

LAPORAN TEORI
MATA KULIAH ALGORITMA DAN STRUKTUR DATA
PERTEMUAN 14 : TREE



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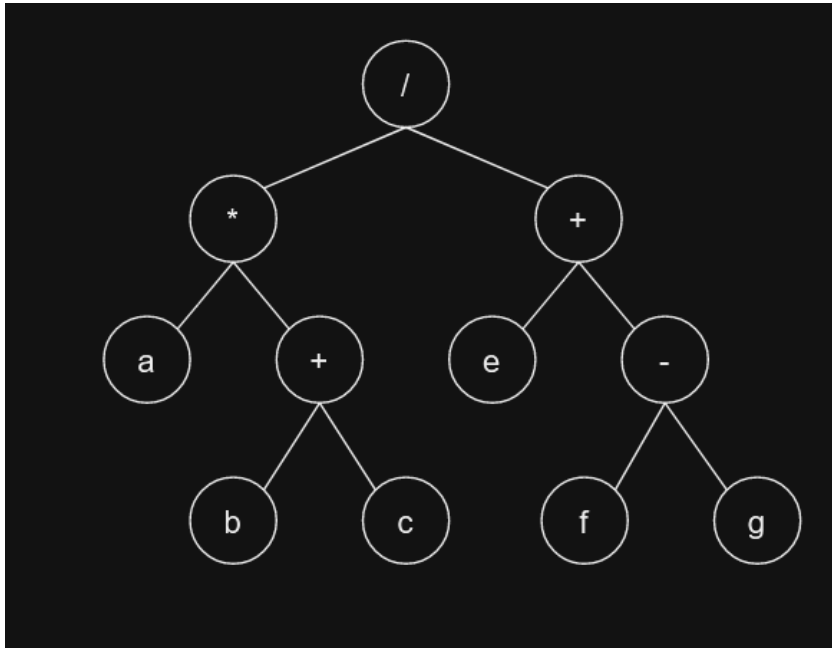
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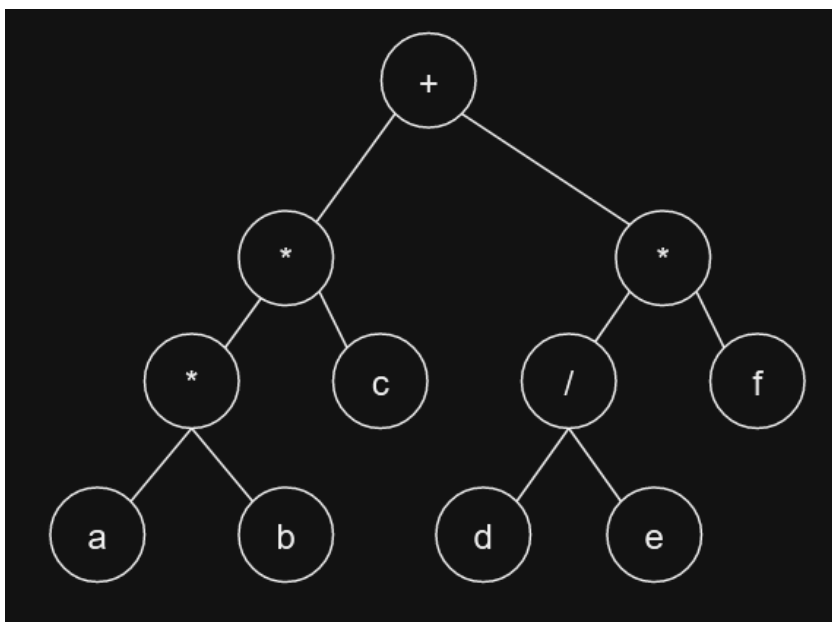
Tugas Latihan 1

Buatlah binary tree dari ekspresi aritmatik berikut:

1. $a * (b + c) / (e + (f - g))$



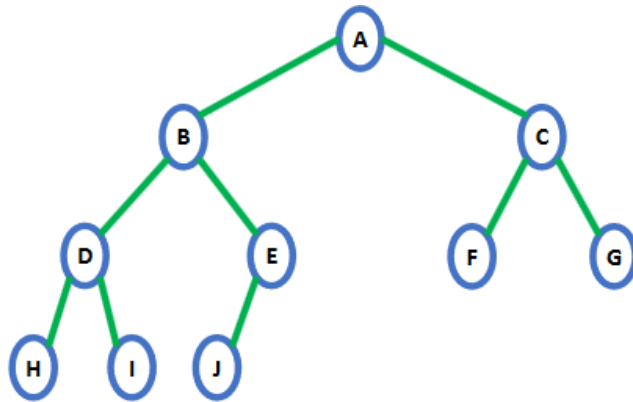
2. $((a * b) * c) + (d / e) * f$



Tugas Latihan 2

- Representasikan tree berikut dengan ilustrasi array dan linked list.

1.



a. Array

1. Asumsi root dimulai dari indeks-0

A	B	C	D	E	F	G	H	I	J
0	1	2	3	4	5	6	7	8	9

Proses :

- $B = 2 \cdot 0 + 1 = 1$
- $C = 2 \cdot 0 + 2 = 2$
- $D = 2 \cdot 1 + 1 = 3$
- $E = 2 \cdot 1 + 2 = 4$
- $F = 2 \cdot 2 + 1 = 5$
- $G = 2 \cdot 2 + 2 = 6$
- $H = 2 \cdot 3 + 1 = 7$
- $I = 2 \cdot 3 + 2 = 8$
- $J = 2 \cdot 4 + 1 = 9$

2. Asumsi root dimulai dari indeks-1

	A	B	C	D	E	F	G	H	I	J
0	1	2	3	4	5	6	7	8	9	10

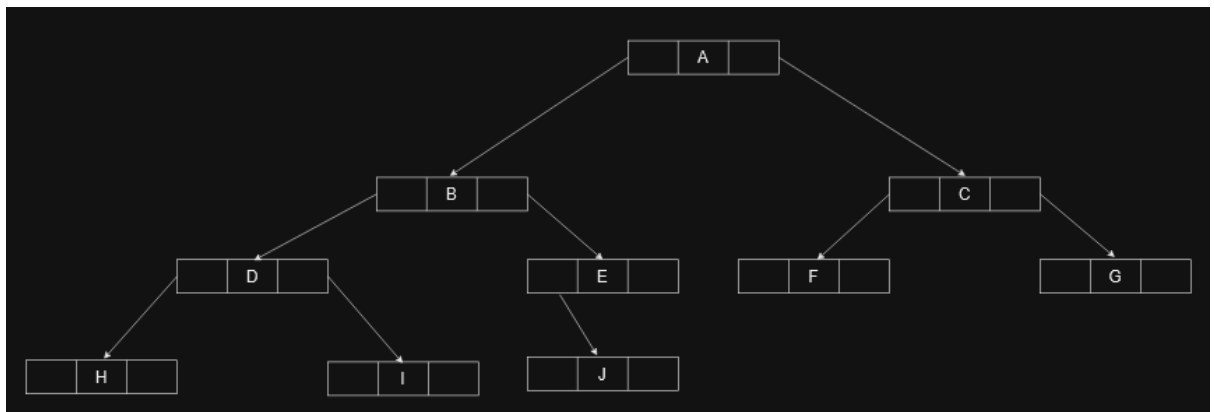
Proses :

- $B = 2 \cdot 1 = 2$
- $C = 2 \cdot 1 + 1 = 3$
- $D = 2 \cdot 2 = 4$
- $E = 2 \cdot 2 + 1 = 5$

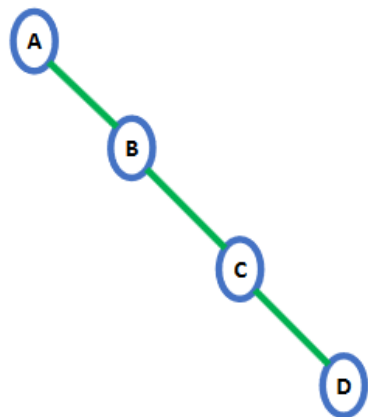
- $F = 2 * 3 = 6$
- $G = 2 * 3 + 1 = 7$
- $H = 2 * 4 = 8$
- $I = 2 * 4 + 1 = 9$
- $J = 2 * 5 = 10$

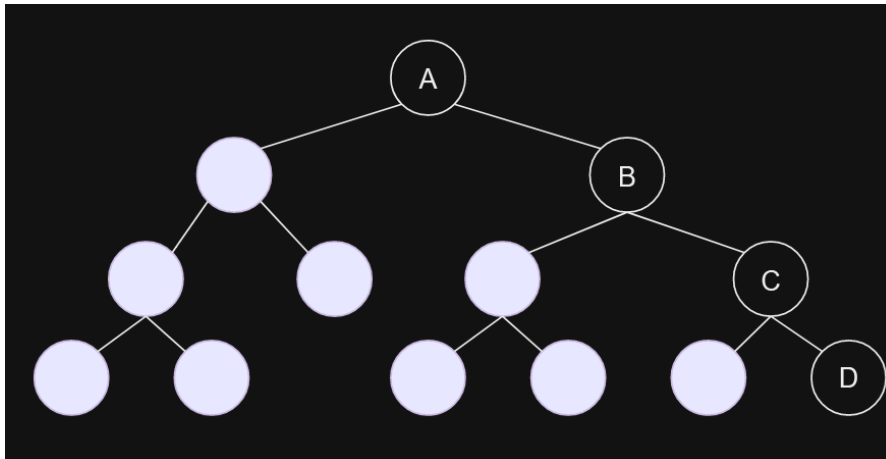
b. Linked list

Masing-masing node terdiri dari 3 bagian, pointer kiri, data, dan pointer kanan.



2.





a. Array

1. Asumsi root dimulai dari indeks-0

A		B				C							D
0	1	2	3	4	5	6	7	8	9	10	11	12	

Proses :

- $B = 2 \cdot 0 + 2 = 2$
- $C = 2 \cdot 2 + 2 = 6$
- $D = 2 \cdot 5 + 2 = 12$

2. Asumsi root dimulai dari indeks 1

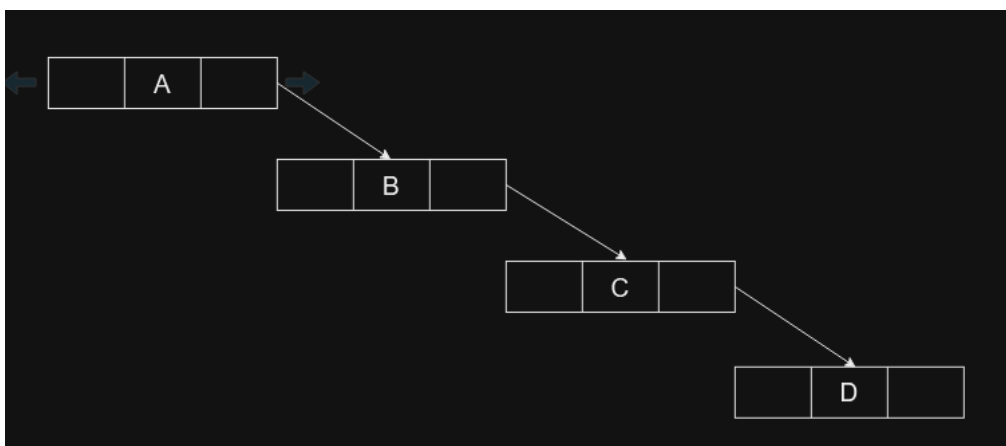
	A		B				C						D
0	1	2	3	4	5	6	7	8	9	10	11	12	13

Proses :

- $B = 2 \cdot 1 + 1 = 3$
- $C = 2 \cdot 3 + 1 = 7$
- $D = 2 \cdot 7 + 1 = 15$

b. Linked list

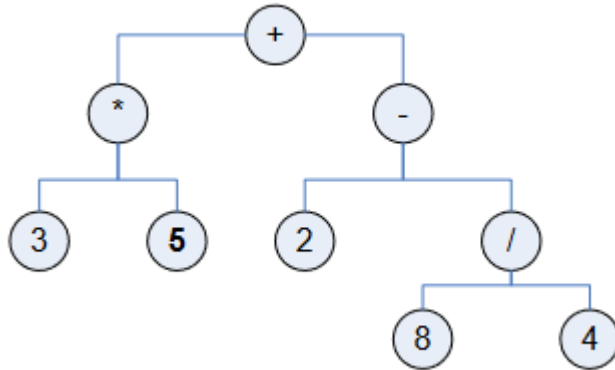
Masing-masing node terdiri dari 3 bagian, pointer kiri, data, dan pointer kanan



Tugas Latihan 3

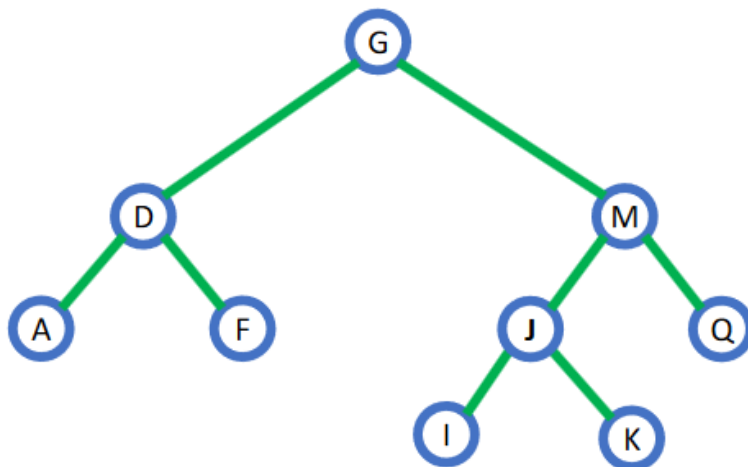
- Telusuri pohon biner berikut dengan menggunakan metode preorder, inorder, postorder, dan level order traversal.

1.



- Preorder : root – left child – right child : +, *, 3, 5, -, 2, /, 8, 4
- Inorder : left child – root – right child : 3, *, 5, +, 2, -, 8, /, 4
- Postorder : left child – right child – root : 3, 5, *, 2, 8, 4, /, -, +
- Level Order : +, *, -, 3, 5, 2, /, 8, 4

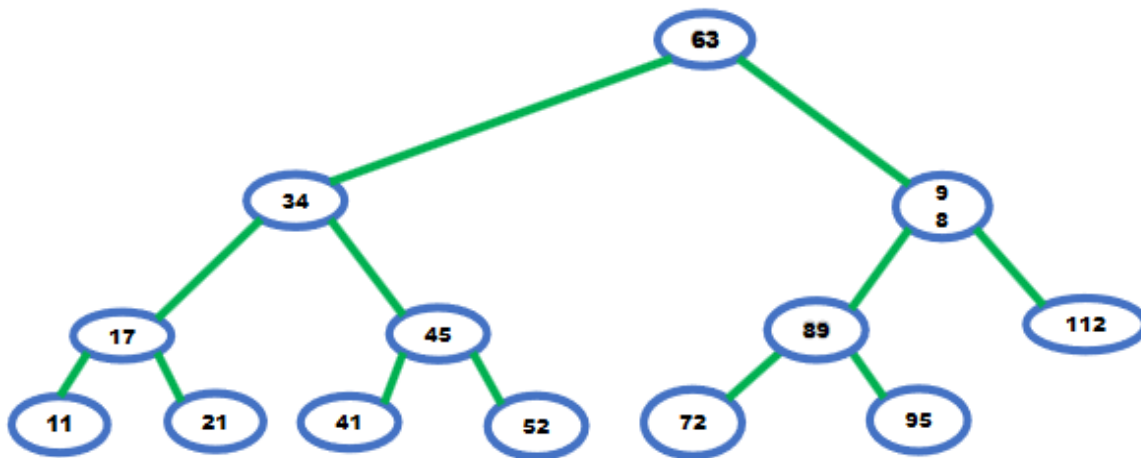
2.



- Preorder : root – left child – right child : G, D, A, F, M, J, I, K, Q
- Inorder : left child – root – right child : A, D, F, G, I, J, K, M, Q
- Postorder : left child – right child – root : A, F, D, I, K, J, Q, M, G
- Level Order : G, D, M, A, F, J, Q, I, K

Tugas latihan 4

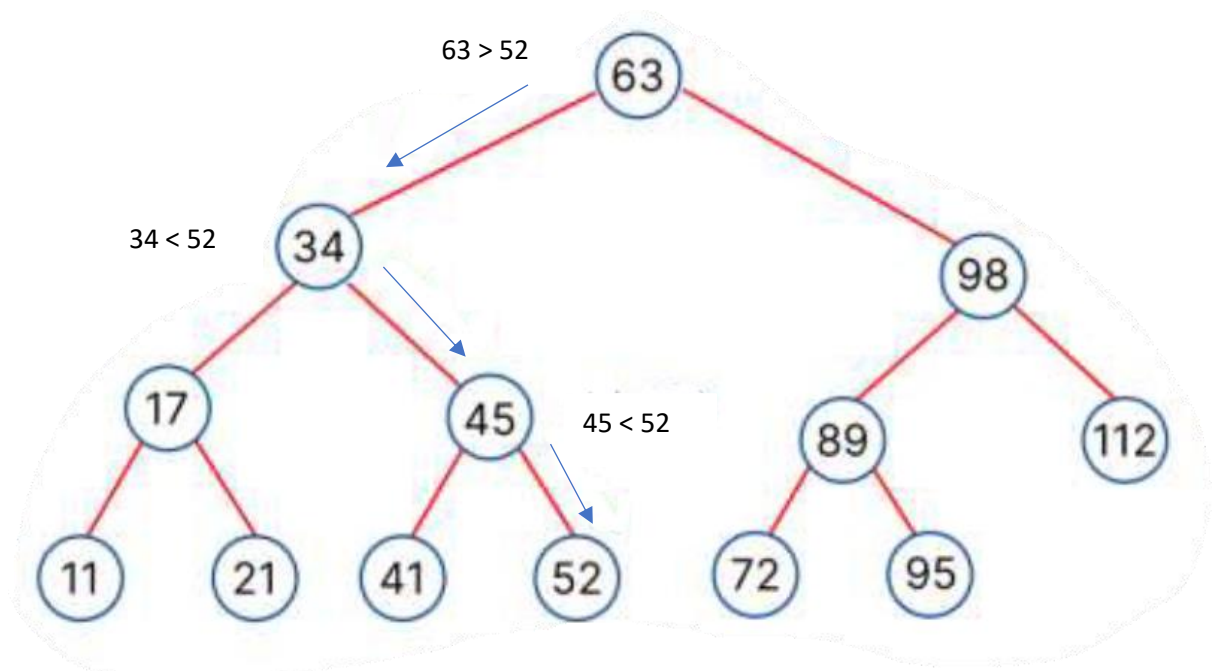
- Terdapat sebuah tree seperti gambar disamping



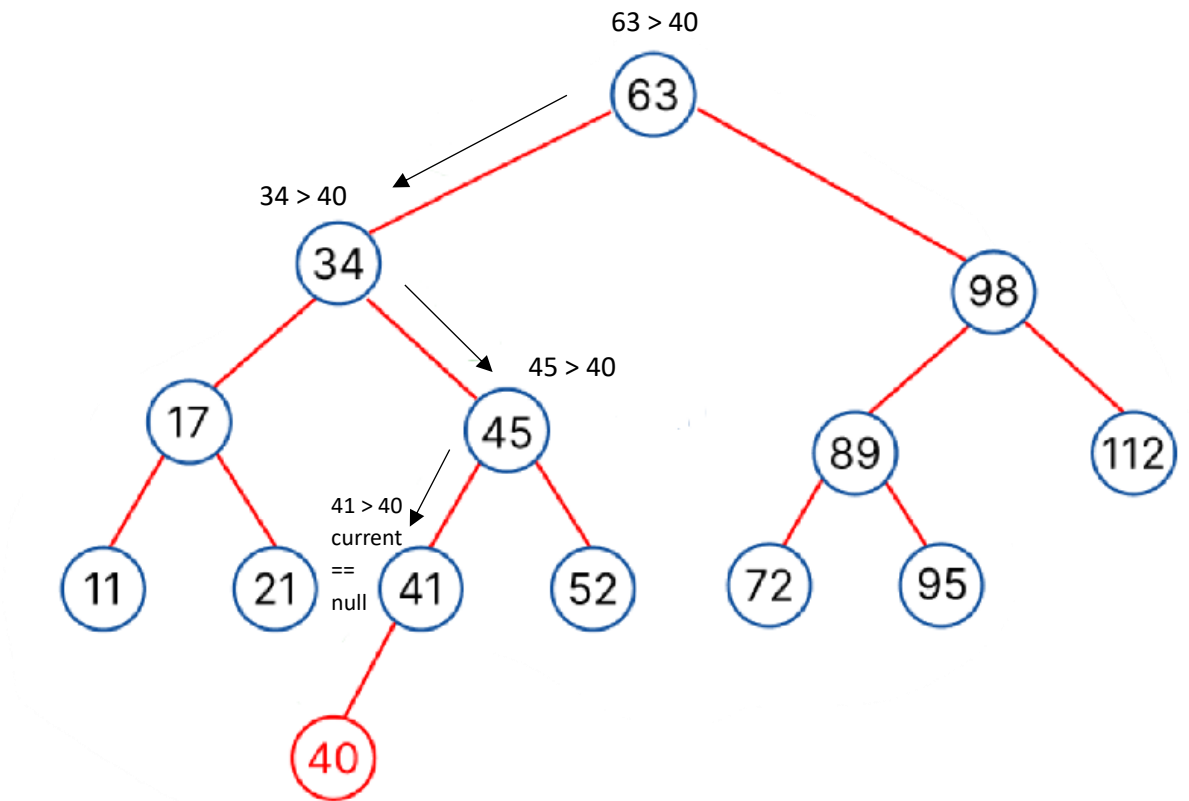
Terdapat data baru (40) yang akan ditambahkan dan data lama (98) yang akan dihapus.

Ilustrasikan operasi (find, insert, delete, display) yang akan dilakukan untuk mengatasi penambahan dan penghapusan data tersebut.

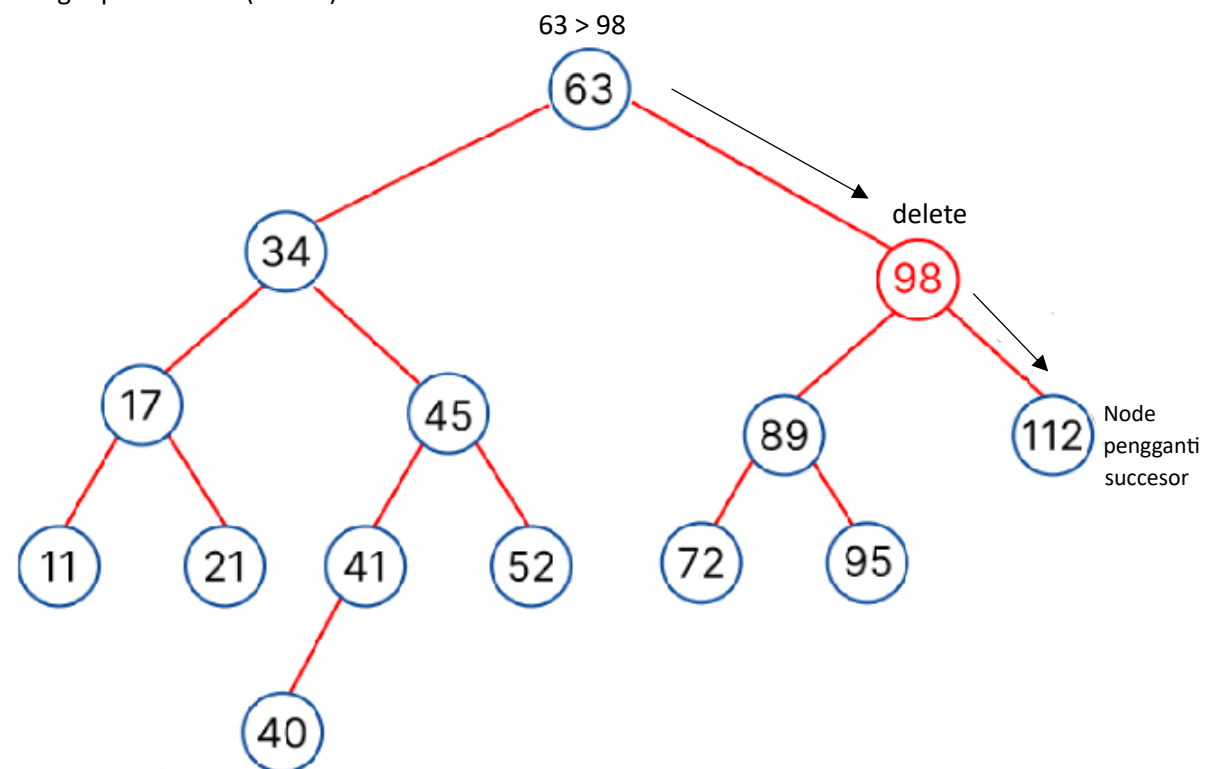
1. Mencari data 52 (find):

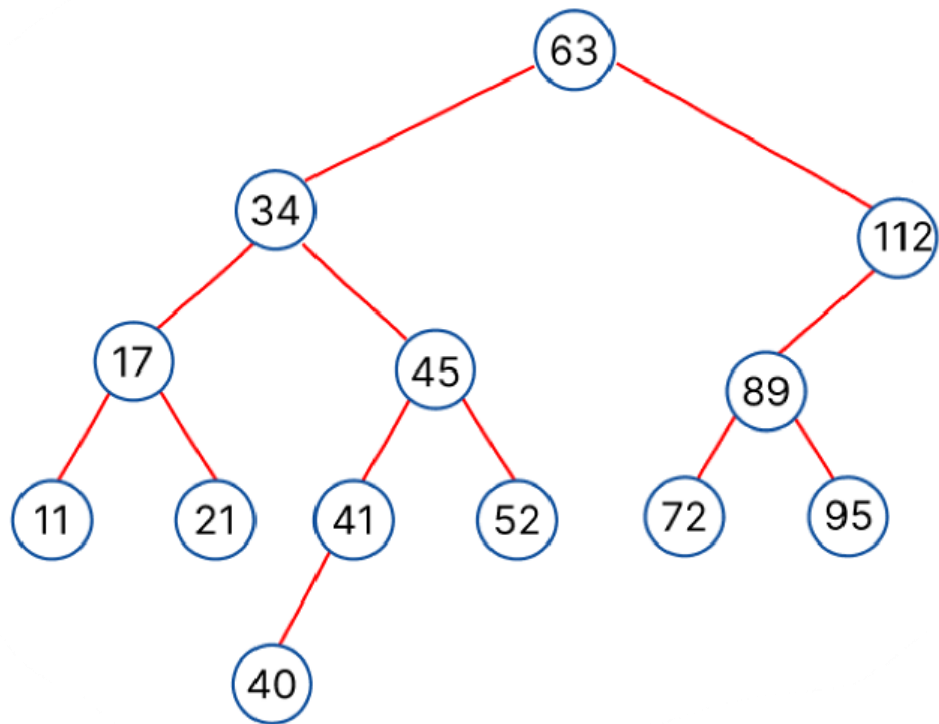


2. Menambahkan data 40 (insert):



3. Menghapus data 98 (delete)





4. Display

- Preorder : 63, 34, 17, 11, 21, 45, 41, 40, 52, 112, 89, 72, 95
- Inorder : 11, 17, 21, 34, 40, 41, 45, 52, 63, 72, 89, 95, 112
- Postorder : 11, 21, 17, 40, 41, 52, 45, 34, 72, 95, 89, 112, 63
- Level Order : 63, 34, 112, 17, 45, 89, 11, 21, 41, 52, 72, 95, 40