

# CP2410 Practical 05

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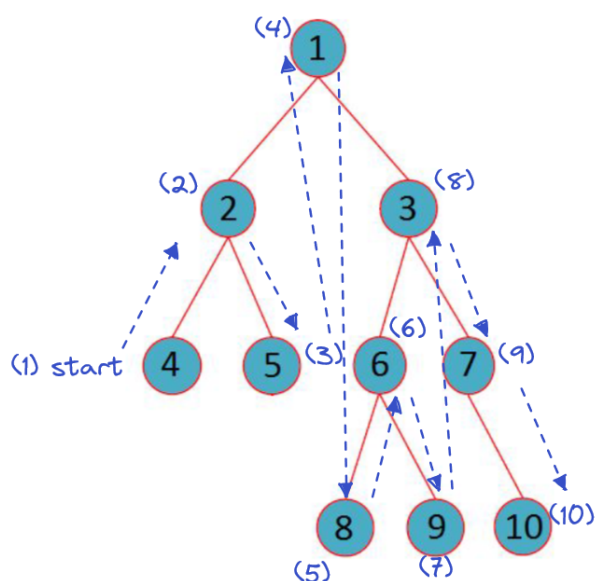
## Question 1

- The root node is `'/user/rt/courses/'`.
- There are 8 internal nodes, those are: `'/user/rt/courses/'`, `'cs016/'`, `'cs252/'`, `'homeworks/'`, `'programs/'`, `'projects/'`, `'papers/'`, and `'/demos'`.
- The node `'cs016/'` has 9 descendants.
- The node `'cs016/'` has one ancestor.
- The siblings for node `'homeworks/'` are `'grades'` and `'programs/'`.
- There are 5 nodes in the subtrees rooted at node `'projects/'`, those are: `'papers/'`, `'demos/'`, `'buylow'`, `'sellhigh'`, and `'market'`.
- The depth of node `'papers/'` is 3.
- The height of the tree is 4.

## Question 2

- the inorder traversal should look like this:

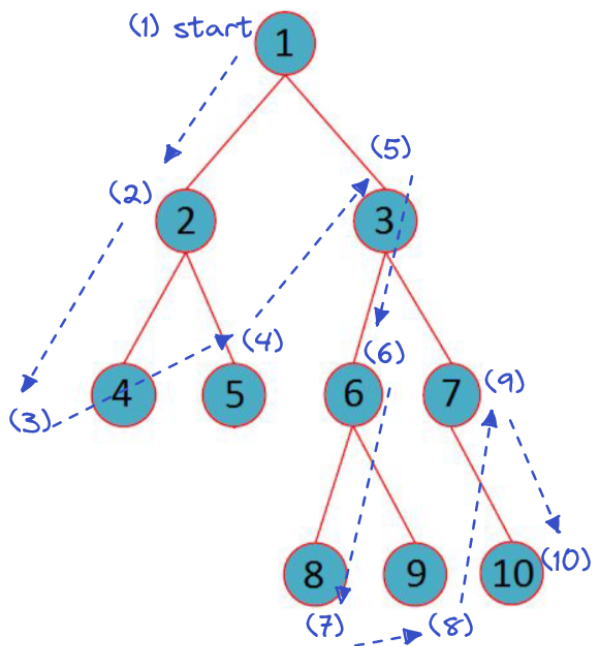
*Inorder traverse*



Output: 4 2 5 1 8 6 9 3 7 10

b. the preorder traversal should look like this:

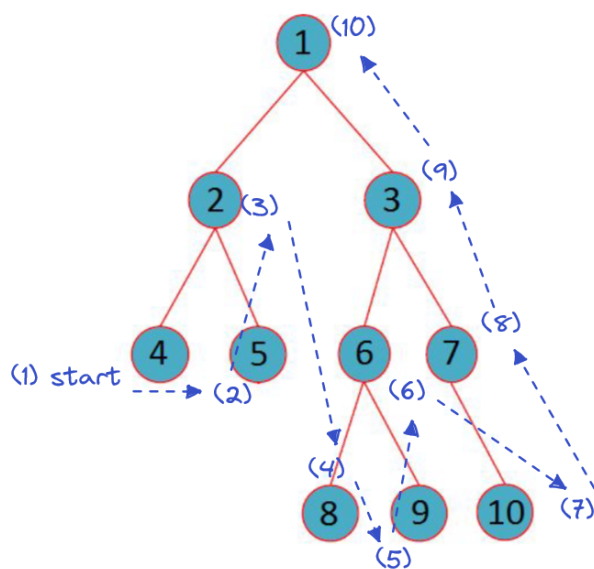
### Preorder traverse



Output: 1 2 4 5 3 6 8 9 7 10

c. the postorder traversal should look like this:

### Postorder traverse



Output: 4 5 2 8 9 6 10 7 3 1

## Question 3

Here is the screenshot of the linked binary tree and its three traverse methods implementation code:

```

prac06.md  traverse_output.py  traversal_examples.py
ch08 > traverse_output.py > ...
23 from linked_binary_tree import LinkedBinaryTree
22
21
20 linked_bt = LinkedBinaryTree()
19 pos1 = linked_bt._add_root(1)
18 pos2 = linked_bt._add_left(pos1, 2)
17 pos3 = linked_bt._add_right(pos1, 3)
16 pos4 = linked_bt._add_left(pos2, 4)
15 pos5 = linked_bt._add_right(pos2, 5)
14 pos6 = linked_bt._add_left(pos3, 6)
13 pos7 = linked_bt._add_right(pos3, 7)
12 pos8 = linked_bt._add_left(pos6, 8)
11 pos9 = linked_bt._add_right(pos6, 9)
10 pos10 = linked_bt._add_right(pos7, 10)
9
8 print("Inorder:")
7 for p in linked_bt.inorder():
6     print(p.element(), end=' ')
5 print()
4
3 print("Preorder:")
2 for p in linked_bt.preorder():
1     print(p.element(), end=' ')
24 print()
1
2 print("Postorder:")
3 for p in linked_bt.postorder():
4     print(p.element(), end=' ')
5 print()
6

PROBLEMS  OUTPUT  TERMINAL  GITLENS  SQL CONSOLE  DEBUG CONSOLE

pwsh ~\Dev\cp2410\Week06\ch08 > python .\traverse_output.py
Inorder:
4 2 5 1 8 6 9 3 7 10
Preorder:
1 2 4 5 3 6 8 9 7 10
Postorder:
4 5 2 8 9 6 10 7 3 1
pwsh ~\Dev\cp2410\Week06\ch08 >

```

outputs are the same as my answer in [Q2](#).