BBM 203

ASSIGNMENT 4

Problem :

The problem is to generate a BNF-Tree considering the given symbols and production rule then print the tree recursively.

Solution :

I created 4 different struct types to handle different offsprings that are Node, NodeWithOneChild, NodeWithTwoChildren, NodeWithThreeChildren, and every struct type has a type variable that indicates what type of struct is. I created the **root** pointer that has one child which is an <cond> offspring. Generating a tree is start with that <cond> offspring.

Methods to solve the problem :

char readFile():** It reads the terminal file given as an argument then stores every line in the array and returns the array.

int generateNumber(): Generates a random number in the given range. It takes 2 arguments which are lower and upper bounds.

void* createNode(): Creates a node that has no child. Assigns its data from the appropriate terminal file randomly then returns that node.

void* setOp(),void* relOp(),void* preOp(),void* OP(),void* VAR(): Creates a node that has one child. Generates number then assigns its children to createNode() method.

void* createExpr(): Generates a number range 0,2 then with respect to the number creates new NodeWithOneChild or NodeWithTwoChildren or NodeWithThreeChildren. After the creation of the node assigns children to appropriate methods.

void* createCond(): Generates a number range 0,1, then with respect to the number creates a new NodeWithThreeChildren. After the creation of the node assigns children to appropriate methods.

void printTree(): Prints the tree recursively. It takes one argument which is a void pointer. After the casting, if the node has no child prints its data, else calls itself with its child, repeat this process until the number of children.

Umut Özdemir

21727609