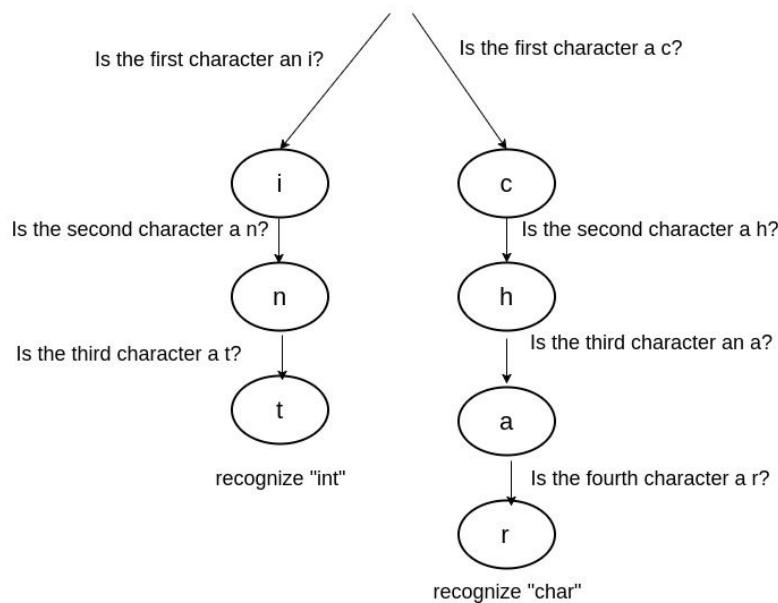


### Problem 3. (20 points) GenTree.java

*“A decision tree is a decision support tool that uses a tree-like graph or model of decisions and their possible consequences to make a decision based on the circumstances of a scenario presented”*

A paradigm you see often in programs is your program will receive a string of characters as input and it must check if a sub sequence of characters exists in that input. If I wanted to check and see if a string inputted into my program started with the substring “int”, I could walk down both strings at the same time comparing them character by character to see if they matched.

What if I wanted to check if it started with multiple substrings at the same time (i.e. does my string I received contain “int” or “char”?). One way to navigate this task is to create a decision tree. We could use the following decision tree to solve our problem:



Given some sequence of characters, we could determine if it starts with the substrings “int” or “char”, and also if it does not start with either, by simply walking through our diagram. Notice how the given diagram above corresponds to the following switch statement:

```

switch (input[0]) {
    case 'i':
        switch (input[1]) {
            case 'n':
                switch (input[2]) {
                    case 't':
                        System.out.println("recognized int");
                        break;
                }
                break;
        }
        break;
    case 'c':
        switch (input[1]) {
            case 'h':
                switch (input[2]) {
                    case 'a':
                        switch(input[3]) {
                            case 'r':
                                System.out.println("recognized");
                                break;
                        }
                        break;
                }
                break;
        }
        break;
}

```

In our example above we only had two strings in the set of sub strings we were recognizing. In theory, we could generate a decision tree (and switch statement) like this to recognize any set of substrings!

You will be writing a program **that generates a java method** to automatically recognize a set of substrings. The program will receive a set of strings as input from standard in and then generate a java method that recognizes this set of strings via a switch statement as described above. This method should then be printed to stdout.

The program you are writing will receive a set of strings, one per line, from standard in. Each string read in belongs to the set of substrings your generated method must recognize. Once it has collected this set, your program will generate a method called `public int recognize(String input)`. You will generate the “decision tree” switch

statement as the body of code for this function. If the function successfully recognizes a substring, it should return 1. Otherwise, return 0. You will emit your generated function to standard output.

Note: if you receive two substrings such as "abc" and "abcd" where one is the start of the other, you should recognize abc if given a string that starts with abc, or recognize abcd if given a string that starts with abcd.