

M way search tree search and insertion

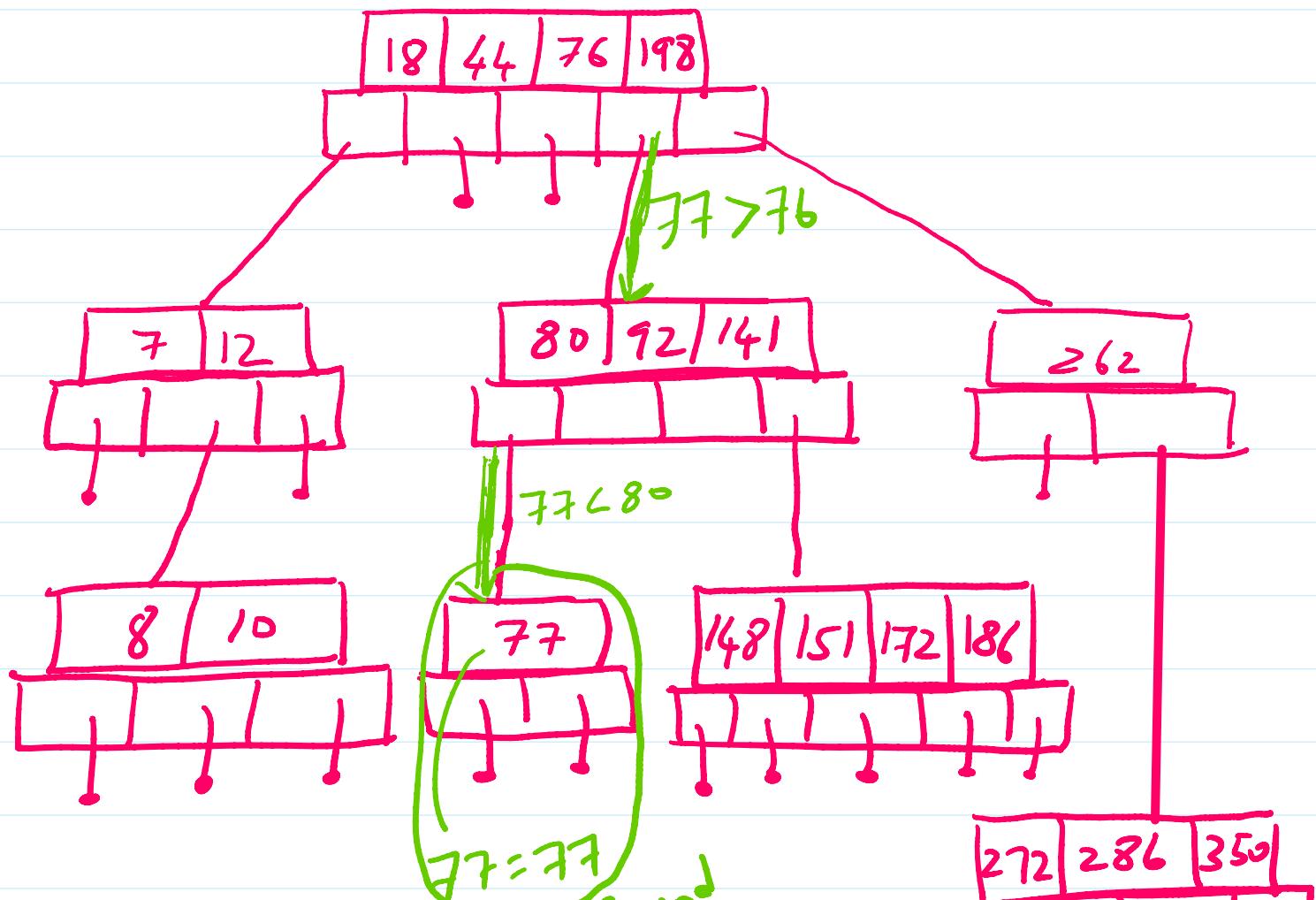
31 August 2021 14:26

M-WAY Search Tree

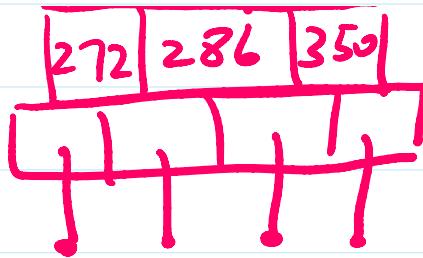
Search

Example:

Search 77 in the following M-way search tree of order 5.

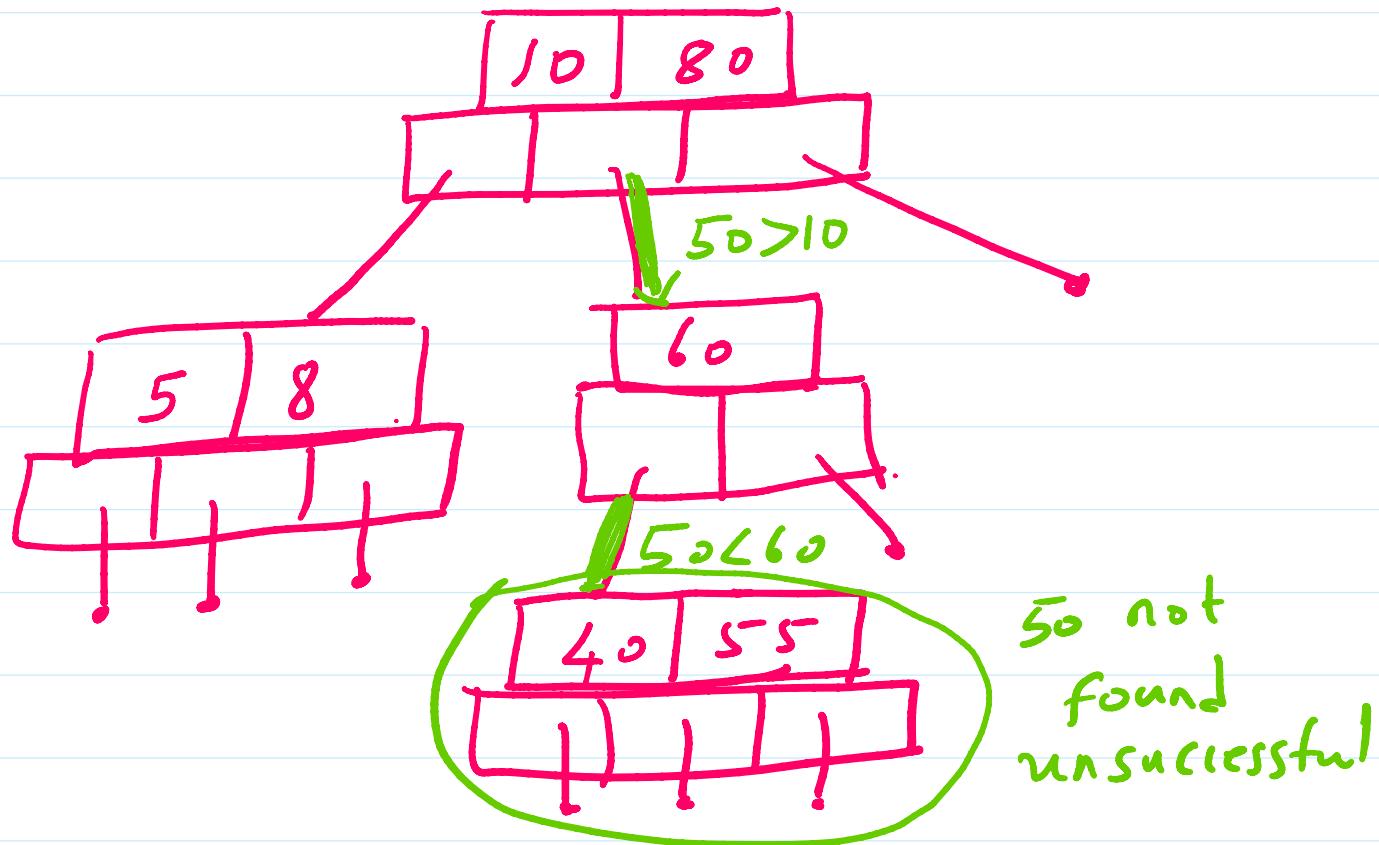


$77 = 77$
found



Example 2

Search 50 in the following 3-WAY Tree.

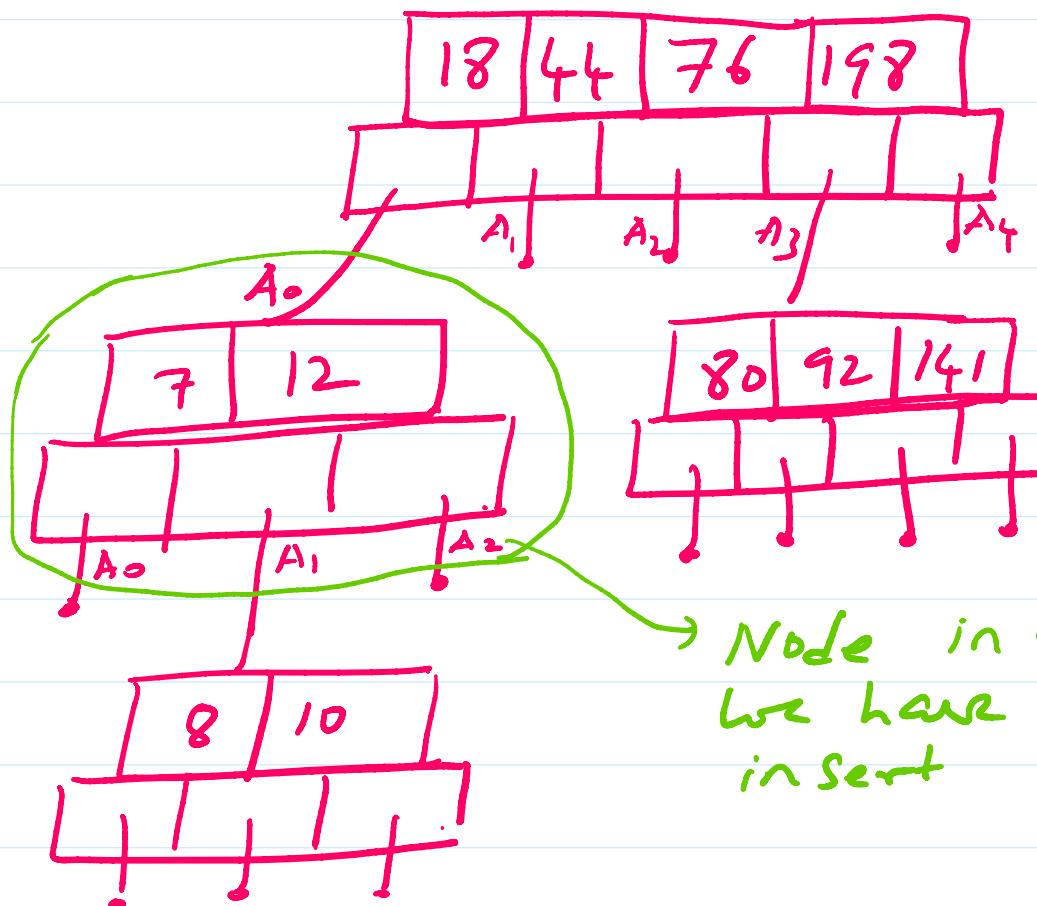


Insertion

Example 1

Example 1

Insert 6 in the following 5-way tree.



Step 1:

Consider Root node.

$$6 < 18$$

\therefore Go to left of 18.

Left pointer not null (A₀)

Left pointer not null (A_0)
Go to the node pointed by A_0 .

Step 2 :

Consider node $\boxed{7 \mid 8}$.

$6 < 7$

Go to left of 7.

Left pointer is null (A_1)

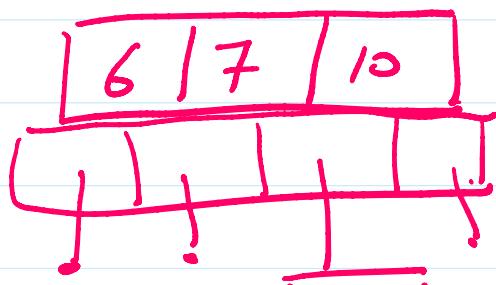
Check whether space
is available.

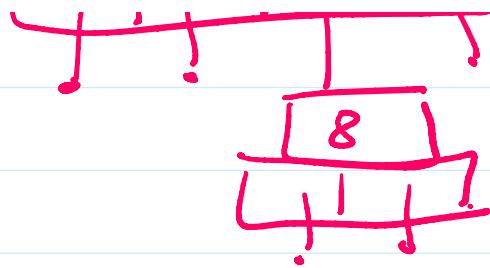
[order 5, \therefore 4 keys allowed]

Yes ✓

Insert in the
current node.

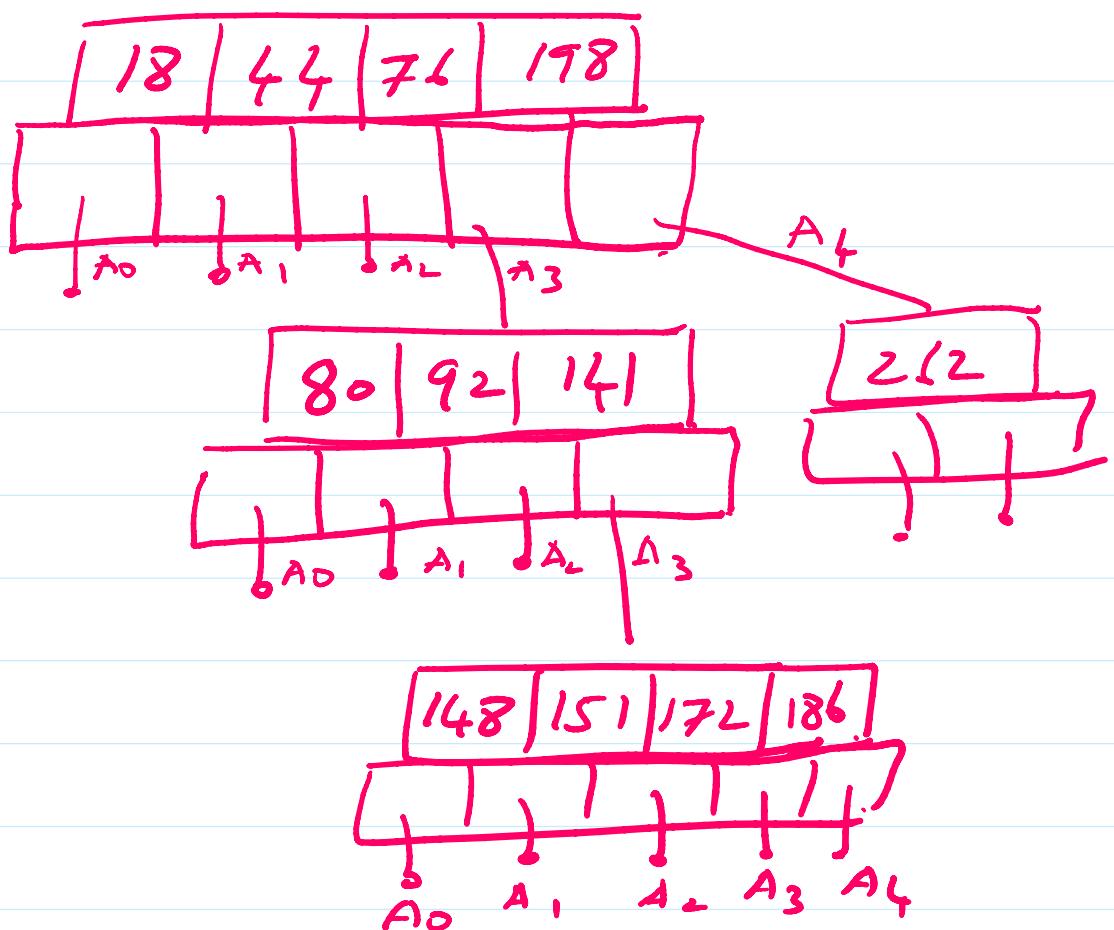
\therefore Resultant node is





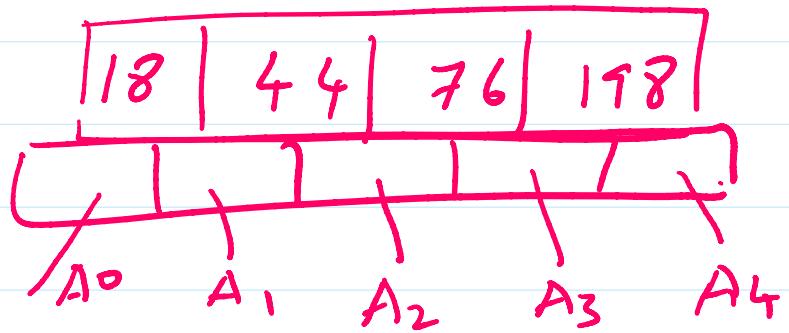
Example 2:

Insert 146 in the following 5-way search tree.



Step 1

Consider Root node



$146 > 76$ and < 198

\therefore Choose A₃ Pointer.

A₃ Pointer is not null.

Go to the node pointed by
A₃

Step 2

Consider the node

80	92	141
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$146 > 141$

Choose A₃ pointer

A₃ Pointer is not null.

Go to the node Pointed by
A₃

Step 3

Consider the node

148	151	172	184
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$146 < 148$

\therefore Choose Ao pointer

Ao pointer is null

Hence Consider the current node. Space is not available because already 4 keys are there.

Step 4

Go one level down
and create a new node
Pointed by Ao & insert 146.

