

Level Order Traversal:

What does traversal mean?

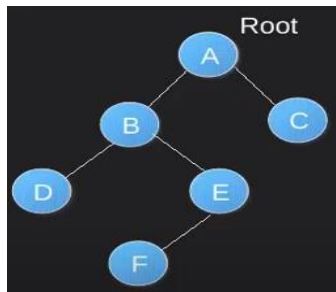
Reading/Processing the data of a node exactly once in some order in a tree.

Let's understand the algorithm, which contains 3 steps:

```
printLevelorder(tree)
1) Create an empty queue q
2) temp_node = root /*start from root*/
3) Loop while temp_node is not NULL
    a) print temp_node->data.
    b) Enqueue temp_node's children (first left then right children) to q
    c) Dequeue a node from q and assign it's value to temp_node
```

Note:

- If a node contains one child, that means the node contain one null link.
- If a node contains no child, that means the node contain two null links.
- The parent node of a node cannot be null.



Step One: we create a temporary queue, and call it q:

```
Queue (FIFO) _____
```

Step Two: we point our temp node variable to the root of the tree, which in this example is A:

```
temp_node = A
```

Step Three: we execute a while loop:

a)... since temp node variable A is not null, we print its data...

b)... then we enqueue its children into the Queue, which are B and C...

```
Queue (FIFO)  B C
Level Order : A                                temp_node = A
```

c)... B is now the temp node; since it is not null, we print it and its children (D and E) are enqueued:

```
Queue (FIFO)  C D E
Level Order : A B                                temp_node = B
```

And the process is repeated for C:

```
Queue (FIFO)  D E
Level Order : A B C                                temp_node = C
```

... since C is not null, we print its data...

... since C has no children, we do not enqueue anything. Now it's on to the next level:

```
Queue (FIFO)  E
Level Order : A B C D                                temp_node = D
```

... and the next level:

```
Queue (FIFO)  F
Level Order : A B C D E                                temp_node = E
```

... and the last level:

```
Queue (FIFO)
Level Order : A B C D E F                                temp_node = F
```

... since F's child nodes are null, the temp node will then be null and nothing will print.

```
Queue (FIFO)
Level Order : A B C D E F                                temp_node = NULL
```

... now we break out of our while loop.