**Research Paper Summary**

1. Red Black Tree Research Paper
   * Red-black trees are a well-known way of implementing balanced 2-3-4 trees as binary trees.
   * Red-black tree is binary search tree but having red and black colours to show it’s nodes.
   * Root node will be always black.
   * 2-3-4 tree is a self balancing tree which may have 2 or 3 or 4 child nodes.
   * Created by Okasaki in 1998.
   * There’s an insertion algorithm of Okasaki and deletion as well which I couldn’t understand.
2. Stack Research Paper
   * Stack is a linear data structure which can be used for data retrieval and storage.
   * We can use Trie data structure for data retrieval.
   * Trie is a data structure which is used to store data string.
3. Queue Research paper
   * A queue is a collection of linearly ordered elements in which elements are added at one end and retrieved at the other end.
   * It follows FIFO approach.
   * Queue is used in process job scheduling.
   * Queue can be used in priority based scheduling algorithm.
   * There are two types of priority based scheduling algorithm 1) Ascending and 2)Descending.
   * Much more things are there such as circular queue, doubly ended queue.
   * Its implementation is also present in the research paper.
4. Linked list Research Paper
   * This research paper is based on comparative studies of linked list sorting.
   * We can perform all the sorting algorithm using linked list such as bubble sort, quick sort, merge sort, insertion sort, selection sort and shell sort.
   * Sediment sort is also possible which is the representation of sorting algorithm in graphical format and it uses boundary values.
   * It creates a new tail and swaps the elements.
   * It also uses Knuth Description.
   * All the comparisons between sorting algorithm is present in the research paper based on its best case, average case and worst case.
5. Graph Research Paper
   * Graph is a data structure that consists of finite set of vertices, together with a set of unordered pairs of these vertices for an undirected graph or a set of ordered pairs for a directed graph.
   * There are three different graphs are present and those are directed, undirected and weighted graph.
   * Graph can be represented as adjacency matrix and adjacency list.
   * Traversal of graph can be represented as breadth first search and depth first search.
   * Their advantages and disadvantages in also included in the research paper.