

## Lab 3 - Report

### Students:

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## 1 Overview

*In this section, briefly listing the issues that the class today covers.*

## 2 Results

**Exercise 1:** Accept a sentence starting with “Are”, followed by a lowercase-word identifier, and end ing with a question mark.

Language design

```
1  grammar Sample;
2
3  // Define the start rule for the language
4  sentence : ARE ID E_Mask; // The language must begin with an identifier
5
6  // Define the identifier rule
7  ARE: 'Are';
8  ID: [a-z]+;
9  E_Mask: '?';
10
11 // Define a rule to skip whitespace
12 WS : [ \t\r\n]+ -> skip ; // Skip spaces, tabs, newlines
13
```

Input/ Output

```
Sample.g4 × 001.txt ×
Sample > tests > 001.txt
1 Are you ok?

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS SQL HISTOR

● PS E:\Homework\PP1\Lab\Sample> python run.py test
Complete jar file ANTLR : D:/antlr/antlr4-4.9.2-complete.jar
Length of arguments : 1
-----
Running testcases...
(program (sentence Are y o u o k ?))
Input accepted
-----
Run tests completely
❖ PS E:\Homework\PP1\Lab\Sample>
```

```
1 Are you kidding me?

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS SQL HISTOR

Length of arguments : 1
-----
Antlr4 is running...
Generate successfully
● PS E:\Homework\PP1\Lab\Sample> python run.py test
Complete jar file ANTLR : D:/antlr/antlr4-4.9.2-complete.jar
Length of arguments : 1
-----
Running testcases...
(program (sentence Are y o u k i d d i n g m e ?))
Input accepted
```

```
Sample.g4 001.txt x
Sample > tests > 001.txt
1 Do you have any medicine?

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS SQL HISTORY ...

• PS E:\Homework\PP1\Lab\Sample> python run.py test
Complete jar file ANTLR : D:/antlr/antlr4-4.9.2-complete.jar
Length of arguments : 1
-----
Running testcases...
(program (sentence Are y o u o k ?))
Input accepted
-----
Run tests completely
• PS E:\Homework\PP1\Lab\Sample> python run.py test
Complete jar file ANTLR : D:/antlr/antlr4-4.9.2-complete.jar
Length of arguments : 1
-----
Running testcases...
line 1:0 token recognition error at: 'D'
line 1:1 missing 'Are' at 'o'
(program (sentence <missing 'Are'> o y o u h a v e a n y m e d i c i n e ?))
line 1:0 token recognition error at: 'D'
Input rejected: missing 'Are' at 'o'
-----
Run tests completely
❖ PS E:\Homework\PP1\Lab\Sample> 
```

**Exercise 2: Accept questions that start with “Can”, “Could”, “Should”, or “Would”, followed by a lowercase identifier, ending with a question mask**

Language design

```
sentence: QUESTION ID E_Mask;

QUESTION: ('Can' | 'CouLd' | 'ShouLd' | 'WouLd');
ID: [a-z ]+ ;
E_Mask: '?';

WS : [ \t\r\n]+ -> skip; // skip spaces, tabs, newlines
```

Input/ Output

Project Ctrl+Shift+E

Sample.g4run.py001.txt ×

▼ Sample C:\Source\PPL\Lab3\Sam1Would you ?

TerminalLocal × + ▼

Length of arguments : 1

-----

Antlr4 is running...

Generate successfully

PS C:\Source\PPL\Lab3\Sample> python run.py test

Complete jar file ANTLR : C:/Program Files/antlr/antlr4-4.9.2-complete.jar

Length of arguments : 1

-----

Running testcases...

(program (sentence Would you ?))

Input accepted

-----

Run tests completely

▼ Sample C:\Source\PPL\Lab3\Sam1Would you !

TerminalLocal × + ▼

PS C:\Source\PPL\Lab3\Sample> python run.py test

Complete jar file ANTLR : C:/Program Files/antlr/antlr4-4.9.2-complete.jar

Length of arguments : 1

-----

Running testcases...

line 1:10 token recognition error at: '!'

line 1:11 missing '?' at '<EOF>'

(program (sentence Would you <missing '?'>))

line 1:10 token recognition error at: '!'

Input rejected: missing '?' at '<EOF>'

-----

Run tests completely

```
Sample C:\Source\PPL\Lab3\Sam 1 Hello you ?

Terminal Local x + v
PS C:\Source\PPL\Lab3\Sample> python run.py test
Complete jar file ANTLR : C:/Program Files/antlr/antlr4-4.9.2-complete.jar
Length of arguments : 1
-----
Running testcases...
line 1:0 token recognition error at: 'H'
line 1:1 missing QUESTION at 'ello'
line 1:6 extraneous input 'you' expecting '?'
(program (sentence <missing <INVALID>> ello you ?))
line 1:0 token recognition error at: 'H'
Input rejected: missing QUESTION at 'ello'
-----
Run tests completely
```

**Exercise 3: Extend Exercise 2 by allowing an optional subject pronoun (he, she, they, we) before the verb.**

Language design

```
001.txt Sample.g4 X run.py
Sample > Sample.g4
1 grammar Sample;
2
3 program: sentence;
4
5 sentence: VERB SUB ID+ E_Mask;
6
7 VERB: ('Could'|'Should'|'Can'|'Would');
8 SUB: ('he'|'she'|'they'|'we');
9 ID: [a-z] ;
10 E_Mask: '?';
11
12 WS : [ \t\r\n]+ -> skip; // skip spaces, tabs, newlines
```

Input/ Output

001.txt × Sample.g4 run.py

Sample > tests > 001.txt

1 Could you do it?

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS SQL HISTORY

(program (sentence Could she d o i t ?))  
Input accepted  
-----  
Run tests completely  
● PS E:\Homework\PP1\Lab\Sample> python run.py test  
Complete jar file ANTLR : D:/antlr/antlr4-4.9.2-complete.jar  
Length of arguments : 1  
-----  
Running testcases...  
line 1:6 missing SUB at 'y'  
(program (sentence Could <missing <INVALID>> y o u d o i t ?))  
Input rejected: missing SUB at 'y'  
-----  
Run tests completely  
❖ PS E:\Homework\PP1\Lab\Sample>

001.txt × Sample.g4 run.py

Sample > tests > 001.txt

1 Could he run?

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS SQL HISTO

● PS E:\Homework\PP1\Lab\Sample> python run.py gen  
Complete jar file ANTLR : D:/antlr/antlr4-4.9.2-complete.jar  
Length of arguments : 1  
-----  
Antlr4 is running...  
Generate successfully  
● PS E:\Homework\PP1\Lab\Sample> python run.py test  
Complete jar file ANTLR : D:/antlr/antlr4-4.9.2-complete.jar  
Length of arguments : 1  
-----  
Running testcases...  
(program (sentence Could he r u n ?))  
Input accepted  
-----  
Run tests completely  
❖ PS E:\Homework\PP1\Lab\Sample>

```
001.txt x Sample.g4 run.py
Sample > tests > 001.txt
1 Should he sleep?

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS SQL HISTORY ...
• PS E:\Homework\PPL\Lab\Sample> python run.py test
Complete jar file ANTLR : D:/antlr/antlr4-4.9.2-complete.jar
Length of arguments : 1
-----
Running testcases...
(program (sentence Should he s l e e p ?))
Input accepted
-----
Run tests completely
PS E:\Homework\PPL\Lab\Sample>
```

**Exercise 4: Extend the verb to support two-word verb phrases such as: “wake up”, “log in”, “check out”**

Language design 1

```
grammar Sample;

program: sentence;

sentence: QUESTION (SUBJ)? (V)? V_F '?';

QUESTION: ('Can' | 'Could' | 'Should' | 'Would');
SUBJ: ('he' | 'she' | 'they' | 'we');
V: [a-z];
V_F: ('at' | 'in' | 'on' | 'up' | 'out' | ' ');
E_Mask: '?';

WS : [ \t\r\n]+ -> skip; // skip spaces, tabs, newlines
```

Input/ Output

```
Should they wake up ?
```

```

PS C:\Source\PPL\Lab3\Sample> python run.py test
Complete jar file ANTLR : C:/Program Files/antlr/antlr4-4.9.2-complete.jar
Length of arguments      : 1
-----
Running testcases...
line 1:7 mismatched input 'they' expecting '?'
(program (sentence Should they wake up ?))
Input rejected: mismatched input 'they' expecting '?'
-----
Run tests completely

```

Language design 2

```

sentence: QUESTION SUBJ V E_Mask;

QUESTION: ('Can' | 'Could' | 'Should' | 'Would');
SUBJ: ('he' | 'she' | 'they' | 'we');
V: [a-z]+('at' | 'in' | 'on' | 'up' | 'out' | ' ');
E_Mask: '?';

WS : [ \t\r\n]+ -> skip; // skip spaces, tabs, newlines

```

Test case

```
Should they wake up ?
```

Output



```

generate .....
PS C:\Source\PPL\Lab3\Sample> python run.py test
Complete jar file ANTLR : C:/Program Files/antlr/antlr4-4.9.2-complete.jar
Length of arguments : 1
-----
Running testcases...
line 1:7 missing SUBJ at 'they '
line 1:12 mismatched input 'wake ' expecting '?'
(program (sentence Should <missing <INVALID>> they wake up ?))
Input rejected: missing SUBJ at 'they '
-----
Run tests completely

```

Language design 3

```

grammar Sample;

program: sentence;

sentence: (QUESTION)? (SUBJ)? V V? E_Mask;

QUESTION: ('Can' | 'Could' | 'Should' | 'Would');
SUBJ: ('he' | 'she' | 'they' | 'we');
V: [a-z]+;
E_Mask: '?';

WS : [ \t\r\n]+ -> skip; // skip spaces, tabs, newlines

```

Output

```

  ▾ Sample C:\Source\PPL\Lab3\Sam 1 Should they wake up ?
    > CompiledFiles

Terminal Local × + ▾
-----
Antlr4 is running...
Generate successfully
PS C:\Source\PPL\Lab3\Sample> python run.py test
Complete jar file ANTLR : C:/Program Files/antlr/antlr4-4.9.2-complete.jar
Length of arguments      : 1
-----
Running testcases...
(program (sentence Should they wake up ?))
Input accepted
-----
Run tests completely

```

**Exercise 5:**

**Exercise 6:**

