+M4+M5/5

Display student name,roll no, avg

If A>90

Display Grade A

Display Grade B

Display Grade D

Display Grade C

I =i +1

Display “Fail”

If 60>A>40

If 80>A>60

If 90>A>80

PSEUDOCODE:

START

GET N

INTIALIZE i=0

IF i<N

GET name,Roll no,m1,m2,m3,m4,m5

CALCULATE Total=m1+m2+m3+m4+m5

CALCULATE Average= Total/5

PRINT name,Roll no

IF Average>90

PRINT”Your grade is A”

ELIF 90>Average>80

PRINT”Your grade is B”

ELIF 80>Average>60

PRINT”Your grade is C”

ELIF 60>Average>40

PRINT”Your grade is D”

ELSE

PRINT”Fail”

STOP

RESULT: Thus the Algorithm ,Flow chart and Pseudocode are written for the given problem

EX N.O : 1-G

DATE: 29/11/2022

TITLE : ELECTRIC CURRENT IN 3 PHASE AC CIRCUIT

AIM:

To draw the flowchart and write algorithm for calculating electric current in 3 phase AC circuit.

ALGORITHM:

Step 1: start

Step 2: read the values of PF, I and V

Step 3: calculate P using the formula

P= root 3 \*PF\*I\*V

Step 4: display “The result is P”

Step 5: stop

FLOWCHART:

stop

Display the result is P

Calculate

P=V\*V\*V\*PF\*I\*V\*

Read PF,I,V

start

PSEUDOCODE:

START

GET pf, I, V

P = 1.732\*pf\*V\*I

PRINT P

STOP

RESULT: Thus the Algorithm ,Flow chart and Pseudocode are written for the given problem