

WIA1002 Data Structure

Tutorial 8: Sorting

1. Write a program that generates 10 random characters. Then sort the characters in descending order. (Modify the SortTest.java)
 - a. Selection Sort
 - b. Bubble Sort
 - c. Insertion Sort
 - d. Merge Sort
 - e. Quick Sort

Example output:

```
The random characters are : L A I Q T N L Z S E
Selection Sort - Descending Order
Z T S Q N L L I E A
The random characters are : O N Q K P U Z Q L A
Bubble Sort - Descending Order
Z U Q Q P O N L K A
The random characters are : H U W D Y Y Y A R Y
Insertion Sort - Descending Order
Y Y Y Y W U R H D A
The random characters are : T L P L O Z S G Z Z
Merge Sort - Descending Order
Z Z Z T S P O L L G
The random characters are : Z W Q T A B D C V S
Quick Sort - Descending Order
Z W V T S Q D C B A
```

2. Write a program that generates 10 random String (each with 8 small characters). Then sort the characters in ascending order. (Modify the SortTest.java)
 - a. Merge Sort
 - b. Quick Sort

Example output:

```
The random String are : sdekagap htnptswe raaretqf knrbkmlh xtqffvek mlfpitmz hsferkmi licpjcd u oawxuwyh yqzsrsvy
Merge Sort - Ascending Order
hsferkmi htnptswe knrbkmlh licpjcd u mlfpitmz oawxuwyh raaretqf sdekagap xtqffvek yqzsrsvy
The random String are : tqjxxfjx ivevzutf vjiwnjyp jvadiedo yzqvjrng fjhihowg fhycrepk preqpnrh bjtjtrivb rrvuosbv
Quick Sort - Ascending Order
bjtjtrivb fhycrepk fjhihowg ivevzutf jvadiedo preqpnrh rrvuosbv tqjxxfjx vjiwnjyp yzqvjrng
```

3. Write a program that generates 10 random integers (0-100) and insert into the Linked-List. Then, sort the integers using Selection Sort in ascending order (Modify the LinkedList.java).

Example output:

```
The random integers are : 73 --> 99 --> 42 --> 79 --> 13 --> 43 --> 61 --> 29 --> 48 --> 74 -->
Selection Sort - Ascending Order
13 --> 29 --> 42 --> 43 --> 48 --> 61 --> 73 --> 74 --> 79 --> 99 -->
```

4. Write a program that generates 10 random integers (0-100) and insert into the LinkedList. Then, sort the integers using Bubble Sort in descending order (Modify the LinkedList.java).

Example output:

```
The random integers are : 51 --> 36 --> 29 --> 62 --> 89 --> 51 --> 2 --> 60 --> 45 --> 44 -->
Bubble Sort - Descending Order
89 --> 62 --> 60 --> 51 --> 51 --> 45 --> 44 --> 36 --> 29 --> 2 -->
```