Assignment 5 | 22nd January 2021

Question 1

Name 5 sorting algorithms, also write their time complexities(best, average, worst).

Answer:-A Sorting Algorithm is used to rearrange a given array or list elements according to a comparison operator on the elements. The comparison operator is used to decide the new order of element in the respective data structure.

Insertion, selection, bubble, merge, and quick sort.

Selection Sort	Ω(n^2)	θ(n^2)	O(n^2)
Bubble Sort	Ω(n)	θ(n^2)	O(n^2)
Insertion Sort	Ω(n)	θ(n^2)	O(n^2)
Quick Sort	Ω(n log(n))	θ(n log(n))	O(n^2)
Merge Sort	Ω(n log(n))	θ(n log(n))	O(n log(n))

Question 2

Implement selection sort algorithm using Python.

Answers:-

```
import sys

A = [64, 25, 12, 22, 11]
```

```
for i in range(len(A)):
        min_idx = i
        for j in range(i+1, len(A)):
                if A[min_idx] > A[j]:
                        min_idx = j
        A[i], A[min_idx] = A[min_idx], A[i]
print ("Sorted array")
for i in range(len(A)):
        print("%d" %A[i]),
```

Question 3

Implement pop operation of the stack

Answer:-

```
stack = []
stack.append('a')
stack.append('b')
stack.append('c')
print('Initial stack')
print(stack)
print('\nElements poped from stack:')
print(stack.pop())
print(stack.pop())
print(stack.pop())
print('\nStack after elements are poped:')
print(stack)
```

Question 4

Implement dequeue operation of the queue

Answer:-

```
from collections import deque

q=deque()

q.append(10)

q.append(100)

q.append(1000)

q.append(10000)

print("Initial Queue is:",q)

print(q.popleft())

print(q.popleft())

print("After Removing elements:",q)
```