

HCMC University of Technology
Faculty of Computer Science & Engineering



Assignment 1

Recognizer

Author

Dr. Nguyen Hua Phung

August 29, 2016

Contents

1	Specification	2
1.1	Phase 1: Lexer	2
1.2	Phase 2: Recognizer	3
2	Requirements	3

Assignment 1

version 1.0

After completing this assignment, you will be able to

- define formally lexicon of a programming language.
- use ANTLR to implement a lexer for a programming language.
- define formally grammar of a programming language.
- use ANTLR to implement a recognizer for a programming language.

1 Specification

In this assignment, you are required to write a lexer and a recognizer for a program written in BKOOL. To complete this assignment, you need to:

- read carefully the specification of BKOOL language
- Download and unzip file assignment1.zip, which contains Main.scala, BKOOL.g4 and some other script for your convenience.
- Modify BKOOL.g4. **Please fill in your id in the headers of these files.**

This assignment is divided two phases: lexer phase and recognizer phase. **These phases are assessed independently.**

1.1 Phase 1: Lexer

In this phase, you are required to write a lexer for a program written in ANTLR. To complete this phase, you need to:

- Modify BKOOL.g4 to detect tokens in BKOOL language.
- For lexical errors, please print out as follows:
 - "ErrorToken "+ <char>: when the lexer detects an unrecognized character
 - "Unclosed string: "+<unclosed string>: when the lexer detects an unterminated string.

- "Illegal escape in string: "+<wrong string>: when the lexer detects an illegal escape in string. The wrong string is from the beginning of the string to the illegal escape.
- You can assume that there is only one error in each test case.

1.2 Phase 2: Recognizer

In this phase, you are required to write a recognizer for a program written in BKOOL. To complete this phase, you need to:

- Modify BKOOL.g4.
- You can assume that there is at most one error in each test case.

2 Requirements

The operating system when checking your submission is Linux. Make sure that your program can be compiled and run in the environment.

Note that you must NOT compress your files when submit them. You must submit the following files:

- Phase 1:
 - BKOOL.g4: the lexer
 - The deadline of phase 1 is 16:00 12th Sep. 2016.
- Phase 2:
 - BKOOL.g4: the recogniser
 - The deadline of phase 2 is 16:00 19th Sep. 2016.
 - Lexer is also checked in this phase.
- Result = min(Lexer1, Lexer2) + Recogniser

You must complete the assignment by yourself and do not let your work seen by someone else, otherwise, you will be punished by the university rule for plagiarism.