CSC3301 ASSIGNMENT 2 WORKING WITH CONTEXT FREE GRAMMARS – GROUP 5

Team Members

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CONTEX FREE GRAMMERS

What are context free Grammars ?

Context Free Grammars or CFGs define a formal language. Formal languages work strictly under the defined rules and their sentences are not influenced by the context. And that's where it gets the name context free.

In formal language theory, a context-free grammar (CFG) is a formal grammar whose production rules can be applied to a nonterminal symbol regardless of its context.

In our assessment we are using a JavaScript Library called Tracery to create our own rules and produce data that makes sense based on the rules we set.

We have decided to create a joke generator which will allow us to produce jokes in a specific format using the rules set following the tracery library documentation and implementation.

The figure below shows the rules that we have set for our context free grammar using the Tracery JS library in conjunction with HTML and CSS.
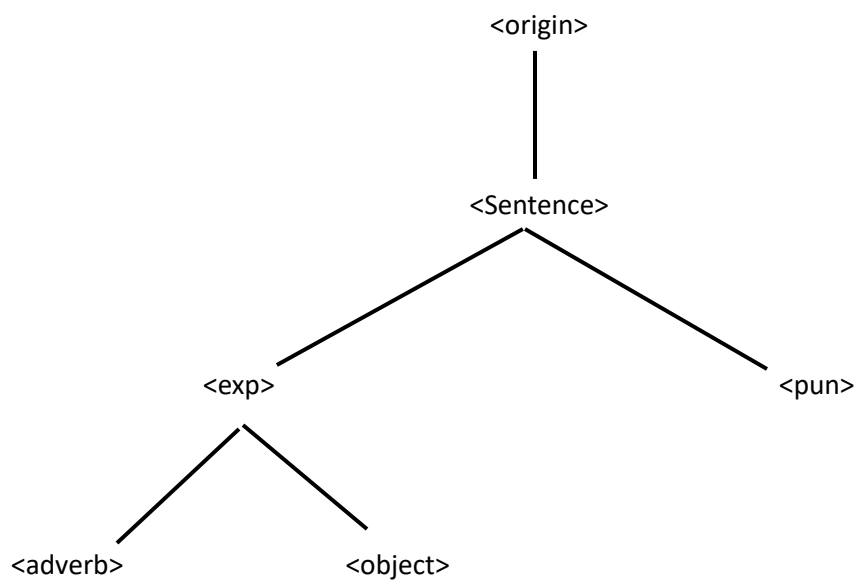
You will find our GitHub repository with all referenced work here.

```
JS index.js > ...
  1  let sentences = []
  2  function generate(){
  3  var rules = {
  4    "origin": ["#sentence.capitalize#"],
  5    "sentence": ["Why don't scientists trust atoms? Because they #pun#.", "I told my wife she was drawing her eyebrows too high. She looked #adve
  6    "pun": ["make up everything", "have no vision", "fall for anything"],
  7    "adverb": ["shocked", "surprised", "astonished"],
  8    "object": ["ketchup", "salad", "frying pan"]
  9  }
 10
 11
 12  let grammar = tracery.createGrammar(rules);
```

PARSE TREE

A parse tree is a graphical representation of the rule hierarchy of a context-free grammar. It shows how the input string is derived from the start symbol of the grammar by applying the production rules of the grammar.
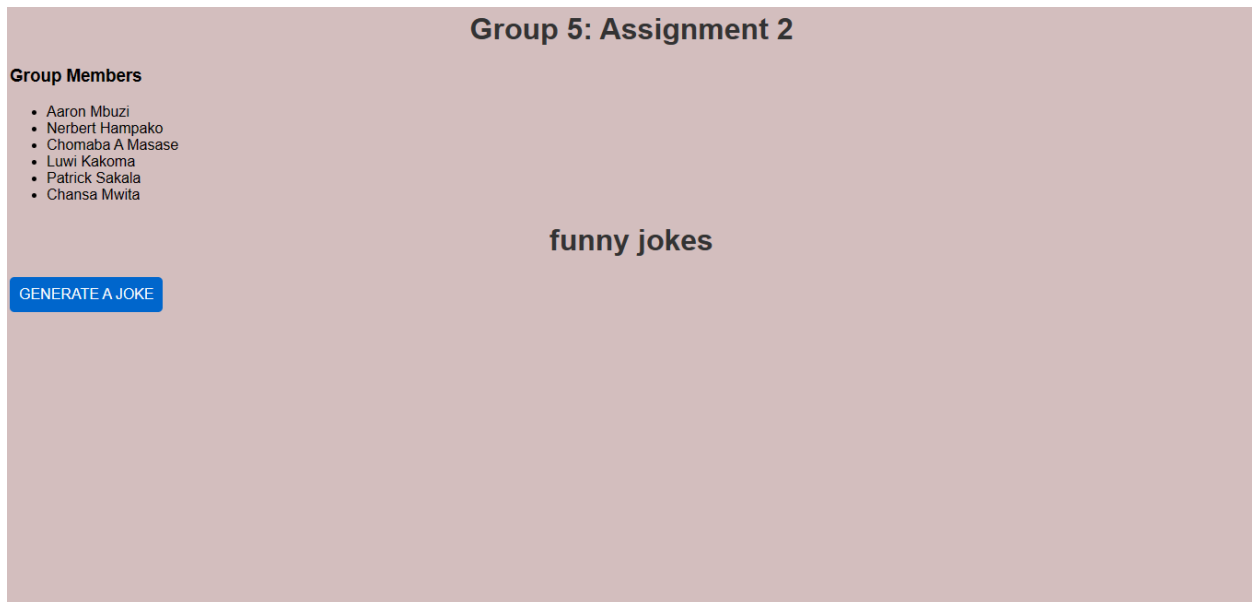
The following figure below is a parse tree presentation of the structural applications of our context free grammar rules to build our sentences.

```
                        <origin>
                           |
                       <Sentence>
                       /         \
                    <exp>        <pun>
                   /     \
              <adverb>  <object>
```

USER INTERFACE

Using HTML and CSS we are able to create a simple user interface. With our user interface we are able to interact with our JavaScript backend using a button to produce our sentences using the set rules.

The figure below shows the user interface of our platform. In our repository the web page is called contextfreegrammer.html.

Group 5: Assignment 2

Group Members

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funny jokes

GENERATE A JOKE

The following figure shows our generated sentences.

funny jokes

GENERATE A JOKE

I told my wife she was drawing her eyebrows too high. She looked astonished surprised.

I told my wife she was drawing her eyebrows too high. She looked shocked surprised.

Why did the tomato turn red? Because it saw the ketchup.

Why did the tomato turn red? Because it saw the salad.

I told my wife she was drawing her eyebrows too high. She looked astonished surprised.

Why did the tomato turn red? Because it saw the frying pan.

Why did the tomato turn red? Because it saw the ketchup.

I told my wife she was drawing her eyebrows too high. She looked shocked surprised.

Why don't scientists trust atoms? Because they have no vision.

I told my wife she was drawing her eyebrows too high. She looked shocked surprised.

Why did the tomato turn red? Because it saw the salad.

I told my wife she was drawing her eyebrows too high. She looked surprised surprised.

I told my wife she was drawing her eyebrows too high. She looked astonished surprised.

Why don't scientists trust atoms? Because they have no vision.

I told my wife she was drawing her eyebrows too high. She looked shocked surprised.

Why don't scientists trust atoms? Because they fall for anything.

REFERENCES

[1]   Aditya," What are Context Free Grammars?",

        https://www.freecodecamp.org/news/context-free-grammar/

[2]   galaxykate," tracery",

        https://github.com/galaxykate/tracery/tree/tracery2