**Personal Project : UML Parser**

**Made By**

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**Tools and Libraries Used:**

Parser : ANTLR

UML Generator: PlantUML

Dependency: Graphviz must be installed on the PC of the user.

**How to install graphviz?**

**For Ubuntu(Prefered):**

sudo apt-get install graphviz

**A brief description about the components**

**ANTLR:**  **Another Tool For Language Recognition**, is a parser generator that uses LL(\*) for parsing. ANTLR reads a grammar and generates a recognizer for the language defined by the grammar (i.e. a program that reads an input stream and generates an error if the input stream does not conform to the syntax specified by the grammar). If there are no syntax errors, then the default action is to simply exit without printing any message.

**ANTLR JAR Dependency**: We need to have Java grammar file so that ANTLR can recognize Java code and generate its parse tree. I have downloaded the Java grammar(.g4) file from github.

<https://github.com/antlr/grammars-v4/blob/master/java/Java.g4>

One should execute command: antlr4 Java.g4 to generate files needed to generate java parse tree.

**PlantUML:** is an open-source tool allowing users to create UML diagrams from a plain text language.

**Graphviz:** ( *Graph Visualization Software*) is a package of open-source tools initiated by AT&T Labs Research for drawing graphs specified in DOT language scripts.

**Brief Description about the Project:**

In this project, Antlr acts as a parse tree generator of the given Java code. Java.g4 file helps it in recognizing java code. When one executes command antlr4 Java.g4 then it generates various file related to java like Javalexer, JavaParser, JavaListener etc.

I have implemented interface **JavaListener** interface. Parse-Tree Listeners are to walk a parse tree and trigger calls into a listener. Then i have gathered relavent data relevant to my project by writing code at its listener event.

For example : **public void** exitClassDeclaration(JavaParser.ClassDeclarationContext ctx)

this function is called each time when parse tree walker exits a class on the generated parse tree.

I have stored all the information required for a class to describe in a class with a structure having these fields

**public class** JavaParseTreeBuilder {

String **class\_entered** ;

String **extendedclasses**;

List<String> **list\_of\_interfaces** = **new** ArrayList<>();

List<List<String>> **list\_variables** = **new** ArrayList<>();

List<String> **list\_of\_function** = **new** ArrayList<>();

Set<List<String>> **list\_of\_classReferences** = **new** HashSet<>();

Set<List<String>> **list\_of\_methodReferences** = **new** HashSet<>();

**int typeclassorinterface** = 1; *// type = 1 for class and type = 0 for interface* }

After traversing whole tree i have all the data required to pass to the plantuml. **public void** print\_List(List<JavaParseTreeBuilder> classList1) this function converts data to plantuml format and then execute generateImage() of class SourceStringReader which in turn generates class diagram.