Assignment 5

* Question 1

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

no. sorting techniques Best case average case wrost case

1- Selection Sort Ω(n^2 ) θ(n^2) O(n^2)

2- Bubble Sort Ω(n) θ(n^2) O(n^2)

3- Insertion Sort Ω(n) θ(n^2) O(n^2)

4- Heap Sort Ω(n log(n)) θ(n log(n) O(n log(n))

5- Quick Sort Ω(n log(n)) θ(n log(n) O(n^2)

* Question 2

Implement selection sort algorithm using Python.

Program-

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

Program –

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

from collections import deque

q = deque()

q.append('a')

q.append('b')

q.append('c')

print("Initial queue")

print(q)

print("\nElements dequeued from the queue")

print(q.popleft())

print(q.popleft())

print(q.popleft())

print("\nQueue after removing elements")

print(q)