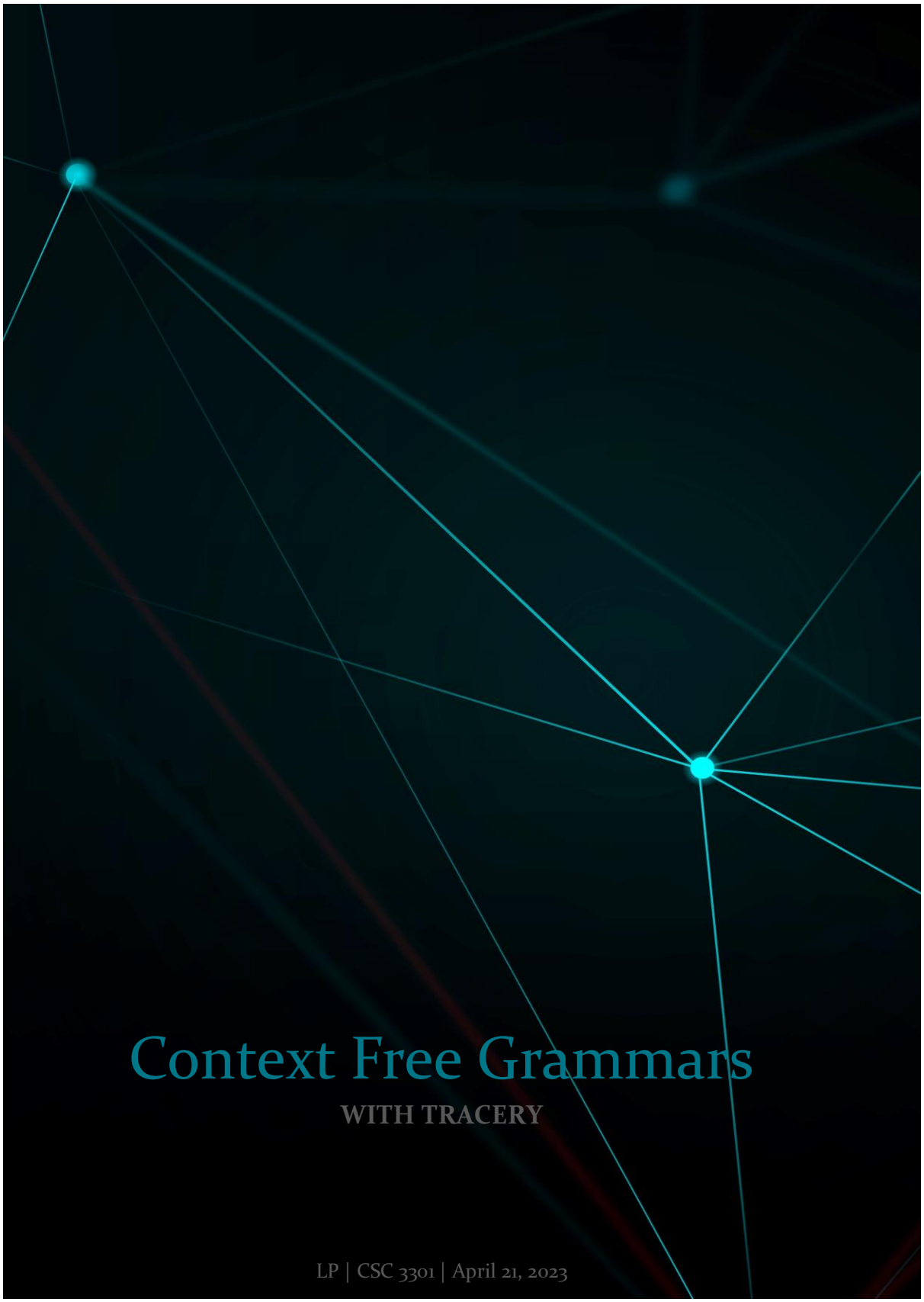

Context Free Grammars

WITH TRACERY

LP | CSC 3301 | April 21, 2023

Group 8 Members include

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Chapter 1

Introduction

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*.
Languages such as English fall under the category of Informal Languages since they are affected by context. They have many other features which a CFG cannot describe.

Even though CFGs cannot describe the context in the natural languages, they can still define the syntax and structure of sentences in these languages. In fact, that is the reason why the CFGs were introduced in the first place.

Tracery is work was used in this assignment and acknowledgement goes to Kate Compton for her amazing work in helping as understand how context free grammar works in her program developed called Tracery.

Chapter 2

How They Work

Context free grammars work in a way that exempts them from typical English grammar. Using an application created by Kate Compton called Tracery, an understanding of how context free grammars work was established. We, as group 8 cloned Kate's tracery GitHub repository and we were able to create our own rules in the JavaScript file using Visual studio code. We created a user interface that can call at random, sentences using tracery yet following our grammar rules. The start symbol is called, which reads the sentences and ensures that they follow in order of our grammar rules.

Chapter 3

Grammar Rules

Grammar rules detect how sentences are to be constructed and below is a snippet of our grammar rules we used in our JavaScript file.

```
var grammars = {

    “sentence”: [“#human# is #often# #mood# when looking at the #natureNoun#”],

“often”: [“rarely”, “never”, “often”, “almost always”, “always”, “sometimes”],

“human”: ["Luyando", "Hassan", "Christopher", "Paul", "Abel", "Moses", "John", "Ruth”],

“mood”: [“vexed”, “excited”, “serene”, “relaxed”, “jaded”, “lucid”],

“natureNoun”: [“ocean”, “mountain”, “forest”, “river”, “sky”],

}
```

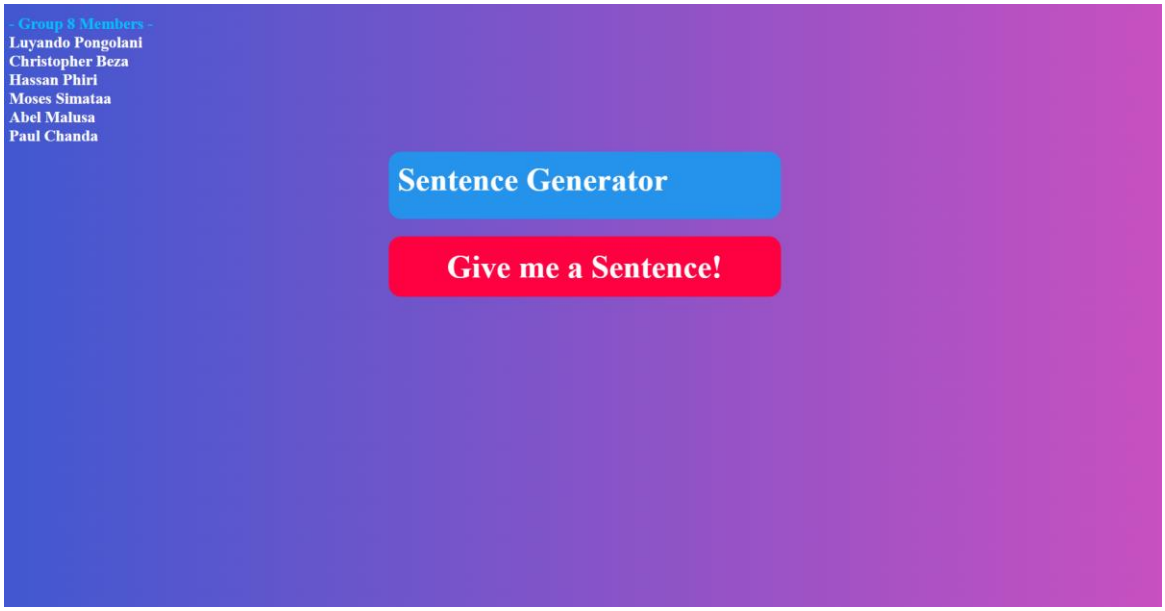
The above snippet of code has the sentence as our start symbol which contains a flow of how our grammar rules are to be constructed. “sentence, often, human, mood, natureNoun” are our grammar rules that will determine how our sentences

are to be constructed and each of the above have sub words that are selected at random based on our grammar rules flow of words in “sentence”.

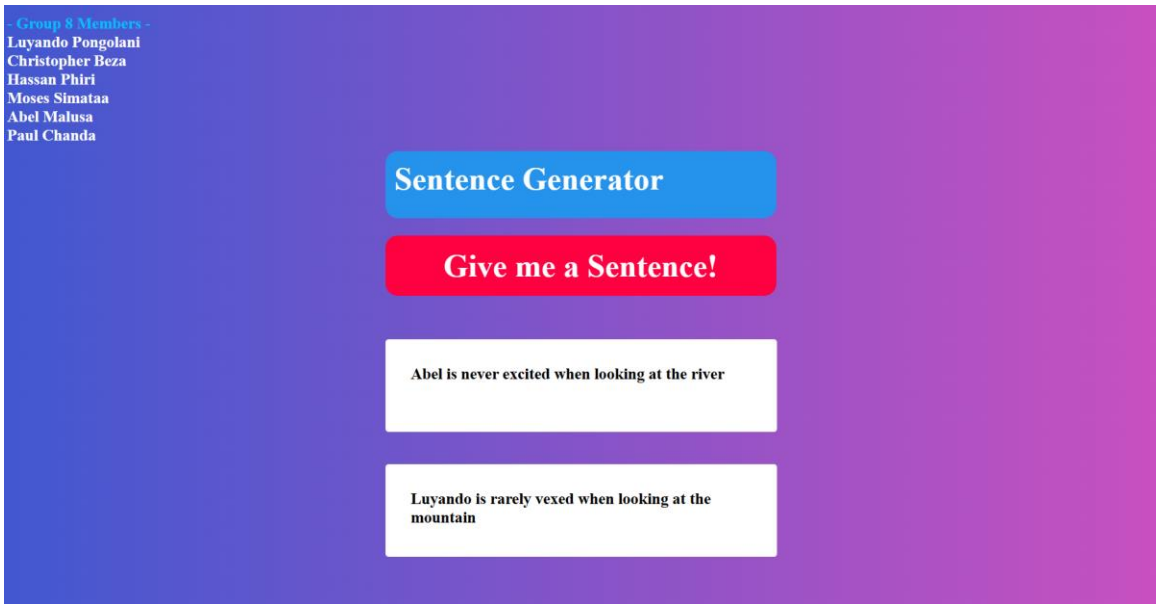
Chapter 4

Screenshots of Interface and Sentences Generated

Please find attached below the screenshots of the interface as well as the sentences generated on our html website.



The above figure displays the interface together with our group members.



The above figure displays the interface as well as the different sentences generated. Attached is the link to the html file. [Tracery Demostration (moses848484.github.io)]

Chapter 5

Conclusion

Context free grammars are a good way of understanding how compilers work in the sense of Syntax and Semantics. With just a brief introduction to context free grammars, we can tell how tedious and cumbersome creating a compiler can be. Other than that, context free grammars can be used to generate stories and are also used in video games for the sole purpose of generating information embedded in an efficient way, randomly. Without a doubt this was a huge improvement in our technological environment.

References

Aditya. (n.d.). *context-free-gramma*. Retrieved from freecodecamp.org: https://www.freecodecamp.org/news/context-free-grammar/

Compton, K. (n.d.). *tracery*. Retrieved from GitHub: https://github.com/galaxykate/tracery