

## I. Program structure:

My program has 6 functions (not included the main function):

- **readFile**: Read data from a file.
- **writeFile**: Save data to a file.
- **menu**: Display a menu and receives user decision.
- **play**: A recursive function to play game, traverse the tree lean on user answer.
- **add**: When the game data has no information about the animal which user is thinking about, ask him to teach (*insert data to the tree*) the game for better and better suggestions.
- **freeMemory**: Deallocate used memory.

The file structure I defined:

- Each node is written in one separated line.
- NULL node is marked with '#' for ease of reading.
- Saved based on pre-order traversing.

## II. Difficulties encountered and solutions:

There is no big problem that I encountered while implementing the program.

It just simple as reading data to a binary tree and traverse the tree but one more step is receiving user decision to finding the right way to traverse.

If I have to choose the hardest function that I encountered, that was adding data to the tree.

But it also easy, create two new NULL successors node of current leaf node. Then move current data to the new right successor (the node we will traverse if user say "No"), and the new animal user tough the game to the new left successor (the node we will traverse if user say "Yes"). Finally, change current question to the new question that the game asked user to teach it.