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| **SUBJECT** | Design Analysis of Algorithm |
| **EXPERIMENT NO :** | 2 |
| **AIM:** | Experiment based on divide and conquer approach. |
| **THEORY** | **QuickSort:-**is a[Divide and Conquer algorithm](https://www.geeksforgeeks.org/divide-and-conquer-algorithm-introduction/). It picks an element as a pivot and partitions the given array around the picked pivot. There are many different versions of quickSort that pick pivot in different ways.  Always pick the first element as a pivot.  Always pick the last element as a pivot (implemented below)  Pick a random element as a pivot.  Pick median as the pivot.  quicksort  **Merge sort:-**Merge sort is similar to the quick sort algorithm as it uses the divide and conquer approach to sort the elements. It divides the given list into two equal halves, calls itself for the two halves and then merges the two sorted halves. We have to define the merge() function to perform the merging.The sub-lists are divided again and again into halves until the list cannot be divided further. Then we combine the pair of one element lists into twoelement lists, sorting them in the process. The sorted two-element pairs is merged into the four-element lists, and so on until we get the sorted list.  **Code:-**  **H:\Screenshot (157).png** |

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|  | H:\Screenshot (158).png  H:\Screenshot (159).png  H:\Screenshot (160).png  H:\Screenshot (161).png  H:\Screenshot (162).png |

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| **RESULT ( SNAPSHOT):**  **Observation:** In this pratical we have learnt about how to find the run time of divide and conquer algorithm of merge sort and quick sort.  Merge sort divides the original array into n subarray of size of one each then repeatedly merges two in same order.quick sort an element as pivot and partitions the array around it moves all elements greater then o its right then recursively sort the subarrays. |