LAB PROGRAMS:

IMPLEMENTATION OF
1.Stack using Queues
2.Queue using Stacks
3. Dual stack in an array
4. Multiple stacks / Queues in an array
5. Implementation of KMP algorithm
6. Read an Array of strings and find a pattern using KMP algorithm
7. Read the contents of a website and find the pattern using KMP algorithm
8. try the same with Rabinkarp algorithm

- . How to do image pattern search? for your knowledge

9. Hash table implementation for storing integers with collision resolution(insert, delete, search display)

a. (chaining method)

b. Linear probing

c. Quadratic Probing

10. Hash table implementation for key-value pair.

11. Conversion of Numbers to Roman Numerals using HashMap and HASHSET

12. Write a program to represent a graph using adjacency matrix, adjacency list.

a) find the adjacent nodes of X

b) find the degree of a node

c) find a path between 2 nodes

d) find whether there is a cycle in the given graph(directed graph)

e) Convert an image to binary data in java/ python

f) Find the difference in images

d) change the color of the images using array(white to black, black to white etc)

e) Dijkstra's algorithm for finding the shortest paths.

13. **PageRank** (**PR**) is an algorithm used by Google Search to rank web pages in their search engine results. PageRank was named after Larry Page, one of the founders of Google

- PageRank is a way of measuring the importance of website pages.

- According to Google:

PageRank works by counting the number and quality of links to a page to determine a rough estimate of how important the website is. The underlying assumption is that more important websites are likely to receive more links from other websites.
Currently, PageRank is not the only algorithm used by Google to order search results, but it is the first algorithm that was used by the company, and it is the best known

Use the concept shown in the following video and find the page rank of n websites.

- https://www.youtube.com/watch?v=P8Kt6Abq_rM

14. Write a program in Java/python (without using libraries) to implement sparse matrices using Linear array list of triplets method.

a) convert the given nxn sparse matrix to compressed form of sparse matrix of size x 3 matrix.

b) Display the sparse matrix

c) Transpose of the matrix

d) Addition of two matrices

e) conversion of compressed form to expanded form of size n x n

15. UnionFind algorithm – Quickunion and Quickfind
16. Conslist