CS3101 - COMPUTATIONAL THINKING

LAB SESSION – (25.10.2023)

SPOT ACTIVITIES

Activity 1 :

Read the following problem scenario:

Online bank transactions refers to bank transactions made on the specific bank site by a particular individual in a secure network i.e. without using hard cash, we can use the facility of debiting and crediting with the help of login ids and passwords provided by the bank.
Following operations are possible with a system that supports online bank transactions.

1. Online registration:
Firstly, the user has to register for an online banking account on the banks website by filling in the necessary details like his name,account no.,mailing address,his contact no.and other necessary details.
2. Log in:
After registration, the user can now login in by entering his ID and password. After log in, the user gets various options and can perform various banking tasks.
3. Options:
The various options available after successful log in are:

(a) Account statement:
It gives the details of the various transactions made over a selected period of time.Theuser can get a detailed description of the transactions made by him over a selected periodof time.
(b) Withdrawal:
This gives the user an option of withdrawing an amount of money from his account.Theuser can withdraw a specified amount and thus,his balance gets deducted accordingly.
(c) Deposit:
This gives the user an option to deposit money to his account and on deposition,the user's balance is increased accordingly.
(d) Current balance:
It gives the total amount of money left in the account after all the transactions have beenmade.
(e) Transfer:
This gives the option of transferring money to other accounts as well.

4. Log Out:
The user can safely log out of his account and go back to the home page of the bankingwebsite

Draw a flow chart for the above problem, where each operation (1 to 4) and sub-operations (3a to 3e) are treated as a separate module /function / procedure. (*NOTE: Use multiway selection case structure that will be processed iteratively until a termination condition is satisfied*).

Activity 2 :

NONOGRAMS

Nonogram is a logic puzzle with simple rules and challenging solutions.

The rules are

- ***You have a grid of squares, which must be either filled in black or marked with X.***
- ***Beside each row of the grid are listed the lengths of the runs of black squares (Xs) on that row.***
- ***Above each column are listed the lengths of the runs of black squares (or X) in that column.***
- ***Your aim is to find all black squares (or X).***

Example

	1	5	2	5	2 1	2
2 1						
1 3						
1 2						
3						
4						
1						

(a) 6 × 6 Nonogram

	1	5	2	5	2 1	2
2 1	■	■				■
1 3		■		■	■	■
1 2		■		■	■	
3		■	■	■		
4		■	■	■	■	
1				■		

(b) Solved Nonogram

Question 1

	2 2	1 1	1	3 2	9	2 4	5	1 5	1 5	1 5
1 4 3										
2 3										
2										
1										
2										
2 7										
1 7										
6										
1 4										
4										

Question 2

	2	2 5	3 3 1	4 4	4	2	2 1	2 1	7	7
7										
9										
3 2										
2 2										
2										
3 2										
4 4										
3 2										
1 1										
3										