

HCMC University of Technology
Faculty of Computer Science & Engineering



Assignment 4

Code Generation

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December 5, 2020

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Assignment 4

version 1.0

This is an obligatory assignment for gifted ones but an optional for the others. If the result (combined by part A and B) is more than 60/100, the assignment part is calculated by the following formula:

Assignment = $\min(10, (\text{assignment1} + \text{assignment2} + \text{assignment3} + 0.5 \text{ assignment4})/3)$

For gifted students, the result of this assignment is also used for the extra work.

After completing this assignment, you will be able to

- explain the mechanism of some structures in a programming language.
- use Python to implement a code generation phase for a stack-based machine like JVM.
- create a complete compiler for JVM.

1 Specification

In this assignment, you are required to write a code generation checker for a program written in BKIT. The code generation will generate Jasmin code from AST created from assignment 2. The Jasmin code then is transferred to Java bytecode which must be run correctly in a Java Virtual Machine (JVM). To complete this assignment, you need to:

- read carefully the specification of BKIT language
- Download assignment4.zip and unzip it.
- Modify main/bkit/codegen/**CodeGenerator.py** and main/bkit/codegen/**Emitter.py** to implement this assignment.
- Modify test/CodeGenSuite.py to create 100 testcases to test your code.

This assignment is dependent on assignment 3 so all necessary **extra data structures** should be **redeclared** in CodeGenerator.py. You may assume that

- There is no lexical, syntax and semantics error in all testcases.
- All global and local variables will be initialized so that their type can be inferred at the declarations

2 Submissions

The operating system when checking your submission is Linux.

- The deadline will be announced on the class website.
- You must submit three files:
 - CodeGenerator.py and Emitter.py in Assignment 4 Submission
 - CodeGenSuite.py in CodeGenSuite Workshop

3 Plagiarism

- You must complete the assignment by yourself and do not let your work seen by someone else.
- You just submit your code in your allocated account.

If you violate any requirement, you will be punished by the university rule for plagiarism.

4 Change Log