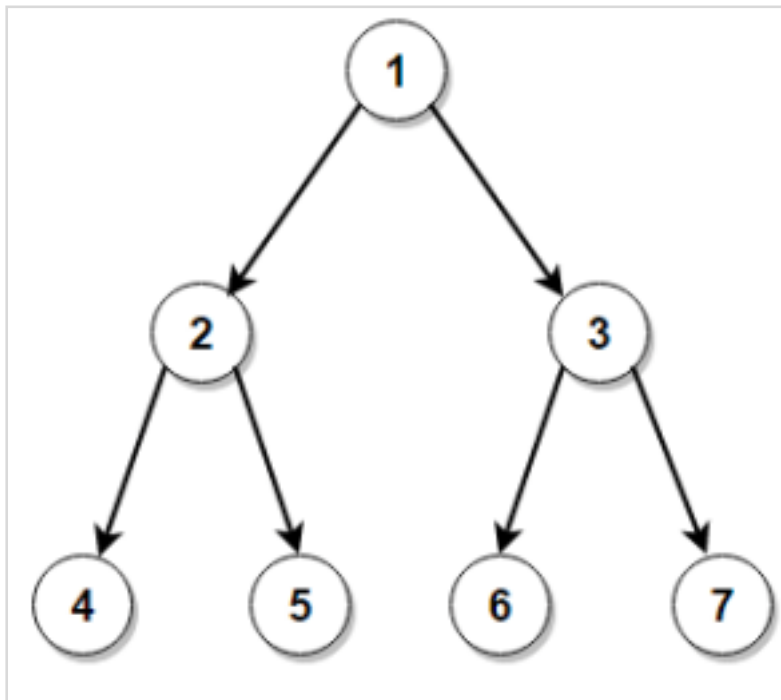


CS2100-Trees

#CS2100/individual

Implementar Arbol



Base Code

```
template <typename T>
class Node{
public:
    T key;
    Node<T> *left, *right;

    Node(T key){
        this->key = key;
        this->left = this->right = nullptr;
    }
};

template <typename T>
```

```
class Tree{
public:
    Node<T> * root;

    Tree(void):root(nullptr){
    }
};
```

Implementar las siguientes funcionalidades

- ☐ Check if two given binary trees are identical or not (1pts)
 - Identical Structure and Content
- ☐ Insert Node (2pts)
- ☐ Delete Node (2pts)
- ☐ Calculate height of a binary tree (1pts)
 - Number of nodes from root to leaf in the longest path
- ☐ Delete given Binary Tree (1pts)
 - Delete entire tree
- ☐ In-order Tree Traversal (1pts)
 - Left - Node - Right
- ☐ Pre-order Tree Traversal (1pts)
 - Node - Left - Right
- ☐ Post-order Tree Traversal (1pts)
 - Left - Right - Node
- ☐ Find next node in same level for given node in a binary tree (1pts)
- ☐ Check if given binary tree is complete binary tree or not (1pts)
 - Is call complete if every level, except the last, is completely filled and all nodes are as far left as posible
- ☐ Print all paths from root to leaf nodes in given binary tree (1pts)
- ☐ Find ancestors of given node in a Binary Tree (1pts)
- ☐ Check if given binary tree is height balanced or not (1pts)
 - Difference of length of height of right and left side are zero
- ☐ Determine if given Binary Tree is a BST or not (1pts)
- ☐ Convert a Binary Tree to BST by maintaining its original structure (2pts)
- ☐ Calculate height of a binary tree with leaf nodes forming a circular doubly linked list (2pts)

Tooling

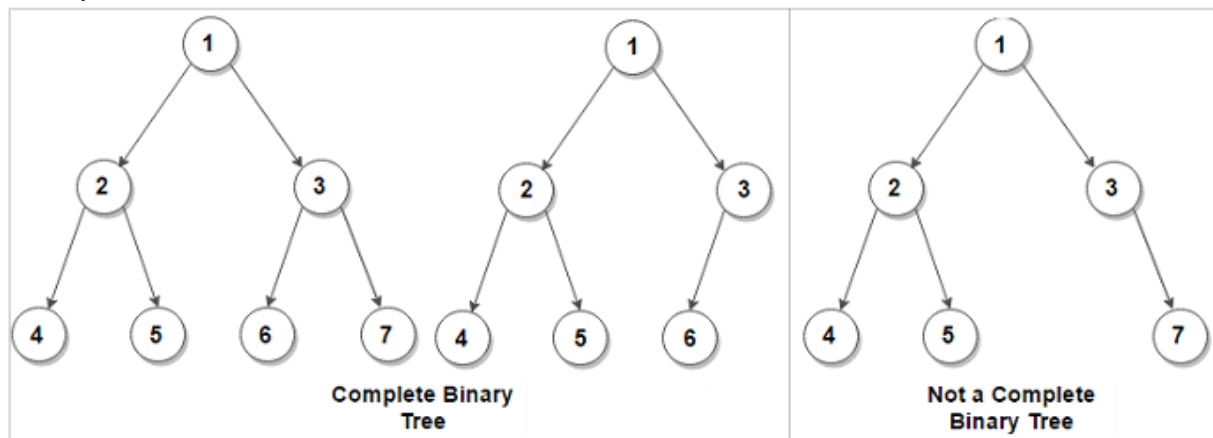
- Lenguaje C++
- Git + GitFlow + Karma Comments
- Si el código no compila se calificara sobre 11.
- Hacer un main para probar los ejercicios
- Evitar warnings
- Código limpio → *Keep it short and simple.*

Help!

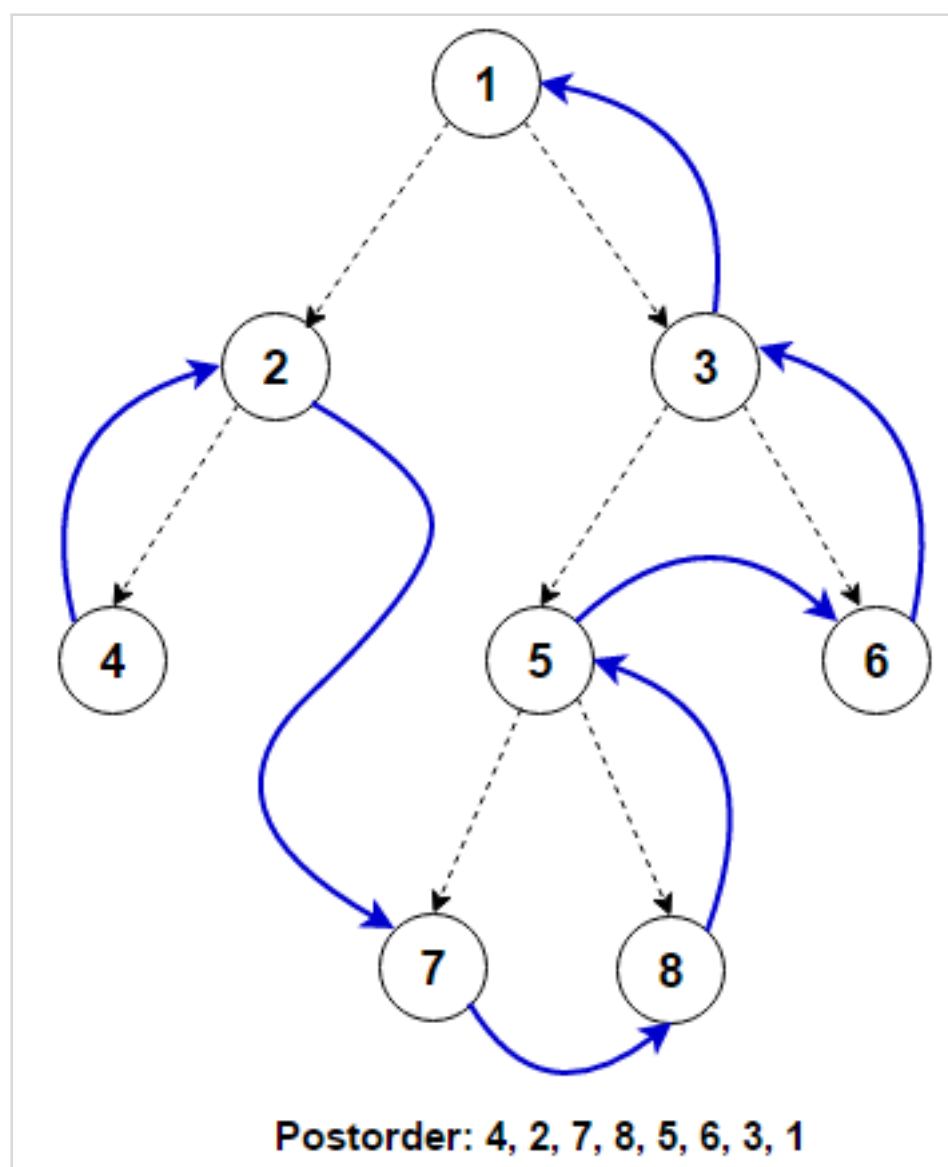
- Usemos el canal de Slack! (<https://bit.ly/2LYblbh>)

Images

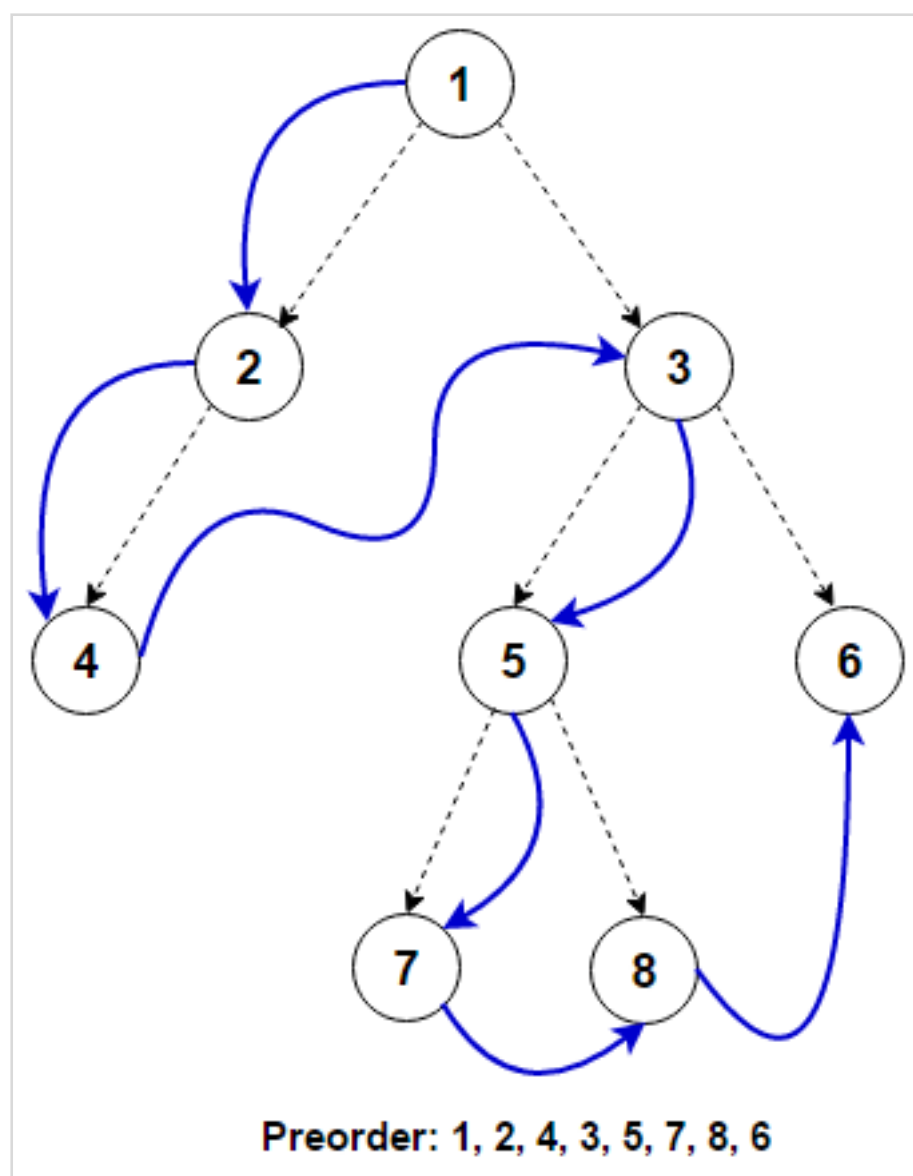
Complete Tree



Post Order



Pre Order



In Order

