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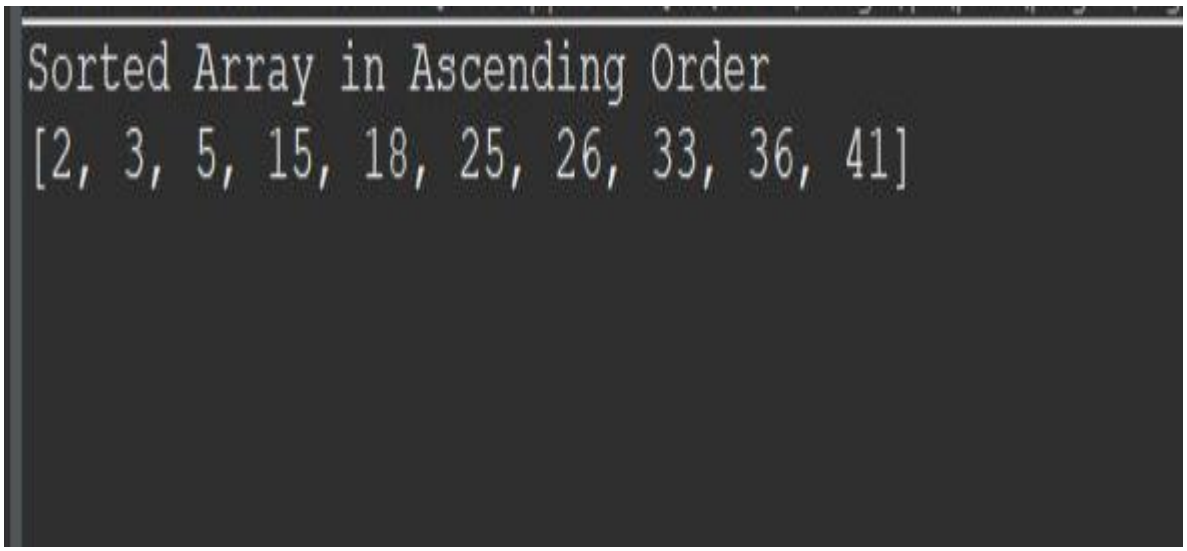
DSA LAB TEST

1. Write a Java program to

a. Perform quick sort

```
package com.sorting;

public class QuickSort1 {

        static int partition(int arr[], int low, int high) {


          int pivot = arr[high];


          int i = (low - 1);

          for (int j = low; j < high; j++) {
            if (arr[j] <= pivot) {

              i++;

              int temp = arr[i];
              arr[i] = arr[j];
              arr[j] = temp;
            }

          }


          int temp = arr[i + 1];
          arr[i + 1] = arr[high];
          arr[high] = temp;


          return (i + 1);
        }

        static void quickSort(int arr[], int low, int high) {
          if (low < high) {


            int pi = partition(arr, low, high);


            quickSort(arr, low, pi - 1);


            quickSort(arr, pi + 1, high);
          }
        }
      }
```

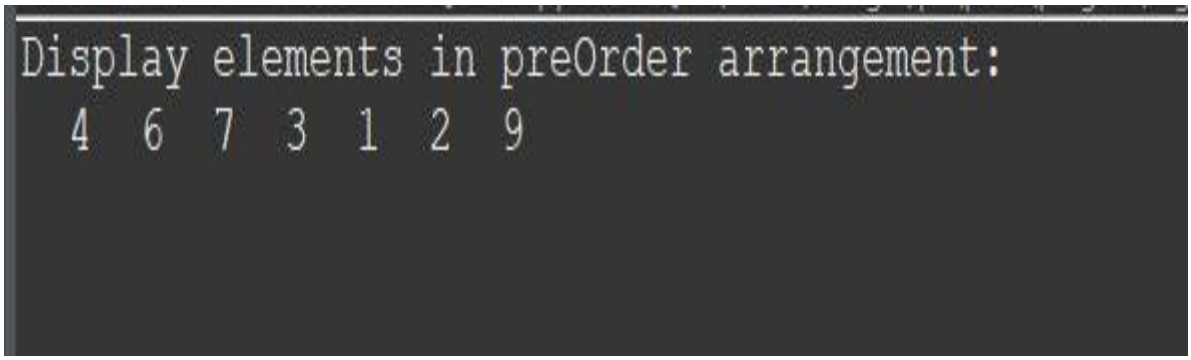
```
package com.sorting;

import java.util.Arrays;

public class QuickSort1Main {
        public static void main(String args[]) {

                int[] arr = { 33, 18, 36, 41, 26, 15, 3, 25, 5, 2 };
                int n = arr.length;
        QuickSort1.quickSort(arr, 0, n - 1);
        System.out.println("Sorted Array in Ascending Order ");
                System.out.println(Arrays.toString(arr));
               }

}
```



b. Perform preorder tree traversal

```
package com.treetravesal;



public class PreTraversal {

	Node root;
	public static class Node {
		int key;
		Node left;
		Node right;

		public Node(int key) {
			this.key = key;
			}
}
	 public void preOrder(Node node1) {
		 if(node1!=null) {
			  System.out.print("  "+node1.key);
			 preOrder(node1.left) ;
			 preOrder(node1.right);

		 }
	 }
	 public static Node binaryTree() {
		 Node rootNode=new Node(4);
		 Node node3= new Node(7);
		 Node node4= new Node(6);
		 Node node5= new Node(3);
		 Node node7= new Node(2);
		 Node node8= new Node(1);
		 Node node9= new Node(9);

		 rootNode.left=node4;
		 rootNode.right=node8;
		 node4.left=node3;
		 node4.right=node5;
		 node8.left=node7;
		 node8.right=node9;
		 return rootNode;
		 }


}
```

```
package com.treetraversal.main;


import com.treetravesal.PreTraversal;
import com.treetravesal.PreTraversal.Node;

public class PreTraversalMain {
	public static void main(String[] args) {
				PreTraversal b = new PreTraversal();
				Node rootNode=  PreTraversal.binaryTree();

			System.out.println("Display elements in preOrder arrangement:");
			b.preOrder(rootNode);

}

}
```



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