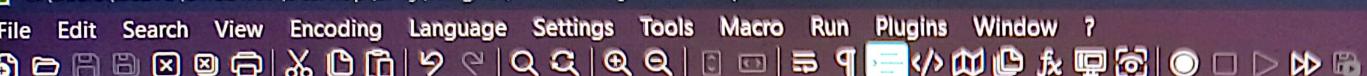


C:\Users\weave\OneDrive\Desktop\anuj\assign5\Bubblesort.java - Notepad++



Bubblesort.java

```
1 class BubbleSort {  
2     static void bubbleSort(int[] arr) {  
3         int n = arr.length;  
4         for (int i = 0; i < n - 1; i++) {  
5             for (int j = 0; j < n - i - 1; j++) {  
6                 if (arr[j] > arr[j + 1]) {  
7                     // Swap arr[j] and arr[j+1]  
8                     int temp = arr[j];  
9                     arr[j] = arr[j + 1];  
10                    arr[j + 1] = temp;  
11                }  
12            }  
13        }  
14    }  
15  
16    public static void main(String[] args) {  
17        int[] arr = {64, 34, 25, 12, 22, 11, 90};  
18        bubbleSort(arr);  
19        System.out.println("Sorted array:");  
20        for (int i : arr) {  
21            System.out.print(i + " ");  
22        }  
23    }  
24}  
25
```

C:\Windows\System32\cmd.e

```
C:\Users\weave\OneDrive\Desktop\anuj\assign5>java BubbleSort  
Error: Could not find or load main class BubbleSort  
Caused by: java.lang.ClassNotFoundException: BubbleSort
```

```
C:\Users\weave\OneDrive\Desktop\anuj\assign5>javac BubbleSort.java
```

```
C:\Users\weave\OneDrive\Desktop\anuj\assign5>java BubbleSort  
Sorted array:  
11 12 22 25 34 64 90  
C:\Users\weave\OneDrive\Desktop\anuj\assign5>
```

```
Ran Plugins Window ?
import java
SelectionSort.java
InsertionSort.java

class SelectionSort {
    public static void selectionSort(int[] arr) {
        int n = arr.length;
        for (int i = 0; i < n - 1; i++) {
            int minIndex = i;
            for (int j = i + 1; j < n; j++) {
                if (arr[j] < arr[minIndex]) {
                    minIndex = j;
                }
            }
            // Swap arr[i] and arr[minIndex]
            int temp = arr[minIndex];
            arr[minIndex] = arr[i];
            arr[i] = temp;
        }
    }

    public static void main(String[] args) {
        int[] arr = {64, 34, 25, 12, 22, 11, 90};
        selectionSort(arr);
        System.out.println("Sorted array:");
        for (int i : arr) {
            System.out.print(i + " ");
        }
    }
}
```

```
C:\Windows\System32\cmd.exe
C:\Users\weave\OneDrive\Desktop\anuj\ass
java

C:\Users\weave\OneDrive\Desktop\anuj\ass
Sorted array:
11 12 22 25 34 64 90
C:\Users\weave\OneDrive\Desktop\anuj\ass
rt.java

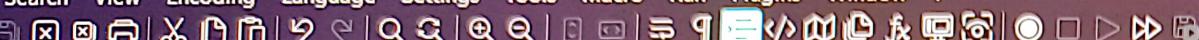
C:\Users\weave\OneDrive\Desktop\anuj\ass
t
Sorted array:
11 12 22 25 34 64 90
C:\Users\weave\OneDrive\Desktop\anuj\ass
```

Sort.java | SelectionSort.java | InsertionSort.java

```
class SelectionSort {
    public static void selectionSort(int[] arr) {
        int n = arr.length;
        for (int i = 0; i < n - 1; i++) {
            int minIndex = i;
            for (int j = i + 1; j < n; j++) {
                if (arr[j] < arr[minIndex]) {
                    minIndex = j;
                }
            }
            // Swap arr[i] and arr[minIndex]
            int temp = arr[minIndex];
            arr[minIndex] = arr[i];
            arr[i] = temp;
        }
    }

    public static void main(String[] args) {
        int[] arr = {64, 34, 25, 12, 22, 11, 90};
        selectionSort(arr);
        System.out.println("Sorted array:");
        for (int i : arr) {
            System.out.print(i + " ");
        }
    }
}
```

```
C:\Windows\System32\cmd.exe
C:\Users\weave\OneDrive\Desktop\anuj\assign5>javac Bubblesort.java
C:\Users\weave\OneDrive\Desktop\anuj\assign5>java BubbleSort
Sorted array:
11 12 22 25 34 64 90
C:\Users\weave\OneDrive\Desktop\anuj\assign5>javac SelectionSort.java
C:\Users\weave\OneDrive\Desktop\anuj\assign5>java SelectionSort
Sorted array:
11 12 22 25 34 64 90
C:\Users\weave\OneDrive\Desktop\anuj\assign5>
```



SelectionSort.java InsertionSort.java

```
class InsertionSort {  
    public static void insertionSort(int[] arr) {  
        int n = arr.length;  
        for (int i = 1; i < n; i++) {  
            int key = arr[i];  
            int j = i - 1;  
            while (j >= 0 && arr[j] > key) {  
                arr[j + 1] = arr[j];  
                j = j - 1;  
            }  
            arr[j + 1] = key;  
        }  
    }  
}
```

```
public static void main(String[] args) {  
    int[] arr = {64, 34, 25, 12, 22, 11, 90};  
    insertionSort(arr);  
    System.out.println("Sorted array:");  
    for (int i : arr) {  
        System.out.print(i + " ");  
    }  
}
```

```
C:\Windows\System32\cmd.exe x + v  
rt.java  
  
C:\Users\weave\OneDrive\Desktop\anuj\assign5>java SelectionSort  
Sorted array:  
11 12 22 25 34 64 90  
C:\Users\weave\OneDrive\Desktop\anuj\assign5>javac InsertionSort.java  
  
C:\Users\weave\OneDrive\Desktop\anuj\assign5>java InsertionSort  
Sorted array:  
11 12 22 25 34 64 90  
C:\Users\weave\OneDrive\Desktop\anuj\assign5>
```

C:\Users\weave\OneDrive\Desktop\anuj\assign5\MergeSort.java - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

Bubblesort.java SelectionSort.java InsertionSort.java MergeSort.java

```
22 }  
23  
24 private void merge(int[] arr, int[] temp, int left, int mid, int right)  
25 {  
26     for (int i = left; i <= right; i++) {  
27         temp[i] = arr[i];  
28     }  
29  
30     int i = left;  
31     int j = mid + 1;  
32     int k = left;  
33  
34     while (i <= mid && j <= right) {  
35         if (temp[i] <= temp[j]) {  
36             arr[k] = temp[i];  
37             i++;  
38         } else {  
39             arr[k] = temp[j];  
40             j++;  
41         }  
42         k++;  
43     }  
44  
45     while (i <= mid) {  
46         arr[k] = temp[i];  
47         k++;  
48         i++;  
49     }  
50 }  
51  
52 }  
53  
54 public static void main(String[] args) {  
55     int[] arr = {12, 11, 13, 5, 6, 7};  
56     MergeSort sorter = new MergeSort();  
57     sorter.mergeSort(arr);  
58     System.out.println("Sorted array:");  
59     for (int num : arr) {  
60         System.out.print(num + " ");  
61     }
```

C:\Windows\System32\cmd.exe + v
C:\Users\weave\OneDrive\Desktop\anuj\assign5>javac InsertionSort.java
C:\Users\weave\OneDrive\Desktop\anuj\assign5>java InsertionSort
Sorted array:
11 12 22 25 34 64 90
C:\Users\weave\OneDrive\Desktop\anuj\assign5>javac MergeSort.java
C:\Users\weave\OneDrive\Desktop\anuj\assign5>java MergeSort
Sorted array:
5 6 7 11 12 13
C:\Users\weave\OneDrive\Desktop\anuj\assign5>

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

Bubblesort.java SelectionSort.java InsertionSort.java MergeSort.java QuickSort.java

```

5
6     int n = arr.length;
7     quickSort(arr, 0, n - 1);
8 }
9
10 private void quickSort(int[] arr, int low, int high) {
11     if (low < high) {
12         int pi = partition(arr, low, high);
13
14         quickSort(arr, low, pi - 1);
15         quickSort(arr, pi + 1, high);
16     }
17
18     private int partition(int[] arr, int low, int high) {
19         int pivot = arr[high];
20         int i = low - 1;
21
22         for (int j = low; j < high; j++) {
23             if (arr[j] <= pivot) {
24                 i++;
25                 // Swap arr[i] and arr[j]
26                 int temp = arr[i];
27                 arr[i] = arr[j];
28                 arr[j] = temp;
29             }
30
31             int temp = arr[i + 1];
32             arr[i + 1] = arr[high];
33             arr[high] = temp;
34
35             return i + 1;
36         }
37
38         public static void main(String[] args) {
39             int[] arr = {10, 7, 8, 9, 1, 5};
40             QuickSort sorter = new QuickSort();
41             sorter.quickSort(arr);
42             System.out.println("Sorted array:");
43             for (int num : arr) {
44                 System.out.print(num + " ");
45             }
46         }
47     }
48 }

```

C:\Windows\System32\cmd.exe

11 12 22 25 34 64 90

C:\Users\weave\OneDrive\Desktop\anuj\assign5>javac MergeSort.java

C:\Users\weave\OneDrive\Desktop\anuj\assign5>java MergeSort

Sorted array:

5 6 7 11 12 13

C:\Users\weave\OneDrive\Desktop\anuj\assign5>javac QuickSort.java

C:\Users\weave\OneDrive\Desktop\anuj\assign5>java QuickSort

Sorted array:

1 5 7 8 9 10

C:\Users\weave\OneDrive\Desktop\anuj\assign5>

C:\Users\weave\OneDrive\Desktop\anuj\assign5\BubbleSortStrings.java - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Bubblesort.java SelectionSort.java InsertionSort.java MergeSort.java QuickSort.java BubbleSortStrings.java

```
1 class BubbleSortStrings {  
2     public static void bubbleSort(String[] arr) {  
3         int n = arr.length;  
4         for (int i = 0; i < n - 1; i++) {  
5             for (int j = 0; j < n - i - 1; j++) {  
6                 if (arr[j].compareTo(arr[j + 1]) > 0) {  
7                     String temp = arr[j];  
8                     arr[j] = arr[j + 1];  
9                     arr[j + 1] = temp;  
10                }  
11            }  
12        }  
13    }  
14  
15    public static void main(String[] args) {  
16        String[] arr = {"banana", "apple", "orange", "grape", "kiwi"};  
17        System.out.println("Original array:");  
18        for (String str : arr) {  
19            System.out.print(str + " ");  
20        }  
21        System.out.println();  
22  
23        bubbleSort(arr);  
24  
25        System.out.println("Sorted array:");  
26        for (String str : arr) {  
27            System.out.print(str + " ");  
28        }  
29    }  
30 }  
31 }
```

C:\Windows\System32\cmd.exe
C:\Users\weave\OneDrive\Desktop\anuj\assign5>java QuickSort
Sorted array:
1 5 7 8 9 10
C:\Users\weave\OneDrive\Desktop\anuj\assign5>javac BubbleSortS
trings.java

C:\Users\weave\OneDrive\Desktop\anuj\assign5>java BubbleSortSt
rings
Original array:
banana apple orange grape kiwi
Sorted array:
apple banana grape kiwi orange
C:\Users\weave\OneDrive\Desktop\anuj\assign5>

```

        nextNode.next = curr;
        temp = curr;
        curr = nextNode;
        nextNode = temp;
        swapped = true;
    }
    prev = curr;
    curr = nextNode;
    nextNode = nextNode.next;
}
} while (swapped);

return head;
}

public void printList(ListNode head) {
    ListNode curr = head;
    while (curr != null) {
        System.out.print(curr.val + " ");
        curr = curr.next;
    }
    System.out.println();
}

public static void main(String[] args) {
    ListNode head = new ListNode(4);
    head.next = new ListNode(2);
    head.next.next = new ListNode(1);
    head.next.next.next = new ListNode(3);

    BubbleSortLinkedList sorter = new BubbleSortLinkedList();
    System.out.println("Original Linked List:");
    sorter.printList(head);

    ListNode sortedHead = sorter.bubbleSort(head);

    System.out.println("Sorted Linked List:");
    sorter.printList(sortedHead);
}

```

C:\Windows\System32\cmd.exe + ^

public class BubbleSortLinkedList {
1 error

C:\Users\weave\OneDrive\Desktop\anuj\assign5>javac Ques9.java

C:\Users\weave\OneDrive\Desktop\anuj\assign5>java BubbleSortLi
nkedList

Original Linked List:

4 2 1 3

Sorted Linked List:

1 2 3 4

C:\Users\weave\OneDrive\Desktop\anuj\assign5>

*C:\Users\weave\OneDrive\Desktop\anuj\assign5\Ques10.java - Notepad++

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Bubblesort.java SelectionSort.java InsertionSort.java MergeSort.java QuickSort.java BubbleSortStrings.java Ques9.java Ques10.java

```
30
31     }
32     last = curr;
33 } while (swapped);
34
35 return head;
36
37
38 private void swap(DoublyListNode node1, DoublyListNode node2) {
39     int temp = node1.val;
40     node1.val = node2.val;
41     node2.val = temp;
42 }
43
44
45 public void printList(DoublyListNode head) {
46     DoublyListNode curr = head;
47     while (curr != null) {
48         System.out.print(curr.val + " ");
49         curr = curr.next;
50     }
51     System.out.println();
52 }
53
54 public static void main(String[] args) {
55     DoublyListNode head = new DoublyListNode(4);
56     head.next = new DoublyListNode(2);
57     head.next.prev = head;
58     head.next.next = new DoublyListNode(1);
59     head.next.next.prev = head.next;
60     head.next.next.next = new DoublyListNode(3);
61     head.next.next.next.prev = head.next.next;
62
63     BubbleSortDoublyLinkedList sorter = new BubbleSortDoublyLinkedList();
64     System.out.println("Original Doubly Linked List:");
65     sorter.printList(head);
66
67     DoublyListNode sortedHead = sorter.bubbleSort(head);
68
69     System.out.println("Sorted Doubly Linked List:");
70     sorter.printList(sortedHead);
```

C:\Windows\System32\cmd.exe

1 error

C:\Users\weave\OneDrive\Desktop\anuj\assign5>javac Ques10.java

C:\Users\weave\OneDrive\Desktop\anuj\assign5>java BubbleSortDoublyLinkedList

Original Doubly Linked List:

4 2 1 3

Sorted Doubly Linked List:

1 2 3 4

C:\Users\weave\OneDrive\Desktop\anuj\assign5>