

INTRODUCTION TO FLOWCHARTING

Question 1

A University has 3,000 students. These students are divided in four categories:

- (i) B. Tech
- (ii) M. Tech
- (iii) M.S.
- (iv) Ph.D.

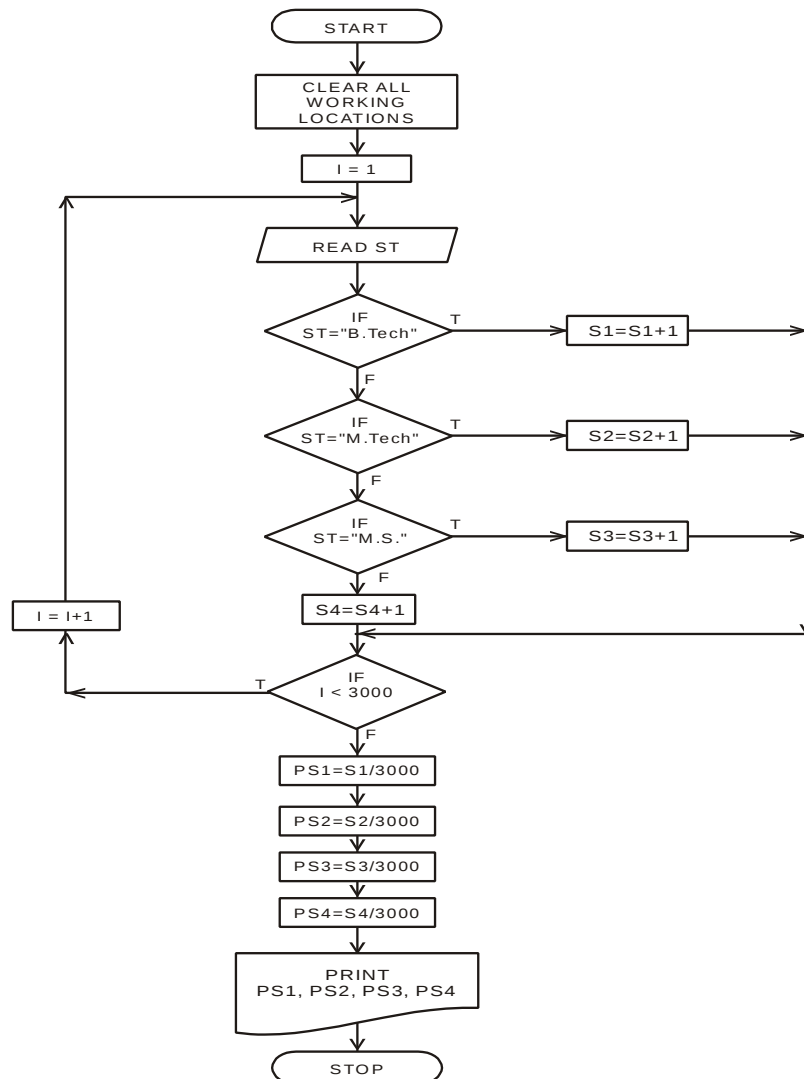
Draw a flow chart for finding the percentage of the students in each category.

(10 Marks) (PCC-May 2007)

Answer

The flowchart is given below:

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Abbreviations:

ST = Student,

PS1 to PS4 = Percentage,

S1 to S4 = No. of Student,

T = True,

F = False

Question 2

An electric supply company charges the following rates from its consumers:

No. of unit consumed	Charges/unit (Rs.)
For the first 200 units	2.50
For the next 300 units	3.50

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Over 500 units

5.00

Computer database of the company has the following information:

- ◆ Consumer Name
- ◆ Address
- ◆ Unit consumed
- ◆ Bill date
- ◆ Payment date

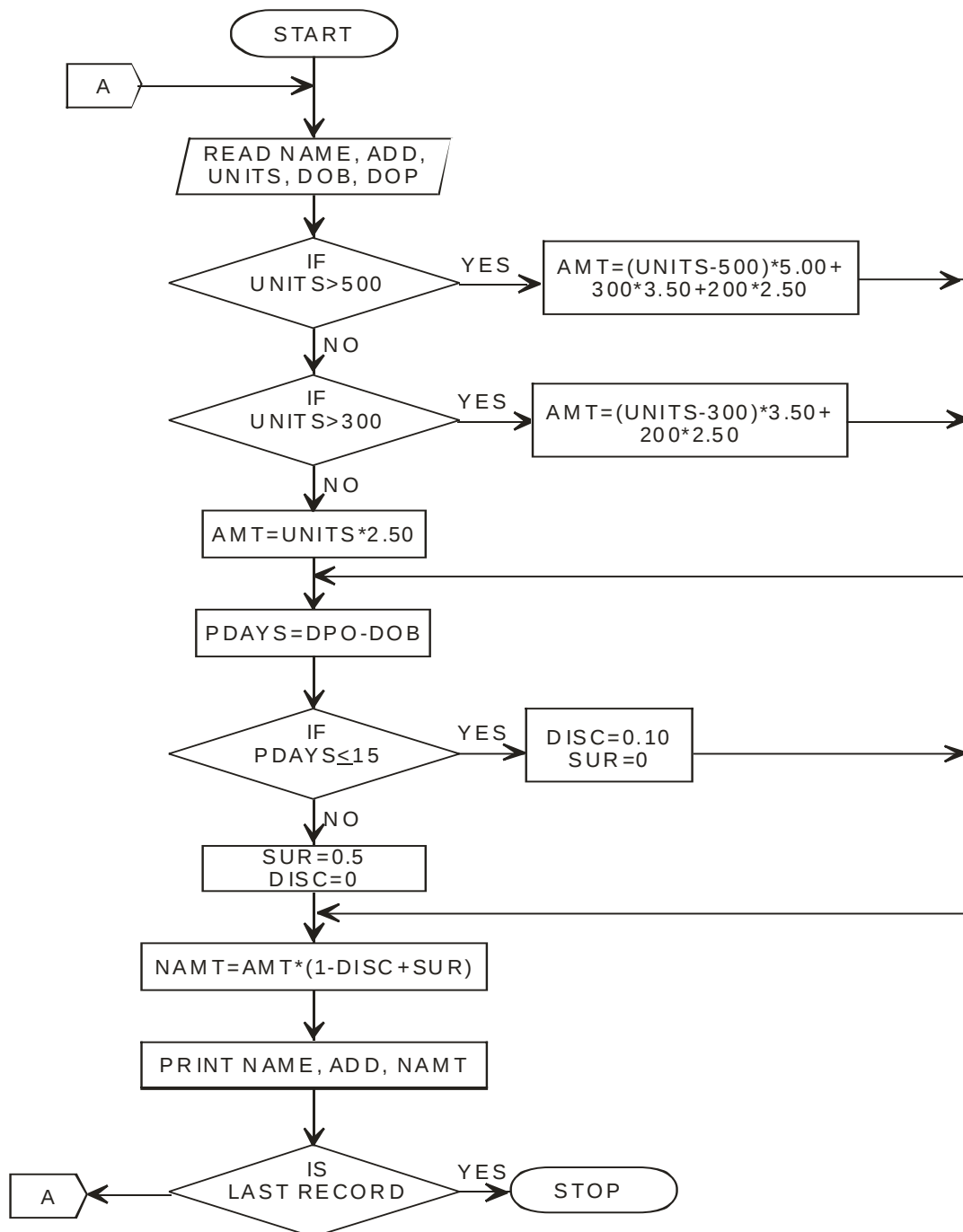
If the consumer pays his bill within 15 days from the bill date, 10% discount is given. If he makes the payment after 15 days from the bill date, 5% surcharge is levied. Draw a Flow Chart to calculate the net amount of the bill for each consumer and print it.

(10 Marks) (PCC-Nov 2007)

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Answer

The flowchart is given below:



Question 3

A bicycle shop in a city hires bicycles by the day at different rates for different models as given below:

Model No.	Hire rate per day (Rs.)
Model No. 1	14.00
Model No. 2	12.00
Model No. 3	10.00

In order to attract customers, the shopkeeper gives a discount on the number of days a bicycle is hired for. The policy of discount is as given below:

No. of days	Discount rate (%)
1–5	0.00
6–10	8
11 and over	15

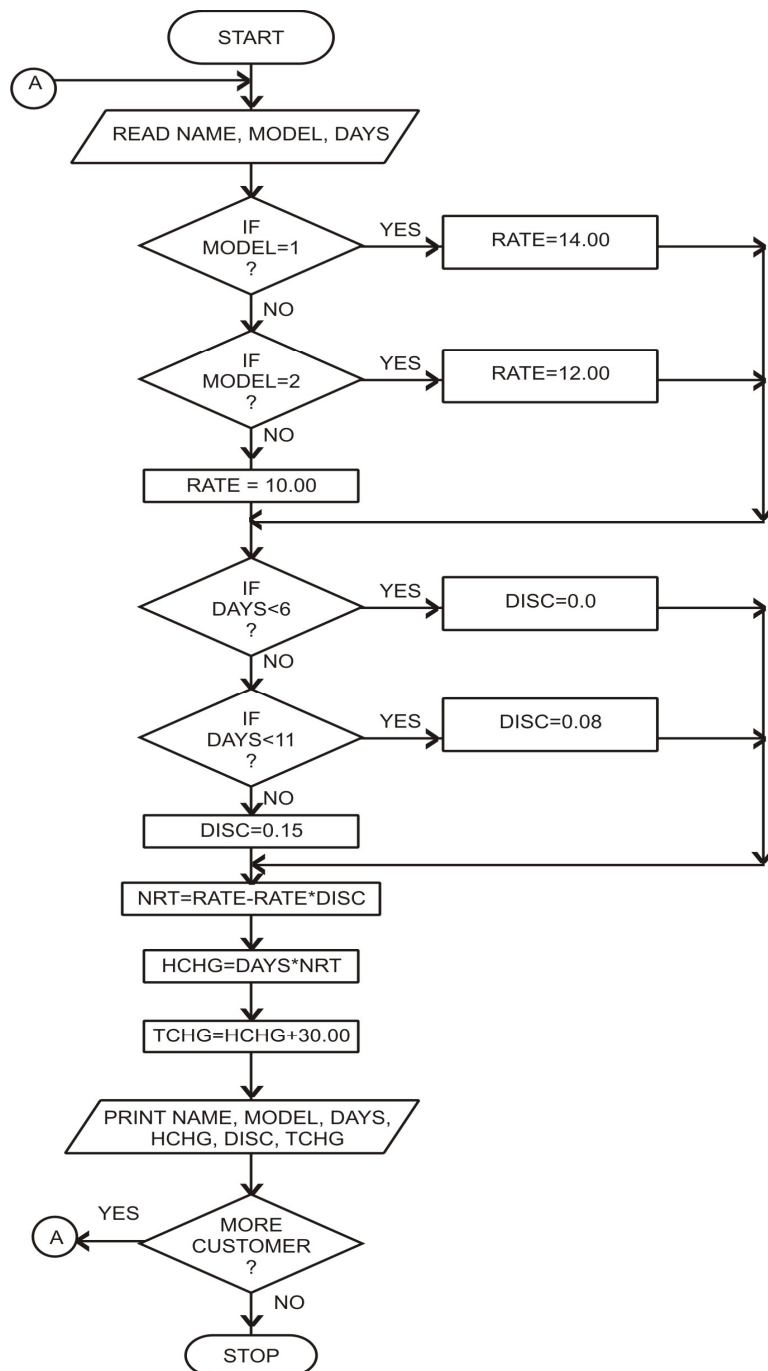
For every bicycle hired, a deposit of Rs. 30.00 must be paid.

Develop a flow chart to print out the details for each customer such as name of the customer, bicycle model number, number of days a bicycle is hired for, hire charges, discount and total charges including deposits.
(10 Marks)(PCC-May 2008)

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Answer

The flowchart is given below:



Question 4

A Book Publisher offers discount to customers on the basis of customer type and number of copies ordered as shown below:

Customer Type	Number of Copies Ordered	% of Discount
Book Seller	More than 10	25
	Less than or equal to 10	15
Library	More than 5	20
	Less than or equal to 5	10

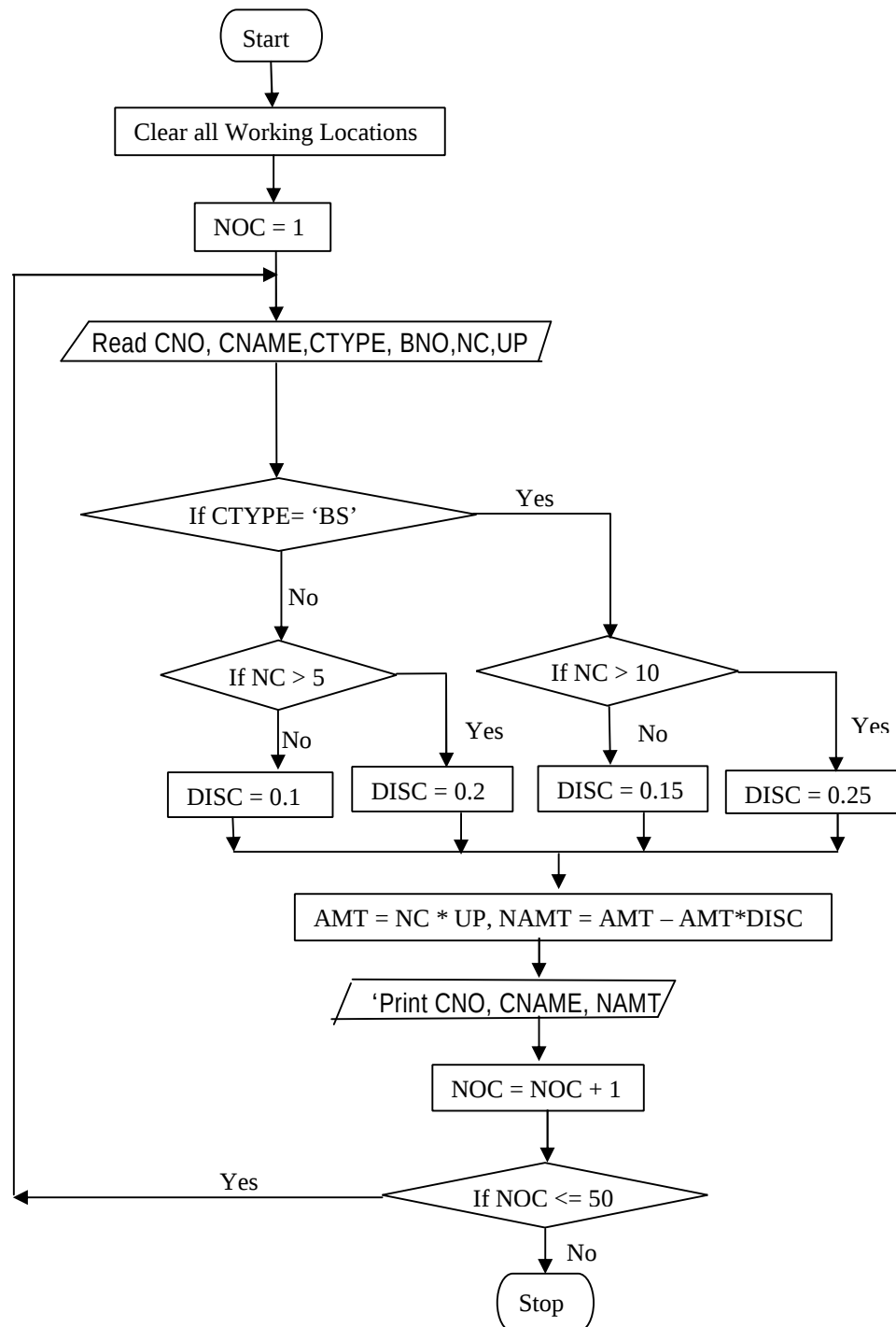
Customer number, name, type, book number, number of copies ordered and unit price are given as input. Draw a flowchart to calculate the net amount of the bill for each customer and print it. The above is to be carried out for 50 customers. (10 Marks)(PCC-Nov 2008)

Answer

The flowchart is given below:

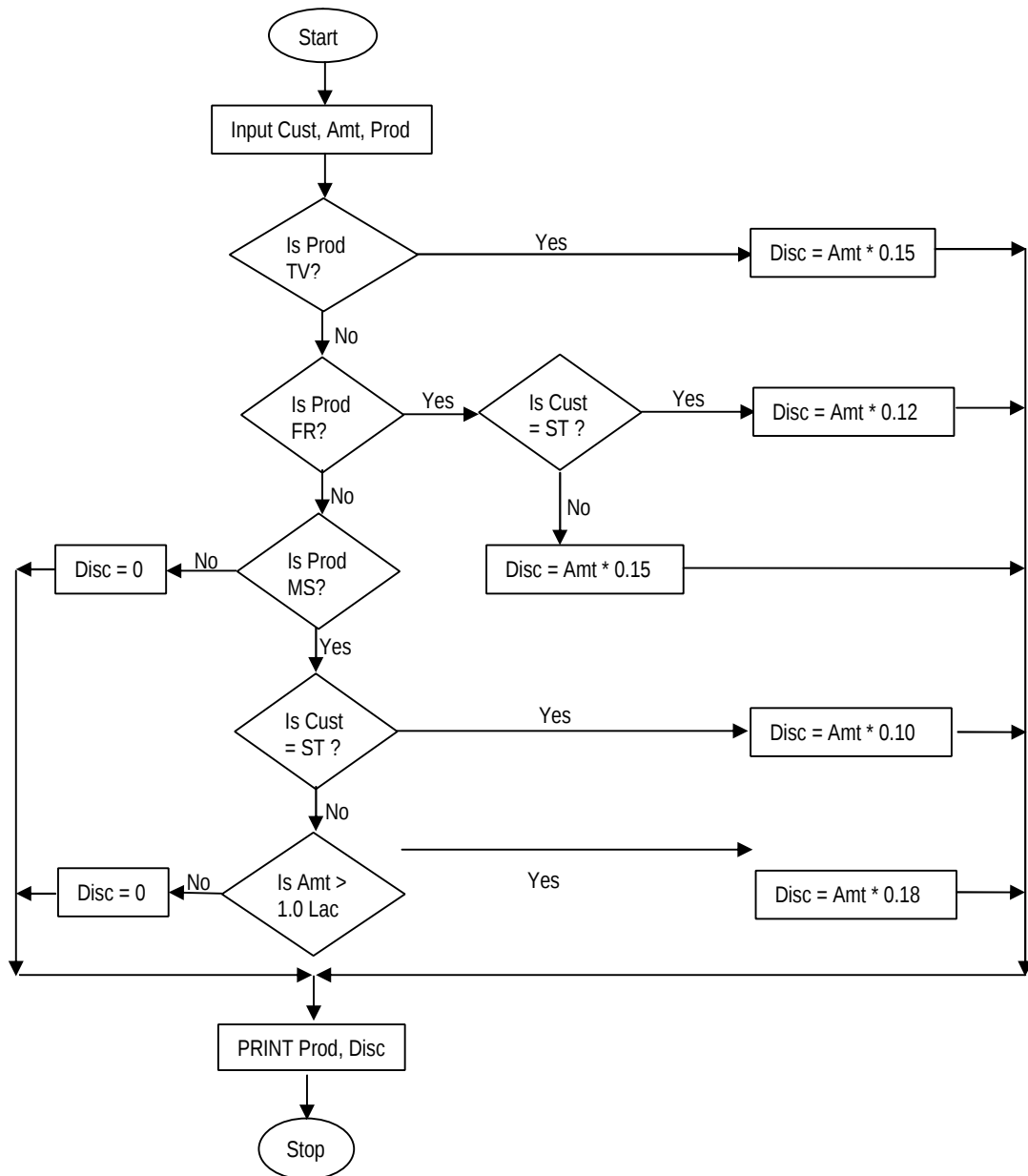
Symbols Used Are:

CNO	-	Customer Number
CNAME	-	Customer Name
CTYPE	-	'BS' Book Seller / 'LIB' Library
NC	-	Number of Copies
BNO	-	Book Number
UP	-	Unit Price
DISC	-	Discount
AMT	-	Total Amount
NAMT	-	Net Amount
NOC	-	Number of Customers



Question 5

Frame the problem for which the given flowchart has been drawn. See the Abbreviations defined below:



Cust : Client, Prod : Product , Amt : Amount, Disc : Discount, TV : Television, FR : Fridge,
MS : Music system, ST : Student (10 Marks)(PCC-June 2009)

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Answer

The flowchart drawn is for the following problem:

A company engaged in selling electronic items to different class of clients has adapted the following discount policy:

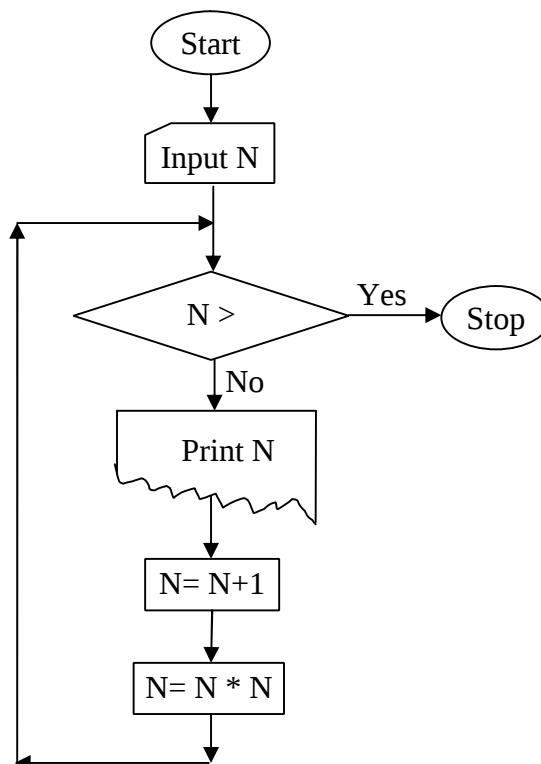
- (i) A discount of 15% is offered on TV irrespective of category of client and the value of order.
- (ii) On purchase of fridge, a discount of 15% is allowed to others and 12% to students, irrespective of the value of the order.
- (iii) On Music system, others are offered a discount of 18% only if the value of order is more than Rs 1 Lac. Students are offered a discount of 10% irrespective of the value of order.

Prepare a flowchart to print the product type and discount allowed to a customer.

Note: It is a sample formation of the problem. Students can frame the problem in their own language based on the above three conditions.

Question 6

- (a) Write the output sequence (at least first five numbers) for the given flowchart, if $N = 0$ is selected as the value for N as input.
 - (b) If the statement " $N = N * N$ " in the computation box of the flowchart is modified as " $N = N * (N - 1)$ ". Write the output sequence (at least first five numbers) for the flowchart with $N = 0$ as the input value for N .
- (10 Marks) (PCC-Nov 2009)



Answer

(a) The output sequence will be :

0 1 4 25 676

(b) The output sequence in this case will be:

0 0 0 0 0

Being in loop, the program will continue to write 0 endlessly.