

Compiler Construction: Lab 1

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Objective:

- Setup ANTLR and compile the grammar file

Tools we will use:

1. ANTLR v3.5.2 (strictly not v4)

Jar file available at brightspace

2. Make utility

If not installed in your system, use your package manager to install it.

For ubuntu machine, apt-get install make should work fine.

NOTE: Make sure your don't use ANTLR v4 or maven/gradle.

ANTLR setup

Agnostic to OS, you have to add ANTLR jar to \$CLASSPATH environment variable and use

java (JDK <= 1.8) to compile the grammar file.

For Linux/Mac-os machine:

1. Make sure ANTLR jar file is present. Assume it is present at ANTLR_PATH

(/home/your_username/antlr.jar)

Commands:

cd desktop

scp antlr.jar user@linux.csc.uvic.ca:

2. Edit your ~/.bashrc. Edit your \$CLASSPATH variable.

Commands: vi ~/.bashrc

CLASSPATH = \$CLASSPATH:ANTLR_PATH

echo "export CLASSPATH=~/antlr-3.3-complete.jar:\$CLASSPATH" >> ~/.bashrc

export CLASSPATH=~directory/antlr.jar:\$CLASSPATH

export CLASSPATH=".:usr/antlr.jar:\$CLASSPATH"

SET CLASSPATH=.;C:\usr/antlr.jar;%CLASSPATH% (Windows)

3. Download all the files from Bright-> Labs -> Lab1 and put it in a folder

"lab1". After the download completes, do

Commands: mkdir -p /home/your_username/csc435/lab1

cp -R lab1 /home/your_username/csc435/lab1

cd /home/your_username/csc435/lab1

or exactly use

scp -r lab1 user@linux.csc.uvic.ca:

4. Compile

Command: make

Result

```
java org.antlr.Tool -fo . ulNoActions.g
```

```
Picked up _JAVA_OPTIONS: -Xmx1024m -XX:CompressedClassSpaceSize=256m
```

```
javac *.java
```

```
Picked up _JAVA_OPTIONS: -Xmx1024m -XX:CompressedClassSpaceSize=256m
```

5. Lexer, parser java file should get generated if there is no issue with the grammar file. To

run the main java file (which is Compiler.java),

```
do: java Compiler lab1_should_accept.ul
```

Result:

```
Picked up _JAVA_OPTIONS: -Xmx1024m -XX:CompressedClassSpaceSize=256m
```

6. Then execute: `java Compiler lab1_reject.ul` . You should observe an error because

`lab1_reject.ul` does not comply with the grammar file you are using.

Result:

```
line 1:0 required (...) loop did not match anything at input 'foo'
```

Caveats

1. Name of the grammar file and the string used alongside grammar directive (in the grammar file) should be the same.

2. Lexer Rule: Starts with uppercase, Parser Rule: Starts with lowercase

3. Do not miss a semicolon at the end of the rule

4. Error

java.lang.ClassNotFoundException: org.antlr.Tool