CSE220 - Data Structures and Algorithms - Embedded Lab – Fall 2014-15 – CYCLE SHEET 1 ***Data Structures Covered:*** **STACK, QUEUE, LIST, Singly Linked List, Double Linked List & Applications** **Implement in C or C++**	
1	**Implement Stack ADT (Abstract Data Type) with main ADT functions like *push(), pop(), isStackEmpty(), isStackFull().*Use *Structure* or *Class* for defining the ADT. Use Static Array as a *Data Member* it can be of any type (Primitive or User-defined).Declare necessary parameters and return types for the functions.**
2	**Implement Queue ADT(Abstract Data Type) with main ADT functions like *enqueue(), dequeue(), getQueueSize(), isQueueFull(), isQueueEmpty().* Use *Structure* or *Class* for defining the ADT. Use Static Array as a *Data Member* it can be of any type (Primitive or User-defined).Declare necessary parameters and return types for the functions.**
3	**Implement List ADT(Abstract Data Type) with main ADT functions like *insert(), delete(), search(), traverse().* Use *Structure* or *Class* for defining the ADT. Use Static Array as a *Data Member* it can be of any type (Primitive or User-defined).Declare necessary parameters and return types for the functions.**
4	**Implement String(List ADT with character Array as member)Abstract Data Type with main ADT functions like *getStringLength(), searchPartofString(), deletePartOfString(), insertCharacterInString(), stringReverse().* Use *Structure* or *Class* for defining the ADT. Use Character Array as a Data Member in ADT definition. Declare necessary parameters and return types for the functions.**
5	**Write a program to evaluate a Postfix expression using Stacks. Get the Post fix expression in string format.**
6	**Write a program to check Balanced Parentheses for an expression using Stacks. For example '{([])}' is balanced but '{([})]' is not. Get the expression in string format.**
7	**Write a program to convert In-fix expression to Post-fix expression. Get the In-fix expression in string format.**
8	**Write a Program to create Queue of Patients waiting to see the Physician in a clinic. Insert Patient details one by one into the Patient Queue in its appropriate position based on the Age, irrespective of their arrival time. Patients should be allowed in the order from the oldest to the youngest.**
9	**Create an unordered linked list to enroll the students who wish to participate for a gaming event by taking details like Name, Register No., Age, Phone number. Ensure that no more than five members are there in the list with same age. Perform insertion(), deletion() and display() operations on the Linked List.**
10	**Create a Double Linked List of Student Details (*Name, Register Number, and Year* as parameters) who want to register for a certain course which has 10 slots. If a First year student opt to register the course, his details should be added to the end of the list (ie. First Year Students details must be in the end of the list if they opt), if Other year students' try to register, his details should be added in the list just before the first Year students'(if it exists). Go on getting 12 students' details and then display first 10 students' details who are admitted in the course.**