Question 1 & 2

C:\WINDOWS\system32\cmd.exe

```
Start Array: 1, 2, 5, 3, 4, 0

All inversions below
[0, 1], [5, 0]
[1, 2], [5, 0]
[2, 5], [3, 3]
[2, 5], [4, 4]
[2, 5], [5, 0]
[3, 3], [5, 0]
[4, 4], [5, 0]

Number of inversions: 7

Start Array: 1, 2, 5, 3, 4, 0
1, 2, 3, 5, 4, 0
Number of swamps performed for this element: 1
1, 2, 3, 4, 5, 0
Number of swamps performed for this element: 1
1, 2, 3, 4, 0, 5
1, 2, 3, 0, 4, 5
1, 2, 0, 3, 4, 5
1, 0, 2, 3, 4, 5
0, 1, 2, 3, 4, 5
Number of swamps performed for this element: 5

The sorted array:
0, 1, 2, 3, 4, 5
Total number of swaps performed when sorting the array: 7

Press any key to continue . . .
```

Question 3

```
iley@9V8J5H2:~/winhome/Documents/Algoritmer och datastrukturer/Lab 2/question3$ gcc -o question_3 question_3.c
iley@9V8J5H2:~/winhome/Documents/Algoritmer och datastrukturer/Lab 2/question3$ ./question_3
Enter size of array: 10
Enter number 1:1
Enter number 2:-2
Enter number 3:3
Enter number 4:-4
Enter number 5:5
Enter number 6:-6
Enter number 7:7
Enter number 8:-8
Enter number 9:9
Enter number 10:-10
-2,-4,-6,-8,-10,3,7,1,9,5,
iley@9V8J5H2:~/winhome/Documents/Algoritmer och datastrukturer/Lab 2/question3$
```

Question 4

```
Enter 1 to sort 1,000 numbers
Enter 2 to sort 10,000 numbers
Enter 3 to sort 100,000 numbers
Enter 4 to sort 1,000,000 numbers
1
Insertionsort took: 0.0
Mergesort took: 0.0
Quicksort took: 0.001

Enter 1 to sort 1,000 numbers
Enter 2 to sort 10,000 numbers
Enter 3 to sort 100,000 numbers
Enter 4 to sort 1,000,000 numbers
2
Insertionsort took: 0.043
Mergesort took: 0.002
Quicksort took: 0.001

Enter 1 to sort 1,000 numbers
Enter 2 to sort 10,000 numbers
Enter 3 to sort 100,000 numbers
Enter 4 to sort 1,000,000 numbers
3
Insertionsort took: 4.294
Mergesort took: 0.016
Quicksort took: 0.005
```

Didn't show 4 cause it takes a very long time, but it is good having since it shows that it takes a very very long time for it to sort so many numbers.

Question 5

```
Enter 1 to sort 1,000 numbers
Enter 2 to sort 10,000 numbers
Enter 3 to sort 100,000 numbers
Enter 4 to sort 1,000,000 numbers
1
Enter desired cutoff value: 7
Mergesort took: 0.0

Enter 1 to sort 1,000 numbers
Enter 2 to sort 10,000 numbers
Enter 3 to sort 100,000 numbers
Enter 4 to sort 1,000,000 numbers
2
Enter desired cutoff value: 7
Mergesort took: 0.004

Enter 1 to sort 1,000 numbers
Enter 2 to sort 10,000 numbers
Enter 3 to sort 100,000 numbers
Enter 4 to sort 1,000,000 numbers
3
Enter desired cutoff value: 7
Mergesort took: 0.022

Enter 1 to sort 1,000 numbers
Enter 2 to sort 10,000 numbers
Enter 3 to sort 100,000 numbers
Enter 4 to sort 1,000,000 numbers
4
Enter desired cutoff value: 7
Mergesort took: 0.178

Enter 1 to sort 1,000 numbers
Enter 2 to sort 10,000 numbers
Enter 3 to sort 100,000 numbers
Enter 4 to sort 1,000,000 numbers
```

Question 7

```
How many numbers do you want in the array?
5
Enter number 1: 5
Enter number 2: 24
Enter number 3: 3
Enter number 4: 2
Enter number 5: 1
Start Array: -5, -24, -3, -2, -1

All inversions below
[0, -5], [1, -24]

Number of inversions: 1

Start array when sorting: -5, -24, -3, -2, -1
-24, -5, -3, -2, -1
Number of swamps performed for this element: 1

The sorted array:
24, 5, 3, 2, 1
Total number of swaps performed when sorting the array: 1

Press any key to continue . . .
```