

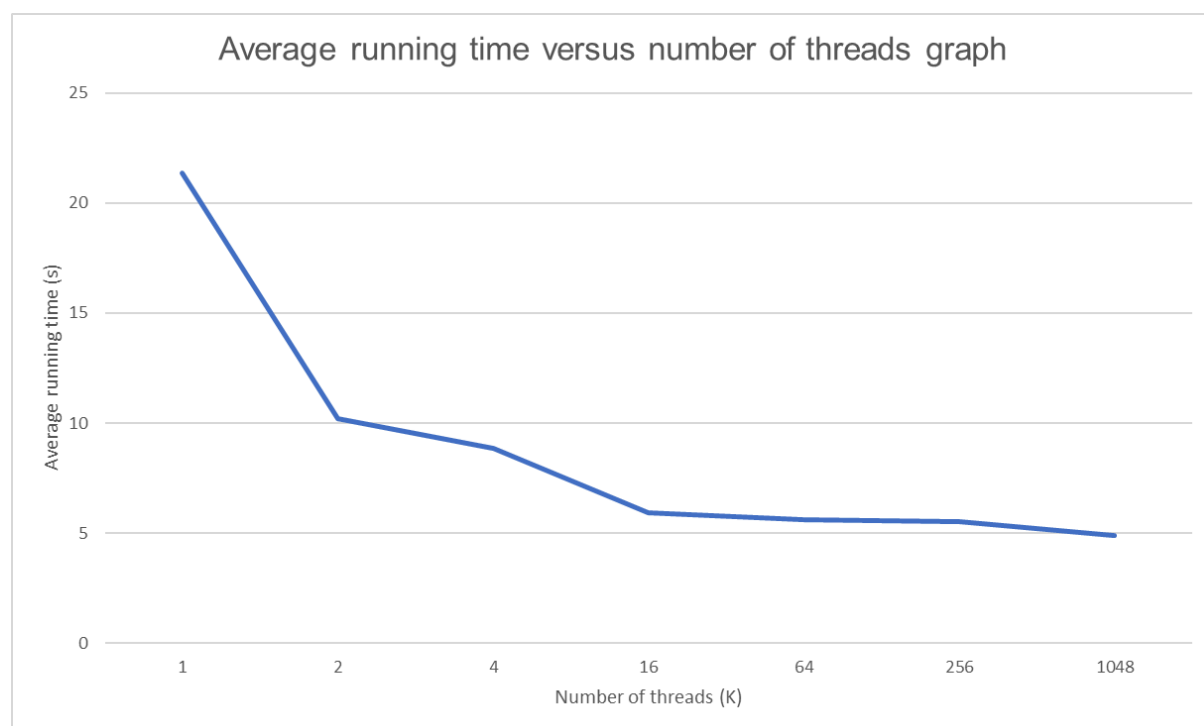
# CSI2120 Project Part 3 Report

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## Running time for all query images.

image	K	1	2	4	16	64	256	1048
q00		23.365	9.7566	8.1765	5.5967	4.829	5.0708	4.6451
q01		23.45	15.973	10.072	5.3147	6.1208	5.6427	4.7047
q02		22.13	10.145	8.62	5.6405	6.5361	5.4971	4.7518
q03		23.758	9.5287	8.3594	5.1544	5.8145	5.4176	4.6751
q04		20.212	9.7268	8.0796	6.1002	5.429	5.5627	4.7931
q05		20.542	9.2761	9.7335	6.1925	5.3209	5.457	4.7626
q06		20.688	9.9232	8.1557	6.2288	5.2466	5.6884	4.8481
q07		20.688	9.4434	8.084	6.1494	5.9125	5.703	4.8469
q08		20.406	9.94	8.4252	6.1584	5.4895	5.6004	4.9483
q09		20.169	9.6053	8.2923	6.0509	5.8586	5.5719	4.5445
q10		20.934	10.333	8.3058	6.3201	5.4864	5.6431	4.809
q11		20.189	10.423	10.416	6.113	5.4419	5.1691	4.5481
q12		24.085	9.6534	10.017	6.2346	5.5633	5.6491	4.8853
q13		19.511	9.9596	8.5985	6.2543	5.505	5.5899	4.9296
q14		19.155	9.8527	9.6381	5.9255	5.4635	5.5406	5.6434
q15		22.698	9.9355	8.4346	5.7024	5.8042	5.4204	5.7718
Average		21.374	10.217	8.838	5.946	5.6139	5.514	4.8817



System: Windows 11  
CPU: i7-11800H 8 cores

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## Results:

**K = 1**

### q00.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q00.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1144.jpg | Similarity: 1.000000000000
Top 2 = 3806.jpg | Similarity: 0.704004629630
Top 3 = 3756.jpg | Similarity: 0.660607638889
Top 4 = 3714.jpg | Similarity: 0.659687500000
Top 5 = 3668.jpg | Similarity: 0.643304398148

Running time: 23.3647724s
K = 1
```

Running time: 23.3647724s

### q01.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q01.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3588.jpg | Similarity: 0.572013888889
Top 2 = 2536.jpg | Similarity: 0.560520833333
Top 3 = 3553.jpg | Similarity: 0.536244212963
Top 4 = 1875.jpg | Similarity: 0.528912037037
Top 5 = 2592.jpg | Similarity: 0.504033564815

Running time: 23.4497645s
K = 1
```

Running time: 23.4497645s

### q02.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q02.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1091.jpg | Similarity: 0.652511574074
Top 2 = 3005.jpg | Similarity: 0.645561342593
Top 3 = 3728.jpg | Similarity: 0.630908564815
Top 4 = 850.jpg | Similarity: 0.627187500000
Top 5 = 1090.jpg | Similarity: 0.623900462963

Running time: 22.130087s
K = 1
```

Running time: 22.130087s

### q03.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q03.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1255.jpg | Similarity: 0.547777777778
Top 2 = 3532.jpg | Similarity: 0.543148148148
Top 3 = 4507.jpg | Similarity: 0.541244212963
Top 4 = 692.jpg | Similarity: 0.538061342593
Top 5 = 4737.jpg | Similarity: 0.532627314815

Running time: 23.7578562s
K = 1
```

Running time: 23.7578562s

## q04.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q04.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1799.jpg | Similarity: 0.845758101852
Top 2 = 848.jpg | Similarity: 0.493998842593
Top 3 = 4261.jpg | Similarity: 0.487644675926
Top 4 = 1800.jpg | Similarity: 0.473570601852
Top 5 = 1937.jpg | Similarity: 0.468379629630

Running time: 20.2118079s
K = 1
```

Running time: 20.2118079s

## q05.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q05.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2223.jpg | Similarity: 0.615549768519
Top 2 = 3091.jpg | Similarity: 0.600503472222
Top 3 = 2550.jpg | Similarity: 0.530243055556
Top 4 = 2883.jpg | Similarity: 0.524861111111
Top 5 = 2901.jpg | Similarity: 0.524519675926

Running time: 20.5421014s
K = 1
```

Running time: 20.5421014s

## q06.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q06.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2278.jpg | Similarity: 0.775960648148
Top 2 = 2224.jpg | Similarity: 0.718101851852
Top 3 = 1108.jpg | Similarity: 0.713339120370
Top 4 = 1917.jpg | Similarity: 0.694438657407
Top 5 = 3806.jpg | Similarity: 0.693269675926

Running time: 20.6880796s
K = 1
```

Running time: 20.6880796s

## q07.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q07.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2377.jpg | Similarity: 1.000000000000
Top 2 = 2379.jpg | Similarity: 0.766250000000
Top 3 = 2079.jpg | Similarity: 0.645526620370
Top 4 = 1653.jpg | Similarity: 0.636799768519
Top 5 = 1896.jpg | Similarity: 0.623883101852

Running time: 21.0071842s
K = 1
```

Running time: 20.6880796s

## q08.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q08.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2587.jpg | Similarity: 0.723275462963
Top 2 = 1837.jpg | Similarity: 0.696093750000
Top 3 = 1515.jpg | Similarity: 0.674982638889
Top 4 = 2586.jpg | Similarity: 0.671620370370
Top 5 = 1217.jpg | Similarity: 0.668900462963

Running time: 20.4055617s
K = 1
```

Running time: 20.4055617s

## q09.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q09.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2839.jpg | Similarity: 0.789421296296
Top 2 = 3414.jpg | Similarity: 0.510636574074
Top 3 = 2617.jpg | Similarity: 0.455486111111
Top 4 = 4363.jpg | Similarity: 0.425480324074
Top 5 = 4816.jpg | Similarity: 0.389224537037

Running time: 20.1690046s
K = 1
```

Running time: 20.1690046s

## q10.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q10.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2976.jpg | Similarity: 0.746099537037
Top 2 = 2971.jpg | Similarity: 0.661614583333
Top 3 = 3108.jpg | Similarity: 0.645937500000
Top 4 = 2194.jpg | Similarity: 0.640156250000
Top 5 = 4118.jpg | Similarity: 0.635653935185

Running time: 20.9343576s
K = 1
```

Running time: 20.9343576s

## q11.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q11.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3017.jpg | Similarity: 0.614583333333
Top 2 = 3660.jpg | Similarity: 0.575665509259
Top 3 = 2411.jpg | Similarity: 0.569953703704
Top 4 = 1010.jpg | Similarity: 0.557459490741
Top 5 = 2067.jpg | Similarity: 0.557146990741

Running time: 20.1893317s
K = 1
```

Running time: 20.1893317s

## q12.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q12.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3135.jpg | Similarity: 1.000000000000
Top 2 = 3133.jpg | Similarity: 0.644351851852
Top 3 = 2447.jpg | Similarity: 0.572094907407
Top 4 = 4429.jpg | Similarity: 0.542517361111
Top 5 = 2964.jpg | Similarity: 0.509583333333

Running time: 24.0851199s
K = 1
```

Running time: 24.0851199s

## q13.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q13.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3225.jpg | Similarity: 1.000000000000
Top 2 = 2082.jpg | Similarity: 0.501278935185
Top 3 = 2083.jpg | Similarity: 0.497268518519
Top 4 = 2078.jpg | Similarity: 0.491186342593
Top 5 = 3051.jpg | Similarity: 0.480972222222

Running time: 19.5110058s
K = 1
```

Running time: 19.5110058s

## q14.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q14.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2193.jpg | Similarity: 0.444930555556
Top 2 = 3318.jpg | Similarity: 0.388333333333
Top 3 = 3108.jpg | Similarity: 0.381521990741
Top 4 = 3085.jpg | Similarity: 0.369554398148
Top 5 = 4028.jpg | Similarity: 0.368773148148

Running time: 19.1548762s
K = 1
```

Running time: 19.1548762s

## q15.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q15.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 4756.jpg | Similarity: 0.738194444444
Top 2 = 2462.jpg | Similarity: 0.722870370370
Top 3 = 3756.jpg | Similarity: 0.698888888889
Top 4 = 2555.jpg | Similarity: 0.697442129630
Top 5 = 908.jpg | Similarity: 0.694386574074

Running time: 22.6984116s
K = 1
```

Running time: 22.6984116s

## q15.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q15.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 4756.jpg | Similarity: 0.738194444444
Top 2 = 2462.jpg | Similarity: 0.722870370370
Top 3 = 3756.jpg | Similarity: 0.698888888889
Top 4 = 2555.jpg | Similarity: 0.697442129630
Top 5 = 908.jpg | Similarity: 0.694386574074

Running time: 22.6984116s
K = 1
```

Running time: 22.6984116s

---

**K = 2**

## q00.jpg

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q00.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1144.jpg | Similarity: 1.000000000000
Top 2 = 3806.jpg | Similarity: 0.704004629630
Top 3 = 3756.jpg | Similarity: 0.660607638889
Top 4 = 3714.jpg | Similarity: 0.659687500000
Top 5 = 3668.jpg | Similarity: 0.643304398148

Running time: 9.7565969s
K = 2
```

Running time: 9.7565969s

## q01.jpg

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q01.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3588.jpg | Similarity: 0.572013888889
Top 2 = 2536.jpg | Similarity: 0.560520833333
Top 3 = 3553.jpg | Similarity: 0.536244212963
Top 4 = 1875.jpg | Similarity: 0.528912037037
Top 5 = 2592.jpg | Similarity: 0.504033564815

Running time: 15.9730254s
K = 2
```

Running time: 15.9730254s

## q02.jpg

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q02.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1091.jpg | Similarity: 0.652511574074
Top 2 = 3005.jpg | Similarity: 0.645561342593
Top 3 = 3728.jpg | Similarity: 0.630908564815
Top 4 = 850.jpg | Similarity: 0.627187500000
Top 5 = 1090.jpg | Similarity: 0.623900462963

Running time: 10.1454049s
K = 2
```

Running time: 10.1454049s

## q03.jpg

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q03.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1255.jpg | Similarity: 0.547777777778
Top 2 = 3532.jpg | Similarity: 0.543148148148
Top 3 = 4507.jpg | Similarity: 0.541244212963
Top 4 = 692.jpg | Similarity: 0.538061342593
Top 5 = 4737.jpg | Similarity: 0.532627314815

Running time: 9.5286973s
K = 2
```

Running time: 9.5286973s

## q04.jpg

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q04.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1799.jpg | Similarity: 0.845758101852
Top 2 = 848.jpg | Similarity: 0.493998842593
Top 3 = 4261.jpg | Similarity: 0.487644675926
Top 4 = 1800.jpg | Similarity: 0.473570601852
Top 5 = 1937.jpg | Similarity: 0.468379629630

Running time: 9.7268226s
K = 2
```

## q05

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q05.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2223.jpg | Similarity: 0.615549768519
Top 2 = 3091.jpg | Similarity: 0.600503472222
Top 3 = 2550.jpg | Similarity: 0.530243055556
Top 4 = 2883.jpg | Similarity: 0.524861111111
Top 5 = 2901.jpg | Similarity: 0.524519675926

Running time: 9.2761074s
K = 2
```

## q06

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q06.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2278.jpg | Similarity: 0.775960648148
Top 2 = 2224.jpg | Similarity: 0.718101851852
Top 3 = 1108.jpg | Similarity: 0.713339120370
Top 4 = 1917.jpg | Similarity: 0.694438657407
Top 5 = 3806.jpg | Similarity: 0.693269675926

Running time: 9.9231534s
K = 2
```

## q07

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q07.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2377.jpg | Similarity: 1.0000000000000
Top 2 = 2379.jpg | Similarity: 0.7662500000000
Top 3 = 2079.jpg | Similarity: 0.645526620370
Top 4 = 1653.jpg | Similarity: 0.636799768519
Top 5 = 1896.jpg | Similarity: 0.623883101852

Running time: 9.4433546s
K = 2
```

## q08

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q08.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2587.jpg | Similarity: 0.723275462963
Top 2 = 1837.jpg | Similarity: 0.696093750000
Top 3 = 1515.jpg | Similarity: 0.674982638889
Top 4 = 2586.jpg | Similarity: 0.671620370370
Top 5 = 1217.jpg | Similarity: 0.668900462963

Running time: 9.9399655s
K = 2
```

## q09

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q09.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2839.jpg | Similarity: 0.789421296296
Top 2 = 3414.jpg | Similarity: 0.510636574074
Top 3 = 2617.jpg | Similarity: 0.455486111111
Top 4 = 4363.jpg | Similarity: 0.425480324074
Top 5 = 4816.jpg | Similarity: 0.389224537037

Running time: 9.6052978s
K = 2
```

## q10

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q10.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2976.jpg | Similarity: 0.746099537037
Top 2 = 2971.jpg | Similarity: 0.661614583333
Top 3 = 3108.jpg | Similarity: 0.645937500000
Top 4 = 2194.jpg | Similarity: 0.640156250000
Top 5 = 4118.jpg | Similarity: 0.635653935185

Running time: 10.3334501s
K = 2
```

## q11



```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q11.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3017.jpg | Similarity: 0.614583333333
Top 2 = 3660.jpg | Similarity: 0.575665509259
Top 3 = 2411.jpg | Similarity: 0.569953703704
Top 4 = 1010.jpg | Similarity: 0.557459490741
Top 5 = 2067.jpg | Similarity: 0.557146990741

Running time: 10.42318s
K = 2
```

## q12

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q12.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3135.jpg | Similarity: 1.000000000000
Top 2 = 3133.jpg | Similarity: 0.644351851852
Top 3 = 2447.jpg | Similarity: 0.572094907407
Top 4 = 4429.jpg | Similarity: 0.542517361111
Top 5 = 2964.jpg | Similarity: 0.509583333333

Running time: 9.6533639s
K = 2
```

## q13

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q13.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3225.jpg | Similarity: 1.000000000000
Top 2 = 2082.jpg | Similarity: 0.501278935185
Top 3 = 2083.jpg | Similarity: 0.497268518519
Top 4 = 2078.jpg | Similarity: 0.491186342593
Top 5 = 3051.jpg | Similarity: 0.480972222222

Running time: 9.9595577s
K = 2
```

## q14

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q14.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2193.jpg | Similarity: 0.444930555556
Top 2 = 3318.jpg | Similarity: 0.388333333333
Top 3 = 3108.jpg | Similarity: 0.381521990741
Top 4 = 3085.jpg | Similarity: 0.369554398148
Top 5 = 4028.jpg | Similarity: 0.368773148148

Running time: 9.8526919s
K = 2
```

## q15

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q15.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 4756.jpg | Similarity: 0.738194444444
Top 2 = 2462.jpg | Similarity: 0.722870370370
Top 3 = 3756.jpg | Similarity: 0.698888888889
Top 4 = 2555.jpg | Similarity: 0.697442129630
Top 5 = 908.jpg | Similarity: 0.694386574074

Running time: 9.9354712s
K = 2
```

---

**K = 4**

**q00.jpg**

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q00.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1144.jpg | Similarity: 1.000000000000
Top 2 = 3806.jpg | Similarity: 0.704004629630
Top 3 = 3756.jpg | Similarity: 0.660607638889
Top 4 = 3714.jpg | Similarity: 0.659687500000
Top 5 = 3668.jpg | Similarity: 0.643304398148

Running time: 8.1764779s
K = 4
```

Running time: 8.1764779s

**q01.jpg**

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q01.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3588.jpg | Similarity: 0.572013888889
Top 2 = 2536.jpg | Similarity: 0.560520833333
Top 3 = 3553.jpg | Similarity: 0.536244212963
Top 4 = 1875.jpg | Similarity: 0.528912037037
Top 5 = 2592.jpg | Similarity: 0.504033564815

Running time: 10.0720784s
K = 4
```

Running time: 10.0720784s

**q02.jpg**

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q02.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1091.jpg | Similarity: 0.652511574074
Top 2 = 3005.jpg | Similarity: 0.645561342593
Top 3 = 3728.jpg | Similarity: 0.630908564815
Top 4 = 850.jpg | Similarity: 0.627187500000
Top 5 = 1090.jpg | Similarity: 0.623900462963

Running time: 8.6199734s
K = 4
```

Running time: 8.6199734s

**q03.jpg**

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q03.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1255.jpg | Similarity: 0.547777777778
Top 2 = 3532.jpg | Similarity: 0.543148148148
Top 3 = 4507.jpg | Similarity: 0.541244212963
Top 4 = 692.jpg | Similarity: 0.538061342593
Top 5 = 4737.jpg | Similarity: 0.532627314815

Running time: 8.3594328s
K = 4
```

Running time: 8.3594328s

## q04.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q04.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1799.jpg | Similarity: 0.845758101852
Top 2 = 848.jpg | Similarity: 0.493998842593
Top 3 = 4261.jpg | Similarity: 0.487644675926
Top 4 = 1800.jpg | Similarity: 0.473570601852
Top 5 = 1937.jpg | Similarity: 0.468379629630

Running time: 8.0796359s
K = 4
```

Running time: 8.0796359s

## q05.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q05.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2223.jpg | Similarity: 0.615549768519
Top 2 = 3091.jpg | Similarity: 0.600503472222
Top 3 = 2550.jpg | Similarity: 0.530243055556
Top 4 = 2883.jpg | Similarity: 0.524861111111
Top 5 = 2901.jpg | Similarity: 0.524519675926

Running time: 9.7335248s
K = 4
```

Running time: 9.7335248s

## q06.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q06.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2278.jpg | Similarity: 0.775960648148
Top 2 = 2224.jpg | Similarity: 0.718101851852
Top 3 = 1108.jpg | Similarity: 0.713339120370
Top 4 = 1917.jpg | Similarity: 0.694438657407
Top 5 = 3806.jpg | Similarity: 0.693269675926

Running time: 8.15572s
K = 4
```

Running time: 8.15572s

## q07.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q07.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2377.jpg | Similarity: 1.000000000000
Top 2 = 2379.jpg | Similarity: 0.766250000000
Top 3 = 2079.jpg | Similarity: 0.645526620370
Top 4 = 1653.jpg | Similarity: 0.636799768519
Top 5 = 1896.jpg | Similarity: 0.623883101852

Running time: 8.0839803s
K = 4
```

Running time: 8.0839803s

## q08.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q08.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2587.jpg | Similarity: 0.723275462963
Top 2 = 1837.jpg | Similarity: 0.696093750000
Top 3 = 1515.jpg | Similarity: 0.674982638889
Top 4 = 2586.jpg | Similarity: 0.671620370370
Top 5 = 1217.jpg | Similarity: 0.668900462963

Running time: 8.4252304s
K = 4
```

Running time: 8.4252304s

## q09.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q09.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2839.jpg | Similarity: 0.789421296296
Top 2 = 3414.jpg | Similarity: 0.510636574074
Top 3 = 2617.jpg | Similarity: 0.455486111111
Top 4 = 4363.jpg | Similarity: 0.425480324074
Top 5 = 4816.jpg | Similarity: 0.389224537037

Running time: 8.292254s
K = 4
```

Running time: 8.292254s

## q10.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q10.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2976.jpg | Similarity: 0.746099537037
Top 2 = 2971.jpg | Similarity: 0.661614583333
Top 3 = 3108.jpg | Similarity: 0.645937500000
Top 4 = 2194.jpg | Similarity: 0.640156250000
Top 5 = 4118.jpg | Similarity: 0.635653935185

Running time: 8.3057776s
K = 4
```

Running time: 8.3057776s

## q11.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q11.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3017.jpg | Similarity: 0.614583333333
Top 2 = 3660.jpg | Similarity: 0.575665509259
Top 3 = 2411.jpg | Similarity: 0.569953703704
Top 4 = 1010.jpg | Similarity: 0.557459490741
Top 5 = 2067.jpg | Similarity: 0.557146990741

Running time: 10.4162024s
K = 4
```

Running time: 10.4162024s

## q12.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q12.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3135.jpg | Similarity: 1.000000000000
Top 2 = 3133.jpg | Similarity: 0.644351851852
Top 3 = 2447.jpg | Similarity: 0.572094907407
Top 4 = 4429.jpg | Similarity: 0.542517361111
Top 5 = 2964.jpg | Similarity: 0.509583333333

Running time: 10.0169485s
K = 4
```

Running time: 10.0169485s

## q13.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q13.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3225.jpg | Similarity: 1.000000000000
Top 2 = 2082.jpg | Similarity: 0.501278935185
Top 3 = 2083.jpg | Similarity: 0.497268518519
Top 4 = 2078.jpg | Similarity: 0.491186342593
Top 5 = 3051.jpg | Similarity: 0.480972222222

Running time: 8.5985294s
K = 4
```

Running time: 8.5985294s

## q14.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q14.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2193.jpg | Similarity: 0.444930555556
Top 2 = 3318.jpg | Similarity: 0.388333333333
Top 3 = 3108.jpg | Similarity: 0.381521990741
Top 4 = 3085.jpg | Similarity: 0.369554398148
Top 5 = 4028.jpg | Similarity: 0.368773148148

Running time: 9.6381066s
K = 4
```

Running time: 9.6381066s

## q15.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q15.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 4756.jpg | Similarity: 0.738194444444
Top 2 = 2462.jpg | Similarity: 0.722870370370
Top 3 = 3756.jpg | Similarity: 0.698888888889
Top 4 = 2555.jpg | Similarity: 0.697442129630
Top 5 = 908.jpg | Similarity: 0.694386574074

Running time: 8.4345727s
K = 4
```

Running time: 8.4345727s

---

**K = 16**

q00.jpg

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q00.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1144.jpg | Similarity: 1.000000000000
Top 2 = 3806.jpg | Similarity: 0.704004629630
Top 3 = 3756.jpg | Similarity: 0.660607638889
Top 4 = 3714.jpg | Similarity: 0.659687500000
Top 5 = 3668.jpg | Similarity: 0.643304398148

Running time: 5.5967275s
K = 16
```

## q01

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q01.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3588.jpg | Similarity: 0.572013888889
Top 2 = 2536.jpg | Similarity: 0.560520833333
Top 3 = 3553.jpg | Similarity: 0.536244212963
Top 4 = 1875.jpg | Similarity: 0.528912037037
Top 5 = 2592.jpg | Similarity: 0.504033564815

Running time: 5.3147406s
K = 16
```

## q02

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q02.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1091.jpg | Similarity: 0.652511574074
Top 2 = 3005.jpg | Similarity: 0.645561342593
Top 3 = 3728.jpg | Similarity: 0.630908564815
Top 4 = 850.jpg | Similarity: 0.627187500000
Top 5 = 1090.jpg | Similarity: 0.623900462963

Running time: 5.6404801s
K = 16
```

## q03

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q03.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1255.jpg | Similarity: 0.547777777778
Top 2 = 3532.jpg | Similarity: 0.543148148148
Top 3 = 4507.jpg | Similarity: 0.541244212963
Top 4 = 692.jpg | Similarity: 0.538061342593
Top 5 = 4737.jpg | Similarity: 0.532627314815

Running time: 5.1544142s
K = 16
```

## q04

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q04.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1799.jpg | Similarity: 0.845758101852
Top 2 = 848.jpg | Similarity: 0.493998842593
Top 3 = 4261.jpg | Similarity: 0.487644675926
Top 4 = 1800.jpg | Similarity: 0.473570601852
Top 5 = 1937.jpg | Similarity: 0.468379629630

Running time: 6.1002151s
K = 16
```

## q05

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q05.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2223.jpg | Similarity: 0.615549768519
Top 2 = 3091.jpg | Similarity: 0.600503472222
Top 3 = 2550.jpg | Similarity: 0.530243055556
Top 4 = 2883.jpg | Similarity: 0.524861111111
Top 5 = 2901.jpg | Similarity: 0.524519675926

Running time: 6.1924992s
K = 16
```

## q06

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q06.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2278.jpg | Similarity: 0.775960648148
Top 2 = 2224.jpg | Similarity: 0.718101851852
Top 3 = 1108.jpg | Similarity: 0.713339120370
Top 4 = 1917.jpg | Similarity: 0.694438657407
Top 5 = 3806.jpg | Similarity: 0.693269675926

Running time: 6.228798s
K = 16
```

## q07

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q07.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2377.jpg | Similarity: 1.000000000000
Top 2 = 2379.jpg | Similarity: 0.766250000000
Top 3 = 2079.jpg | Similarity: 0.645526620370
Top 4 = 1653.jpg | Similarity: 0.636799768519
Top 5 = 1896.jpg | Similarity: 0.623883101852

Running time: 6.1493601s
K = 16
```

## q08

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q08.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2587.jpg | Similarity: 0.723275462963
Top 2 = 1837.jpg | Similarity: 0.696093750000
Top 3 = 1515.jpg | Similarity: 0.674982638889
Top 4 = 2586.jpg | Similarity: 0.671620370370
Top 5 = 1217.jpg | Similarity: 0.668900462963

Running time: 6.1584006s
K = 16
```

## q09

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q09.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2839.jpg | Similarity: 0.789421296296
Top 2 = 3414.jpg | Similarity: 0.510636574074
Top 3 = 2617.jpg | Similarity: 0.455486111111
Top 4 = 4363.jpg | Similarity: 0.425480324074
Top 5 = 4816.jpg | Similarity: 0.389224537037

Running time: 6.0508798s
K = 16
```

## q10

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q10.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2976.jpg | Similarity: 0.746099537037
Top 2 = 2971.jpg | Similarity: 0.661614583333
Top 3 = 3108.jpg | Similarity: 0.645937500000
Top 4 = 2194.jpg | Similarity: 0.640156250000
Top 5 = 4118.jpg | Similarity: 0.635653935185

Running time: 6.3201164s
K = 16
```

## q11

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q11.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3017.jpg | Similarity: 0.614583333333
Top 2 = 3660.jpg | Similarity: 0.575665509259
Top 3 = 2411.jpg | Similarity: 0.569953703704
Top 4 = 1010.jpg | Similarity: 0.557459490741
Top 5 = 2067.jpg | Similarity: 0.557146990741

Running time: 6.1130034s
K = 16
```

## q12



```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q12.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3135.jpg | Similarity: 1.0000000000000
Top 2 = 3133.jpg | Similarity: 0.644351851852
Top 3 = 2447.jpg | Similarity: 0.572094907407
Top 4 = 4429.jpg | Similarity: 0.542517361111
Top 5 = 2964.jpg | Similarity: 0.509583333333

Running time: 6.234608s
K = 16
```

## q13

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q13.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3225.jpg | Similarity: 1.0000000000000
Top 2 = 2082.jpg | Similarity: 0.501278935185
Top 3 = 2083.jpg | Similarity: 0.497268518519
Top 4 = 2078.jpg | Similarity: 0.491186342593
Top 5 = 3051.jpg | Similarity: 0.480972222222

Running time: 6.2542655s
K = 16
```

## q14

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q14.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2193.jpg | Similarity: 0.444930555556
Top 2 = 3318.jpg | Similarity: 0.388333333333
Top 3 = 3108.jpg | Similarity: 0.381521990741
Top 4 = 3085.jpg | Similarity: 0.369554398148
Top 5 = 4028.jpg | Similarity: 0.368773148148

Running time: 5.9255002s
K = 16
```

## q15

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q15.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 4756.jpg | Similarity: 0.738194444444
Top 2 = 2462.jpg | Similarity: 0.722870370370
Top 3 = 3756.jpg | Similarity: 0.698888888889
Top 4 = 2555.jpg | Similarity: 0.697442129630
Top 5 = 908.jpg | Similarity: 0.694386574074

Running time: 5.7024079s
K = 16
```

---

**K = 64**

q00

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q00.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1144.jpg | Similarity: 1.000000000000
Top 2 = 3806.jpg | Similarity: 0.704004629630
Top 3 = 3756.jpg | Similarity: 0.660607638889
Top 4 = 3714.jpg | Similarity: 0.659687500000
Top 5 = 3668.jpg | Similarity: 0.643304398148

Running time: 4.8289609s
K = 64
```

## q01

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q01.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3588.jpg | Similarity: 0.572013888889
Top 2 = 2536.jpg | Similarity: 0.560520833333
Top 3 = 3553.jpg | Similarity: 0.536244212963
Top 4 = 1875.jpg | Similarity: 0.528912037037
Top 5 = 2592.jpg | Similarity: 0.504033564815

Running time: 6.1208125s
K = 64
```

## q02

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q02.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1091.jpg | Similarity: 0.652511574074
Top 2 = 3005.jpg | Similarity: 0.645561342593
Top 3 = 3728.jpg | Similarity: 0.630908564815
Top 4 = 850.jpg | Similarity: 0.627187500000
Top 5 = 1090.jpg | Similarity: 0.623900462963

Running time: 6.5361137s
K = 64
```

## q03

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q03.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1255.jpg | Similarity: 0.547777777778
Top 2 = 3532.jpg | Similarity: 0.543148148148
Top 3 = 4507.jpg | Similarity: 0.541244212963
Top 4 = 692.jpg | Similarity: 0.538061342593
Top 5 = 4737.jpg | Similarity: 0.532627314815

Running time: 5.8145237s
K = 64
```

## q04

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q04.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1799.jpg | Similarity: 0.845758101852
Top 2 = 848.jpg | Similarity: 0.493998842593
Top 3 = 4261.jpg | Similarity: 0.487644675926
Top 4 = 1800.jpg | Similarity: 0.473570601852
Top 5 = 1937.jpg | Similarity: 0.468379629630

Running time: 5.4290122s
K = 64
```

## q05

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q05.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2223.jpg | Similarity: 0.615549768519
Top 2 = 3091.jpg | Similarity: 0.600503472222
Top 3 = 2550.jpg | Similarity: 0.530243055556
Top 4 = 2883.jpg | Similarity: 0.524861111111
Top 5 = 2901.jpg | Similarity: 0.524519675926

Running time: 5.3208547s
K = 64
```

## q06

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q06.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2278.jpg | Similarity: 0.775960648148
Top 2 = 2224.jpg | Similarity: 0.718101851852
Top 3 = 1108.jpg | Similarity: 0.713339120370
Top 4 = 1917.jpg | Similarity: 0.694438657407
Top 5 = 3806.jpg | Similarity: 0.693269675926

Running time: 5.2466185s
K = 64
```

## q07

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q07.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2377.jpg | Similarity: 1.000000000000
Top 2 = 2379.jpg | Similarity: 0.766250000000
Top 3 = 2079.jpg | Similarity: 0.645526620370
Top 4 = 1653.jpg | Similarity: 0.636799768519
Top 5 = 1896.jpg | Similarity: 0.623883101852

Running time: 5.9125076s
K = 64
```

## q08

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q08.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2587.jpg | Similarity: 0.723275462963
Top 2 = 1837.jpg | Similarity: 0.696093750000
Top 3 = 1515.jpg | Similarity: 0.674982638889
Top 4 = 2586.jpg | Similarity: 0.671620370370
Top 5 = 1217.jpg | Similarity: 0.668900462963

Running time: 5.489505s
K = 64
```

## q09

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q09.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2839.jpg | Similarity: 0.789421296296
Top 2 = 3414.jpg | Similarity: 0.510636574074
Top 3 = 2617.jpg | Similarity: 0.455486111111
Top 4 = 4363.jpg | Similarity: 0.425480324074
Top 5 = 4816.jpg | Similarity: 0.389224537037

Running time: 5.8586067s
K = 64
```

## q10

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q10.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2976.jpg | Similarity: 0.746099537037
Top 2 = 2971.jpg | Similarity: 0.661614583333
Top 3 = 3108.jpg | Similarity: 0.645937500000
Top 4 = 2194.jpg | Similarity: 0.640156250000
Top 5 = 4118.jpg | Similarity: 0.635653935185

Running time: 5.4863786s
K = 64
```

## q11

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q11.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3017.jpg | Similarity: 0.614583333333
Top 2 = 3660.jpg | Similarity: 0.575665509259
Top 3 = 2411.jpg | Similarity: 0.569953703704
Top 4 = 1010.jpg | Similarity: 0.557459490741
Top 5 = 2067.jpg | Similarity: 0.557146990741

Running time: 5.4418615s
K = 64
```

## q12

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q12.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3135.jpg | Similarity: 1.000000000000
Top 2 = 3133.jpg | Similarity: 0.644351851852
Top 3 = 2447.jpg | Similarity: 0.572094907407
Top 4 = 4429.jpg | Similarity: 0.542517361111
Top 5 = 2964.jpg | Similarity: 0.509583333333

Running time: 5.5632875s
K = 64
```

## q13

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q13.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3225.jpg | Similarity: 1.000000000000
Top 2 = 2082.jpg | Similarity: 0.501278935185
Top 3 = 2083.jpg | Similarity: 0.497268518519
Top 4 = 2078.jpg | Similarity: 0.491186342593
Top 5 = 3051.jpg | Similarity: 0.480972222222

Running time: 5.5050354s
K = 64
```

## q14

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q14.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2193.jpg | Similarity: 0.444930555556
Top 2 = 3318.jpg | Similarity: 0.388333333333
Top 3 = 3108.jpg | Similarity: 0.381521990741
Top 4 = 3085.jpg | Similarity: 0.369554398148
Top 5 = 4028.jpg | Similarity: 0.368773148148

Running time: 5.4634908s
K = 64
```

## q15

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q15.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 4756.jpg | Similarity: 0.738194444444
Top 2 = 2462.jpg | Similarity: 0.722870370370
Top 3 = 3756.jpg | Similarity: 0.698888888889
Top 4 = 2555.jpg | Similarity: 0.697442129630
Top 5 = 908.jpg | Similarity: 0.694386574074

Running time: 5.8042172s
K = 64
```

---

**K = 256**

**q00**

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q00.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1144.jpg | Similarity: 1.000000000000
Top 2 = 3806.jpg | Similarity: 0.704004629630
Top 3 = 3756.jpg | Similarity: 0.660607638889
Top 4 = 3714.jpg | Similarity: 0.659687500000
Top 5 = 3668.jpg | Similarity: 0.643304398148

Running time: 5.0707728s
K = 256
```

**q01**

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q01.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3588.jpg | Similarity: 0.572013888889
Top 2 = 2536.jpg | Similarity: 0.560520833333
Top 3 = 3553.jpg | Similarity: 0.536244212963
Top 4 = 1875.jpg | Similarity: 0.528912037037
Top 5 = 2592.jpg | Similarity: 0.504033564815

Running time: 5.6427418s
K = 256
```

**q02**

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q02.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1091.jpg | Similarity: 0.652511574074
Top 2 = 3005.jpg | Similarity: 0.645561342593
Top 3 = 3728.jpg | Similarity: 0.630908564815
Top 4 = 850.jpg | Similarity: 0.627187500000
Top 5 = 1090.jpg | Similarity: 0.623900462963

Running time: 5.4970842s
K = 256
```

**q03**

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q03.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1255.jpg | Similarity: 0.547777777778
Top 2 = 3532.jpg | Similarity: 0.543148148148
Top 3 = 4507.jpg | Similarity: 0.541244212963
Top 4 = 692.jpg | Similarity: 0.538061342593
Top 5 = 4737.jpg | Similarity: 0.532627314815

Running time: 5.4175629s
K = 256
```

**q04**

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q04.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1799.jpg | Similarity: 0.845758101852
Top 2 = 848.jpg | Similarity: 0.493998842593
Top 3 = 4261.jpg | Similarity: 0.487644675926
Top 4 = 1800.jpg | Similarity: 0.473570601852
Top 5 = 1937.jpg | Similarity: 0.468379629630

Running time: 5.5626758s
K = 256
```

## q05

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q05.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2223.jpg | Similarity: 0.615549768519
Top 2 = 3091.jpg | Similarity: 0.600503472222
Top 3 = 2550.jpg | Similarity: 0.530243055556
Top 4 = 2883.jpg | Similarity: 0.524861111111
Top 5 = 2901.jpg | Similarity: 0.524519675926

Running time: 5.4569738s
K = 256
```

## q06

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q06.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2278.jpg | Similarity: 0.775960648148
Top 2 = 2224.jpg | Similarity: 0.718101851852
Top 3 = 1108.jpg | Similarity: 0.713339120370
Top 4 = 1917.jpg | Similarity: 0.694438657407
Top 5 = 3806.jpg | Similarity: 0.693269675926

Running time: 5.6883865s
K = 256
```

## q07

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q07.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2377.jpg | Similarity: 1.000000000000
Top 2 = 2379.jpg | Similarity: 0.766250000000
Top 3 = 2079.jpg | Similarity: 0.645526620370
Top 4 = 1653.jpg | Similarity: 0.636799768519
Top 5 = 1896.jpg | Similarity: 0.623883101852

Running time: 5.7030378s
K = 256
```



## q08

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q08.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2587.jpg | Similarity: 0.723275462963
Top 2 = 1837.jpg | Similarity: 0.696093750000
Top 3 = 1515.jpg | Similarity: 0.674982638889
Top 4 = 2586.jpg | Similarity: 0.671620370370
Top 5 = 1217.jpg | Similarity: 0.668900462963

Running time: 5.600406s
K = 256
```

## q09

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q09.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2839.jpg | Similarity: 0.789421296296
Top 2 = 3414.jpg | Similarity: 0.510636574074
Top 3 = 2617.jpg | Similarity: 0.455486111111
Top 4 = 4363.jpg | Similarity: 0.425480324074
Top 5 = 4816.jpg | Similarity: 0.389224537037

Running time: 5.5718995s
K = 256
```

## q10

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q10.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2976.jpg | Similarity: 0.746099537037
Top 2 = 2971.jpg | Similarity: 0.661614583333
Top 3 = 3108.jpg | Similarity: 0.645937500000
Top 4 = 2194.jpg | Similarity: 0.640156250000
Top 5 = 4118.jpg | Similarity: 0.635653935185

Running time: 5.6430565s
K = 256
```

## q11

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q11.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3017.jpg | Similarity: 0.614583333333
Top 2 = 3660.jpg | Similarity: 0.575665509259
Top 3 = 2411.jpg | Similarity: 0.569953703704
Top 4 = 1010.jpg | Similarity: 0.557459490741
Top 5 = 2067.jpg | Similarity: 0.557146990741

Running time: 5.1690625s
K = 256
```

## q12



```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q12.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3135.jpg | Similarity: 1.000000000000
Top 2 = 3133.jpg | Similarity: 0.644351851852
Top 3 = 2447.jpg | Similarity: 0.572094907407
Top 4 = 4429.jpg | Similarity: 0.542517361111
Top 5 = 2964.jpg | Similarity: 0.509583333333

Running time: 5.6491345s
K = 256
```

## q13

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q13.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3225.jpg | Similarity: 1.000000000000
Top 2 = 2082.jpg | Similarity: 0.501278935185
Top 3 = 2083.jpg | Similarity: 0.497268518519
Top 4 = 2078.jpg | Similarity: 0.491186342593
Top 5 = 3051.jpg | Similarity: 0.480972222222

Running time: 5.5899351s
K = 256
```

## q14

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q14.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2193.jpg | Similarity: 0.444930555556
Top 2 = 3318.jpg | Similarity: 0.388333333333
Top 3 = 3108.jpg | Similarity: 0.381521990741
Top 4 = 3085.jpg | Similarity: 0.369554398148
Top 5 = 4028.jpg | Similarity: 0.368773148148

Running time: 5.5406311s
K = 256
```

## q15

```
PS E:\GoLand_Project\Part_3> go run similaritySearch.go q15.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 4756.jpg | Similarity: 0.738194444444
Top 2 = 2462.jpg | Similarity: 0.722870370370
Top 3 = 3756.jpg | Similarity: 0.698888888889
Top 4 = 2555.jpg | Similarity: 0.697442129630
Top 5 = 908.jpg | Similarity: 0.694386574074

Running time: 5.4204249s
K = 256
```

---

**K = 1048**

## q00.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q00.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1144.jpg | Similarity: 1.000000000000
Top 2 = 3806.jpg | Similarity: 0.704004629630
Top 3 = 3756.jpg | Similarity: 0.660607638889
Top 4 = 3714.jpg | Similarity: 0.659687500000
Top 5 = 3668.jpg | Similarity: 0.643304398148

Running time: 4.6451007s
K = 1048
```

Running time: 4.6451007s

## q01.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q01.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3588.jpg | Similarity: 0.572013888889
Top 2 = 2536.jpg | Similarity: 0.560520833333
Top 3 = 3553.jpg | Similarity: 0.536244212963
Top 4 = 1875.jpg | Similarity: 0.528912037037
Top 5 = 2592.jpg | Similarity: 0.504033564815

Running time: 4.7046545s
K = 1048
```

Running time: 4.7046545s

## q02.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q02.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1091.jpg | Similarity: 0.652511574074
Top 2 = 3005.jpg | Similarity: 0.645561342593
Top 3 = 3728.jpg | Similarity: 0.630908564815
Top 4 = 850.jpg | Similarity: 0.627187500000
Top 5 = 1090.jpg | Similarity: 0.623900462963

Running time: 4.7517611s
K = 1048
```

Running time: 4.7517611s

## q03.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q03.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1255.jpg | Similarity: 0.547777777778
Top 2 = 3532.jpg | Similarity: 0.543148148148
Top 3 = 4507.jpg | Similarity: 0.541244212963
Top 4 = 692.jpg | Similarity: 0.538061342593
Top 5 = 4737.jpg | Similarity: 0.532627314815

Running time: 4.6751039s
K = 1048
```

Running time: 4.6751039s

## q04.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q04.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 1799.jpg | Similarity: 0.845758101852
Top 2 = 848.jpg | Similarity: 0.493998842593
Top 3 = 4261.jpg | Similarity: 0.487644675926
Top 4 = 1800.jpg | Similarity: 0.473570601852
Top 5 = 1937.jpg | Similarity: 0.468379629630

Running time: 4.7931379s
K = 1048
```

Running time: 4.7931379s

## q05.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q05.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2223.jpg | Similarity: 0.615549768519
Top 2 = 3091.jpg | Similarity: 0.600503472222
Top 3 = 2550.jpg | Similarity: 0.530243055556
Top 4 = 2883.jpg | Similarity: 0.524861111111
Top 5 = 2901.jpg | Similarity: 0.524519675926

Running time: 4.7625968s
K = 1048
```

Running time: 4.7625968s

## q06.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q06.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2278.jpg | Similarity: 0.775960648148
Top 2 = 2224.jpg | Similarity: 0.718101851852
Top 3 = 1108.jpg | Similarity: 0.713339120370
Top 4 = 1917.jpg | Similarity: 0.694438657407
Top 5 = 3806.jpg | Similarity: 0.693269675926

Running time: 4.8481302s
K = 1048
```

Running time: 4.8481302s

## q07.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q07.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2377.jpg | Similarity: 1.000000000000
Top 2 = 2379.jpg | Similarity: 0.766250000000
Top 3 = 2079.jpg | Similarity: 0.645526620370
Top 4 = 1653.jpg | Similarity: 0.636799768519
Top 5 = 1896.jpg | Similarity: 0.623883101852

Running time: 4.8468964s
K = 1048
```

Running time: 4.8468964s

## q08.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q08.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2587.jpg | Similarity: 0.723275462963
Top 2 = 1837.jpg | Similarity: 0.696093750000
Top 3 = 1515.jpg | Similarity: 0.674982638889
Top 4 = 2586.jpg | Similarity: 0.671620370370
Top 5 = 1217.jpg | Similarity: 0.668900462963

Running time: 4.9483378s
K = 1048
```

Running time: 4.9483378s

## q09.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q09.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2839.jpg | Similarity: 0.789421296296
Top 2 = 3414.jpg | Similarity: 0.510636574074
Top 3 = 2617.jpg | Similarity: 0.455486111111
Top 4 = 4363.jpg | Similarity: 0.425480324074
Top 5 = 4816.jpg | Similarity: 0.389224537037

Running time: 4.5444947s
K = 1048
```

Running time: 4.5444947s

## q10.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q10.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2976.jpg | Similarity: 0.746099537037
Top 2 = 2971.jpg | Similarity: 0.661614583333
Top 3 = 3108.jpg | Similarity: 0.645937500000
Top 4 = 2194.jpg | Similarity: 0.640156250000
Top 5 = 4118.jpg | Similarity: 0.635653935185

Running time: 4.8090448s
K = 1048
```

Running time: 4.8090448s

## q11.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q11.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3017.jpg | Similarity: 0.614583333333
Top 2 = 3660.jpg | Similarity: 0.575665509259
Top 3 = 2411.jpg | Similarity: 0.569953703704
Top 4 = 1010.jpg | Similarity: 0.557459490741
Top 5 = 2067.jpg | Similarity: 0.557146990741

Running time: 4.5480616s
K = 1048
```

Running time: 4.5480616s

## q12.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q12.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3135.jpg | Similarity: 1.000000000000
Top 2 = 3133.jpg | Similarity: 0.644351851852
Top 3 = 2447.jpg | Similarity: 0.572094907407
Top 4 = 4429.jpg | Similarity: 0.542517361111
Top 5 = 2964.jpg | Similarity: 0.509583333333

Running time: 4.8852805s
K = 1048
```

Running time: 4.8852805s

## q13.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q13.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 3225.jpg | Similarity: 1.000000000000
Top 2 = 2082.jpg | Similarity: 0.501278935185
Top 3 = 2083.jpg | Similarity: 0.497268518519
Top 4 = 2078.jpg | Similarity: 0.491186342593
Top 5 = 3051.jpg | Similarity: 0.480972222222

Running time: 4.9296432s
K = 1048
```

Running time: 4.9296432s

## q14.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q14.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 2193.jpg | Similarity: 0.444930555556
Top 2 = 3318.jpg | Similarity: 0.388333333333
Top 3 = 3108.jpg | Similarity: 0.381521990741
Top 4 = 3085.jpg | Similarity: 0.369554398148
Top 5 = 4028.jpg | Similarity: 0.368773148148

Running time: 5.643437s
K = 1048
```

Running time: 5.643437s

## q15.jpg

```
PS D:\My_Things\University\2024_Winter\CSI2120\CSI2120_Project\Part_3> go run similaritySearch.go q15.jpg imageDataset2_15_20
5 most similar images to the query image:
Top 1 = 4756.jpg | Similarity: 0.738194444444
Top 2 = 2462.jpg | Similarity: 0.722870370370
Top 3 = 3756.jpg | Similarity: 0.698888888889
Top 4 = 2555.jpg | Similarity: 0.697442129630
Top 5 = 908.jpg | Similarity: 0.694386574074

Running time: 5.771787s
K = 1048
```

Running time: 5.771787s