ASSIGNMENT 1

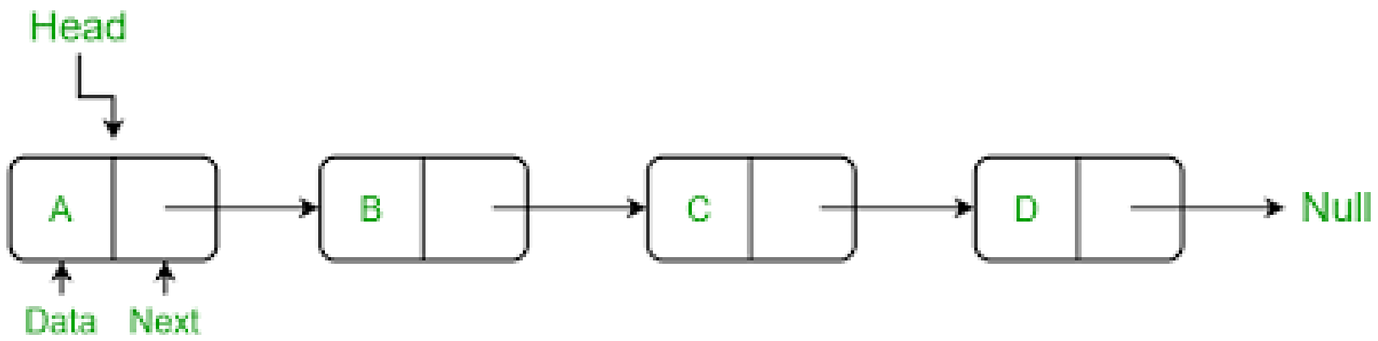
DATA STRUCTURE

Agenda

1. Report On Comparison of LinkedList and Dynamic Array

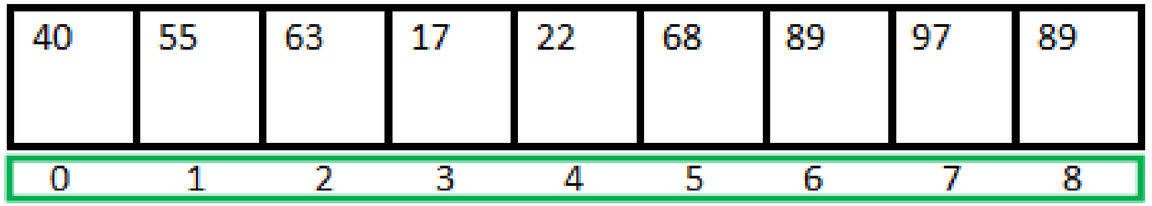
LINKED LIST REPRESENTATION

SRC:-
https://www.geeksforgeeks.org/linked-list-vs-array/



ARRAY REPRESENTATION

SRC:-
https://www.geeksforgeeks.org/linked-list-vs-array/



Array Length = 9
First Index = 0
Last Index = 8

TIME COMPLEXITY

Measure of how long an algorithm takes to run as the size of the input increases

OPERATION	LINKED LIST	DYNAMIC ARRAY
ACCESS	O(N)	O(1)
SEARCH	O(N)	O(N)
INSERT(AT BEGINNING)	O(N)	O(N)
INSERT (AT END)	O(N)	O(1)
INSERT(AT INDEX)	O(N)	O(N)
DELETION(AT BEGINNING)	O(1)	O(N)
DELETION (AT END)	O(N)	O(1)
DELETION (AT INDEX)	O(N)	O(N)

OPERATION	LINKED LIST	DYNAMIC ARRAY
REVERSE	O(N)	O(N)
ROTATION	O(N)	O(N)
MERGE	O(N)	O(N)
INTERLEAVE	O(N)	O(N)
MIDDLE	O(N)	O(1)
SIZE	O(N)	O(1)
IS EMPTY	O(1)	O(1)
SPLIT	O(1)	O(1)

SPACE COMPLEXITY

The total space taken by the algorithm with respect to the input size

OPERATION	LINKED LIST	DYNAMIC ARRAY
ACCESS	O(1)	O(1)
SEARCH	O(1)	O(1)
INSERT(AT BEGINNING)	O(1)	O(1)
INSERT (AT END)	O(1)	O(1)
INSERT(AT INDEX)	O(1)	O(1)
DELETION(AT BEGINNING)	O(1)	O(1)
DELETION (AT END)	O(1)	O(1)
DELETION (AT INDEX)	O(1)	O(1)

OPERATION	LINKED LIST	DYNAMIC ARRAY
REVERSE	O(1)	O(1)
ROTATION	O(1)	O(1)
MERGE	O(1)	O(1)
INTERLEAVE	O(1)	O(1)
MIDDLE	O(1)	O(1)
SIZE	O(1)	O(1)
IS EMPTY	O(1)	O(1)
SPLIT	O(1)	O(1)

LINKED LIST

ADVANTAGES

- DYNAMIC ALLOCATION
- AVAILABILITY

DISADVANTAGES

- ADDITIONAL MEMORY
- DATA ACCESS

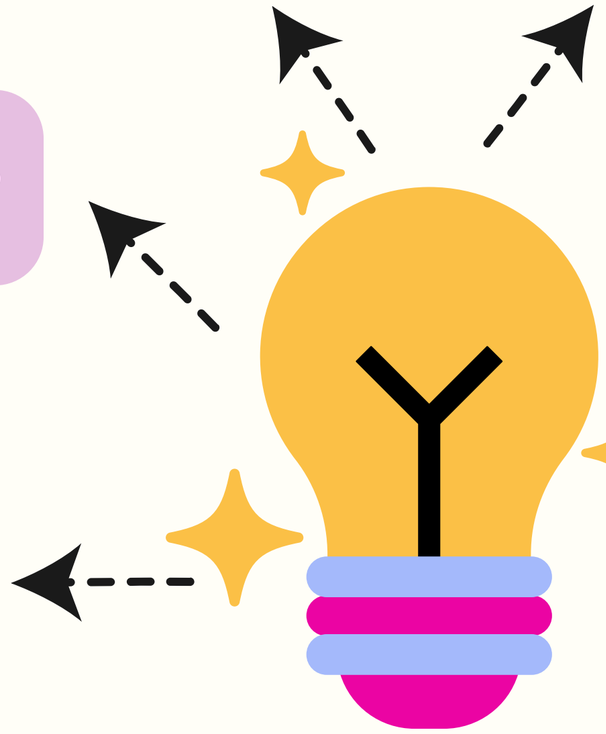
ARRAY

ADVANTAGES

- ORDERING
- RANDOM ACCESS MEMORTY
- NO ADDITIONAL MEMORY

DISADVANTAGES

- STATIC ALLOCATION
- OS DEFRAGMENTATION
- UNUSED MEMORY
- LARGED RAM



THANK YOU!

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