Sprint 12: Implement Sort and Search Algorithms

Problem Statement: 12.1 – Bubble Sort

Caroline is from Chicago. She is looking forward to her 10 days trip to Switzerland. She has decided to make Zurich her base city and visit 8 cities every day from Zurich by doing day trips. She has a list of 10 cities and towns in Switzerland that she wants to cover but has to remove 2 out of the list as on the 10th day she has a flight back to Chicago. She has decided to sort the list based on the distance in kms of each city from Zurich. Use bubble sort to sort the distances. The list goes:

- Bern: 138 kms
- Lucerne: 52 kms
- Interlaken: 118 Kms
- Grindelwald: 136 kms
- Engelberg: 85 kms
- Geneva: 276 kms
- Murren: 103 kms
- Basel: 87 kms
- Zermatt: 214 kms
- Jungfraujoch: 101 kms

Sample Input:

```
String[] citiesFromZurich
={"Bern","Lucerne","InterLaken","Grindelwald","Engelberg","Geneva","Murren","
Basel","Zermatt","Jungfraujoch"};
int[] distanceFromZurich = {138,52,118,136,85,276,103,87,214,101};
```

Expected Output:

```
Lucerne          52
Engelberg        85
Basel            87
Jungfraujoch 101
Murren           103
InterLaken       118
Grindelwald  136
Bern             138
Zermatt          214
Geneva           276
```

Practice Challenge – 12.1 – Boilerplate URL

https://myrepos.stackroute.niit.com/core_java_boilerplates/sprint12_pc12.1.git

Practice Challenge - 12.2 – Quick Sort

Caroline is from Chicago. She is looking forward to her 10 days trip to Switzerland. She has decided to make Zurich her base city and visit 8 cities every day from Zurich by doing day trips. She has a list of 10 cities and towns in Switzerland that she wants to cover but has to remove 2 out of the list as on the 10th day she has a flight back to Chicago. She has decided to sort the list based on the distance in kms of each city from Zurich. Use quick sort to sort the distances.

The list goes:

- Bern: 138 kms
- Lucerne: 52 kms
- Interlaken: 118 Kms
- Grindelwald: 136 kms
- Engelberg: 85 kms
- Geneva: 276 kms
- Murren: 103 kms
- Basel: 87 kms
- Zermatt: 214 kms
- Jungfraujoch: 101 kms

Note : Find the number of comparisons done on the array and the numbers of swaps that happen within the array while using Quick Sort.

Sample Input:

```
String[] citiesFromZurich
={"Bern","Lucerne","InterLaken","Grindelwald","Engelberg","Geneva","Murren","
Basel","Zermatt","Jungfraujoch"};
int[] distanceFromZurich = {138,52,118,136,85,276,103,87,214,101};
```

Expected Output:

```
Lucerne          52
Engelberg        85
Basel            87
Jungfraujoch 101
Murren           103
InterLaken       118
Grindelwald  136
Bern             138
Zermatt          214
Geneva           276
```

Practice Challenge – 12.2 – Boilerplate URL

https://myrepos.stackroute.niit.com/core_java_boilerplates/sprint12_pc12.2.git

Practice Challenge - 12.3 – Linear Search

Caroline is from Chicago. She is looking forward to her 10 days trip to Switzerland. She has decided to make Zurich her base city and visit 8 cities every day from Zurich by doing day trips. She has a list of 10 cities and towns in Switzerland that she wants to cover but has to remove 2 out of the list as on the 10th day she has a flight back to Chicago. She has decided to sort the list based on the distance in kms of each city from Zurich.

The list goes:

- Bern: 138 kms
- Lucerne: 52 kms
- Interlaken: 118 Kms
- Grindelwald: 136 kms
- Engelberg: 85 kms
- Geneva: 276 kms
- Murren: 103 kms
- Basel: 87 kms
- Zermatt: 214 kms
- Jungfraujoch: 101 kms

Use Linear Search to perform the below task. **Task**

1. Find the city which is 52 kms from Zurich
2. Find the city which is more than 270 kms from Zurich.

Note : Display the number of comparisons of the array using Linear Search algorithm.

Sample Input:

```
String[] citiesFromZurich
={"Bern","Lucerne","InterLaken","Grindelwald","Engelberg","Geneva","Murren","
Basel","Zermatt","Jungfraujoch"};
int[] distanceFromZurich = {138,52,118,136,85,276,103,87,214,101};
```

Expected Output:

```
City at 52 kms from Zurich : Lucerne
Number of comparisons:: 10
Cities more than 270 kms from Zurich : {Geneva}
```

Practice Challenge – 12.3 – Boilerplate URL

https://myrepos.stackroute.niit.com/core_java_boilerplates/sprint12_pc12.3.git

Practice Challenge - 12.4 – Binary Search

Caroline is from Chicago. She is looking forward to her 10 days trip to Switzerland. She has decided to make Zurich her base city and visit 8 cities every day from Zurich by doing day trips. She has a list of 10 cities and towns in Switzerland that she wants to cover but has to remove 2 out of the list as on the 10th day she has a flight back to Chicago. She has decided to sort the list based on the distance in kms of each city from Zurich.

The list goes:

- Bern: 138 kms
- Lucerne: 52 kms
- Interlaken: 118 Kms
- Grindelwald: 136 kms
- Engelberg: 85 kms
- Geneva: 276 kms
- Murren: 103 kms
- Basel: 87 kms
- Zermatt: 214 kms
- Jungfraujoch: 101 kms

Use Binary Search to perform the below task.

Task

- Find the city which is 52 kms from Zurich

Note : Display the number of comparisons of the array using Linear Search algorithm.

Sample Input:

```
String[] citiesFromZurich
={"Bern","Lucerne","InterLaken","Grindelwald","Engelberg","Geneva","Murren","
Basel","Zermatt","Jungfraujoch"};
int[] distanceFromZurich = {138,52,118,136,85,276,103,87,214,101};
```

Expected Output:

```
City at 52 kms from Zurich : Lucerne
Number of comparisons:: 8
```

Practice Challenge – 12.4 – Boilerplate URL

https://myrepos.stackroute.niit.com/core_java_boilerplates/sprint12_pc12.4.git