

Q1. Big O
Big theta
Big Ω

Big O gives us the upper limit of the case the upper limit (Worst Case)

Big theta gives us the lower bound of the case (Best Case)

Big Ω gives us the combination of both Big O and Big Ω

Big (o) notations helps us to understand the worst case of a given algorithm it is generally represented as.

$O(1) \rightarrow O(\log n) \rightarrow O(n) \rightarrow O(n \log n) \rightarrow O(n^2) \rightarrow O(n^{\log n})$

where $O(1)$ is best.

Q2.

1. Insertion at the start

```

struct node {
    int val;
    struct node *prev;
    struct node *next;
}

```

```

function Insertatstart (struct node ** head, data
{

```

```

    struct node * newnode;

```

```

    newnode → val = data;

```

```

    newnode → next = head;

```

```

    while (

```

```

        struct node temp = head

```

```

        while (temp → next != head)

```

```

            temp = temp → next;

```

```

        temp → next = newnode;

```

```

    }

```

```

function DeletionOfLastnode (struct node ** head, d
{

```

```

    struct node prev
    struct node temp

```

```

    struct node * newnode = head;

```

```

    while (temp → next != head)

```

```

        temp = temp → next;

```

```

    temp → next = prev → next;

```

```

    prev = temp;

```

```

    prev → next = head;

```


free(temp)

function DeletionOfLastNode(struct node* head)

{ struct node prev;

struct node temp = head;

while (temp->next != head)

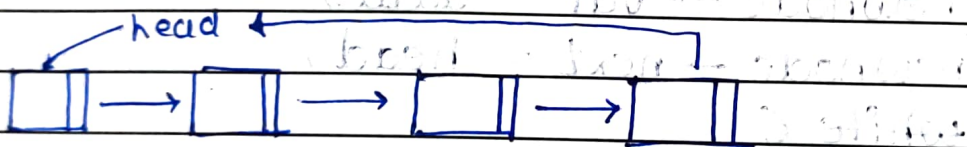
prev->next = temp;

temp = temp->next;

prev->next = head;

free(temp);

}



above is a circular link list in this the end node contains the memory location of the head instead of NULL pointer so we can use this to traverse to the last node until the next points to the head.

Insertion at start

create a new node then traverse to the end node and set the new node->next as the pointer to the last node

Deletion of last node

traverse to end store the previous node free the last node and set previous node to head.

Question
Nos.

Q3.

$$CA + B * (C - D)^E) / (F - G + H * I)$$

var	stack	Output
C	C	A
A	C	A
+	C +	AB
B	C +	AB
*	C + *	AB
C	C + * C	ABC
C	C + * C	ABC
-	C + * C -	ABCD
D	C + * C -	ABCD
)	C + * (-)	ABCD -
^	C + * ^	ABCD - E
E	C + * ^	ABCD - E
)	C + * (^)	ABCD - E ^ * A +
/	/	ABCD - E ^ * A +
C	/ C	ABCD - E ^ * A +
F	/ C	ABCD - E ^ * A + F
-	/ C -	ABCD - E ^ * A + F
G	/ C -	ABCD - E ^ * A + F
+	/ C +	ABCD - E ^ * A + F
H	/ C +	ABCD - E ^ * A + F
*	/ C + *	ABCD - E ^ * A + F
I	/ C + *	ABCD - E ^ * A + F
)	/ C + *)	ABCD - E ^ * A + F

$$ABCD - E ^ * A + F - H I * + /$$

$$ABCD - E^{\wedge} * + FG - HI * + /$$

Item	Quantity	Unit Price	Total
1. 1000	1000	1.00	1000.00
2. 2000	2000	2.00	4000.00
3. 3000	3000	3.00	9000.00
4. 4000	4000	4.00	16000.00
5. 5000	5000	5.00	25000.00
6. 6000	6000	6.00	36000.00
7. 7000	7000	7.00	49000.00
8. 8000	8000	8.00	64000.00
9. 9000	9000	9.00	81000.00
10. 10000	10000	10.00	100000.00
11. 11000	11000	11.00	121000.00
12. 12000	12000	12.00	144000.00
13. 13000	13000	13.00	169000.00
14. 14000	14000	14.00	196000.00
15. 15000	15000	15.00	225000.00
16. 16000	16000	16.00	256000.00
17. 17000	17000	17.00	289000.00
18. 18000	18000	18.00	324000.00
19. 19000	19000	19.00	361000.00
20. 20000	20000	20.00	400000.00
21. 21000	21000	21.00	441000.00
22. 22000	22000	22.00	484000.00
23. 23000	23000	23.00	529000.00
24. 24000	24000	24.00	576000.00
25. 25000	25000	25.00	625000.00
26. 26000	26000	26.00	676000.00
27. 27000	27000	27.00	729000.00
28. 28000	28000	28.00	784000.00
29. 29000	29000	29.00	841000.00
30. 30000	30000	30.00	900000.00
31. 31000	31000	31.00	961000.00
32. 32000	32000	32.00	1024000.00
33. 33000	33000	33.00	1089000.00
34. 34000	34000	34.00	1156000.00
35. 35000	35000	35.00	1225000.00
36. 36000	36000	36.00	1296000.00
37. 37000	37000	37.00	1369000.00
38. 38000	38000	38.00	1444000.00
39. 39000	39000	39.00	1521000.00
40. 40000	40000	40.00	1600000.00
41. 41000	41000	41.00	1681000.00
42. 42000	42000	42.00	1764000.00
43. 43000	43000	43.00	1849000.00
44. 44000	44000	44.00	1936000.00
45. 45000	45000	45.00	2025000.00
46. 46000	46000	46.00	2116000.00
47. 47000	47000	47.00	2209000.00
48. 48000	48000	48.00	2304000.00
49. 49000	49000	49.00	2401000.00
50. 50000	50000	50.00	2500000.00
51. 51000	51000	51.00	2601000.00
52. 52000	52000	52.00	2704000.00
53. 53000	53000	53.00	2809000.00
54. 54000	54000	54.00	2916000.00
55. 55000	55000	55.00	3025000.00
56. 56000	56000	56.00	3136000.00
57. 57000	57000	57.00	3249000.00
58. 58000	58000	58.00	3364000.00
59. 59000	59000	59.00	3481000.00
60. 60000	60000	60.00	3600000.00
61. 61000	61000	61.00	3721000.00
62. 62000	62000	62.00	3844000.00
63. 63000	63000	63.00	3969000.00
64. 64000	64000	64.00	4096000.00
65. 65000	65000	65.00	4225000.00
66. 66000	66000	66.00	4356000.00
67. 67000	67000	67.00	4489000.00
68. 68000	68000	68.00	4624000.00
69. 69000	69000	69.00	47