



SHRI RAMSWAROOP MEMORIAL GROUP OF PROFESSIONAL COLLEGES

B. TECH[EC, EE, EN] [SEM III]

TUTORIAL SHEET-2

(Session: 2020-21)

BASICS DATA STRUCTURE & ALGORITHMS

(KOE-035)

Unit: II

Topic: Stack ,Queue and Linked List

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Subjective Questions:

	CO	BL
Q. 1 What is linked list?How it is different from array?	2	2
Q. 2 Write a C program to reverse a single linked lists.	2	3
Q. 3 Convert given expression $A + ((B - C * D) / E) + F - G / H$ into prefix form using Stack.	2	2
Q. 4 Write the algorithm for evaluating postfix expression using stack.	2	3
Q. 5 Write a C function to traverse circular queue using array.	2	3
Develop the functions in C for following operations in the stack implementation using array:		
A. push		
Q. 6 B. pop	2	3
C. isEmpty		
D. isFull		
Q. 7 Write a C function to insert 10 new elements on an empty Stack as array and display them.	2	3
Q. 8 Write a function to remove duplicates from a sorted single linked list.	2	3
Q. 9 What is priority queue? How can you represent a priority queue in memory? Explain	2	2
Q. 10 Write a C function to delete an element in queue implemented using linked list.	2	3

Supplementary Questions:

	CO	BL
Q. 1 Write a program in C to get the largest element of an array using recursion.	2	3
Q. 2 Design a set of routines for implementing several stacks and queues within a single array.	2	5
Q. 3 Implement the queue with the help of doubly linked list.	2	5

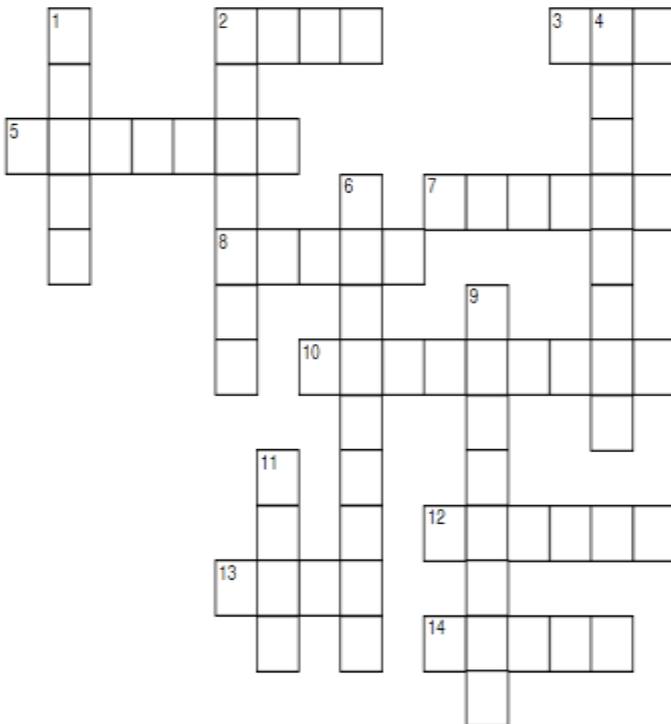
Short Answer Type Questions:

	CO	BL
Q. 1 List the advantages of linked list over arrays.	2	1
Q. 2 What is overflow condition in stack?	2	1
Q. 3 What are the applications of queue?	2	1
Q. 4 Point out the underflow condition in circular queue.	2	1
Q. 5 Evaluate postfix expression 4589+-+ .	2	1

- **Course Outcome (CO)** – It generally refer to traits, knowledge, skill set that a student attains after completing the course successfully.
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Q. 6	Define priority queue.	2	1
Q. 7	What are the different applications of recursion? Find the return value of following function if x is 5 and y is 2: int fun1(int x, int y) { if(x == 0) return y; else return fun1(x - 1, x + y); }	1	1
Q. 8		1	1
Q. 9	What is the advantage of circular queue over simple queue representation?	1	1
Q. 10	Give structure of dequeue.	1	1

Crossword-Puzzles:



<p>ACROSS</p> <p>2. Process of inserting an element in stack is called.....</p> <p>3. Process of removing an element from stack is called.....</p> <p>5. The elements are removal from a stack in order.</p> <p>7.recursion a function that makes two recursive calls to itself when invoked</p> <p>8. Deletion operation is done at end in a queue.</p> <p>10.is the process of defining a problem in terms of itself.</p> <p>12.expression notation requires that all operators precede the two operands</p> <p>13. Stack is also called as.....</p> <p>14. is very useful in situation when data have to stored and then retrieved in reverse order.</p> <p>DOWN</p> <p>1. is open at both its ends</p> <p>2.expression requires that its operators come after the corresponding operands.</p> <p>4. Pushing an element into already full stack, then stack becomes.....</p> <p>6. In a stack, if a user tries to remove an element from empty stack it is called.....</p> <p>9. In queue each element has a priority associated with it.</p> <p>11. is a special case of recursion if there is nothing to do after the function returns except return its value.</p>

References:-

1. Aron M. Tenenbaum, Yedidyah Langsam and Moshe J. Augenstein “Data Structure Using C and C++”, 2nd edition, PHI, 2007.
2. Horowitz, Sahani, and Anderson-Freed, “Fundamentals of Data Structures in C”, 2nd edition, Universities Press, 2007.
3. Lipschutz, “Data Structures”, 2nd edition, Schaum’s Outline Series, TMH, 2006.
4. Dilip Kr. Sultania, “Data Structures Using C”, 1st edition, Techmax, 2007

Signature of the Faculty: _____

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