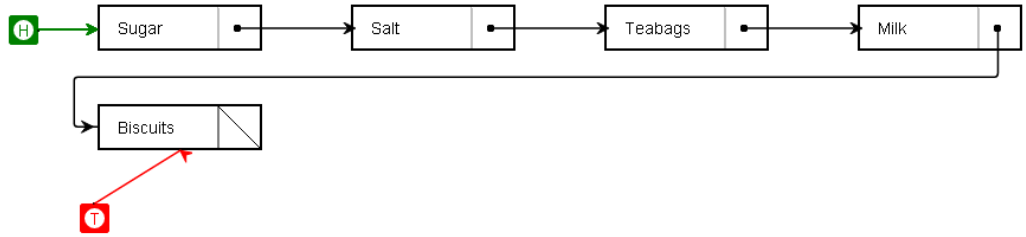
DATA STRUCTURES
3rd Semester
PRACTISE PROGRAM LIST

Sl.No	Program name
1	Given a stack of integers, write a program that updates the input stack such that all occurrences of the smallest values are at the bottom of the stack, while the order of the other elements remains the same. For example: Input stack (top-bottom) : 5 66 5 8 7 Output: 66 8 7 5 5
2	Write a Program to store and retrieve the student information (USN,Name and mobile number) in Last In First Out order.
3	Maria wants to delete the items, Sugar and Milk from linked list.Simulate using C Program. 
4	A bracket is considered to be any one of the following characters: (,), {, }, [, or]. Two brackets are considered to be a matched pair if an opening bracket (i.e., (, [, or {) occurs to the left of a closing bracket (i.e.,),], or }) of the exact same type. There are three types of matched pairs of brackets: [], {}, and (). A matching pair of brackets is not balanced if the set of brackets it encloses are not matched. For example, {[(])} is not balanced because the contents in between { and } are not balanced. The pair of square brackets encloses a single, unbalanced opening bracket, (, and the pair of parentheses encloses a single, unbalanced closing square bracket,]. By this logic, we say a sequence of brackets is balanced if the following conditions are met: It contains no unmatched brackets. The subset of brackets enclosed within the confines of a matched pair of brackets is also a matched pair of brackets. Given a string of brackets, determine whether the sequence of brackets is balanced. If a string is balanced, return YES. Otherwise, return NO.
5	Anisha is a music lover. She usually puts a lot of songs in her mobile and listens to them whenever she is free. She received a huge folder of new songs from her friend. She has an app on her phone that divides those songs into different playlists in her mobile phone

	i.e if the song is motivational than it is added to the playlist A, if the song is romantic then it is added to the playlist B, if the song is sad then to playlist C. If she presses a button in the app to play the playlists in circular manner then the Playlist A, B and C are played in circular fashion until she stops. She can also choose to play the songs within a particular playlist to be played in a circular manner. Simulate this scenario of playing the playlists in circular manner and also the songs within a playlist to be played in a circular manner. Also show its working when she deletes a song from playlist B and deletes the playlist C.
6	Harsha is browsing for an article on data structures through his browser in the internet. On the first web page he opened there was a link to another web page. He clicked on that link and the browser displayed him the linked web page. He has done such N clicks which has taken him to new webpage every time. Now he wants to find out which webpage he was looking into after x clicks from his first webpage wherein x<=N. Help him to know the webpage by simulating this scenario in C using a singly linked list.
7	Consider two singly linked list to store two polynomials. Perform the addition of these two polynomials as shown in the example below: Polynomial 1: 2x^3+8x^4+5x^6 and Polynomial 2: 3x^4+4x^6 then output should be 2x^3+11x^4+9x^6
8	Create a data structure twoStacks that represents two stacks. Implementation of twoStacks should use only one array, i.e., both stacks should use the same array for storing elements. Following functions must be supported by twoStacks. push1(int x) –> pushes x to first stack push2(int x) –> pushes x to second stack pop1() –> pops an element from the first stack and return the popped element pop2() –> pops an element from the second stack and return the popped element
9	You have three stacks of cylinders where each cylinder has the same diameter, but they may vary in height. You can change the height of a stack by removing and discarding its topmost cylinder any number of times. Find the maximum possible height of the stacks such that all of the stacks are exactly the same height. This means you must remove zero or more cylinders from the top of zero or more of the three stacks until they're all the same height, then print the height. The removals must be performed in such a way as to maximize the height. Input Format: The first line contains three space-separated integers n1 , n2 and n3 describing the respective number of cylinders in stacks 1, 2 and 3 . The subsequent lines describe the respective heights of each cylinder in a stack from top to bottom: ● The second line contains n1 space-separated integers describing the cylinder heights in stack 1 . The first element is the top of the stack. ● The third line contains n2 space-separated integers describing the cylinder heights in stack 2. The first element is the top of the stack. ● The fourth line contains n3 space-separated integers describing the cylinder heights in stack 3. The first element is the top of the stack.

10	Suppose there is a circle. There are petrol pumps on that circle. Petrol pumps are numbered 0 to N-1 (both inclusive). You have two pieces of information corresponding to each of the petrol pump: (1) the amount of petrol that particular petrol pump will give, and (2) the distance from that petrol pump to the next petrol pump. Initially, you have a tank of infinite capacity carrying no petrol. You can start the tour at any of the petrol pumps. Calculate the first point from where the truck will be able to complete the circle. Consider that the truck will stop at each of the petrol pumps. The truck will move one kilometer for each litre of petrol. Input Format The first line will contain the value of N. The next N lines will contain a pair of integers each, i.e. the amount of petrol that petrol pump will give and the distance between that petrol pump and the next petrol pump.
11	You're given the pointer to the head node (first node) of a singly linked list, where the data in the nodes must be in ascending order (Sort the list first). Delete as few nodes as possible so that the list does not contain any value more than once. The given head pointer may be null indicating that the list is empty.