❖ **Quick And Merge Sort Application:**

```
class Student {
    String name;
    int marks;

    Student(String name, int marks) {
        this.name = name;
        this.marks = marks;
    }
}

public class MergeSortApplication {

    public static void merge(Student[] arr, int left, int mid, int right) {
        int n1 = mid - left + 1;
        int n2 = right - mid;

        Student[] L = new Student[n1];
        Student[] R = new Student[n2];

        for (int i = 0; i < n1; i++) L[i] = arr[left + i];
        for (int j = 0; j < n2; j++) R[j] = arr[mid + 1 + j];

        int i = 0, j = 0, k = left;
        while (i < n1 && j < n2) {
            if (L[i].marks <= R[j].marks)
                arr[k++] = L[i++];
            else
                arr[k++] = R[j++];
        }

        while (i < n1) arr[k++] = L[i++];
        while (j < n2) arr[k++] = R[j++];
    }

    public static void mergeSort(Student[] arr, int left, int right) {
        if (left < right) {
            int mid = (left + right) / 2;
```

```
            mergeSort(arr, left, mid);
            mergeSort(arr, mid + 1, right);
            merge(arr, left, mid, right);
        }
    }

    public static void main(String[] args) {
        Student[] students = {
                new Student("Asha", 78),
                new Student("Ravi", 92),
                new Student("Kiran", 85),
                new Student("Meena", 67)
        };

        mergeSort(students, 0, students.length - 1);

        System.out.println("Students sorted by marks:");
        for (Student s : students)
            System.out.println(s.name + " - " + s.marks);
    }
}
```

Output

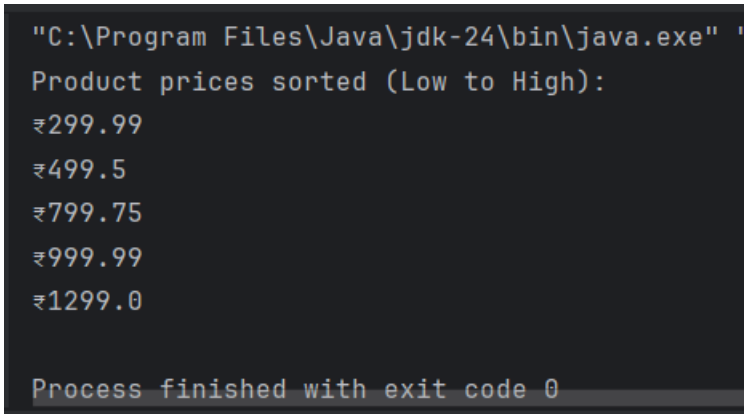
```
"C:\Program Files\Java\jdk-24\bin\java.exe"
Students sorted by marks:
Meena - 67
Asha - 78
Kiran - 85
Ravi - 92

Process finished with exit code 0
```

Quick sort

```
public class QuickSortt {

    public static int partition(double[] arr, int low, int high) {
        double pivot = arr[high];
        int i = (low - 1);
        for (int j = low; j < high; j++) {
```

```
            if (arr[j] < pivot) {
                i++;
                double temp = arr[i];
                arr[i] = arr[j];
                arr[j] = temp;
            }
        }
        double temp = arr[i + 1];
        arr[i + 1] = arr[high];
        arr[high] = temp;
        return i + 1;
    }

    public static void quickSort(double[] arr, int low, int high) {
        if (low < high) {
            int pi = partition(arr, low, high);
            quickSort(arr, low, pi - 1);
            quickSort(arr, pi + 1, high);
        }
    }

    public static void main(String[] args) {
        double[] prices = {999.99, 499.50, 1299.00, 799.75, 299.99};

        quickSort(prices, 0, prices.length - 1);

        System.out.println("Product prices sorted (Low to High):");
        for (double price : prices)
            System.out.println("₹" + price);
    }
}
```

output


"C:\Program Files\Java\jdk-24\bin\java.exe" '
Product prices sorted (Low to High):
₹299.99
₹499.5
₹799.75
₹999.99
₹1299.0
Process finished with exit code 0