**Question 5(b): Algorithm Analysis**

Both the array-based stack and the linked-list-based stack perform their main operations — push(add) and pop (remove) in constant time, written as O(1). This means that no matter how many elements are in the stack, these actions always take the same amount of time since they only affect the top element.

The array based stack is generally faster because all elements are stored together in continuous memory. However, it has a fixed size, so once the array is full, no new elements can be added, which may cause a stack overflow.

On the other hand, the linked-list stack is more flexible because it can grow using pointers and memory allocation. The drawback is that it’s slightly slower and uses more memory, since every node also stores an extra pointer and requires extra memory management.