

HCMC University of Technology  
Faculty of Computer Science & Engineering



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# Assignment 4

## Code Generation

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# Assignment 4

## version 1.0

This is an optional for regular students but obligatory assignment for gifted ones. For regular students, this result will added to your assignment result as a bonus, while for gifted students, this result is used to assess the achievement of extra requirements of gifted students.

After completing this assignment, you will be able to

- explain the mechanism of some structures in a programming language.
- use Scala 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 MC. The code generation will generate Jasmin code from AST created from assignment 2. The Jasmin code then is transfered 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 MC language
- Download assignment4.zip and unzip it.
- Modify `main/mc/codegen/CodeGenerator.py` and `main/mc/codegen/Emitter.py` to implement this assignment.
- Modify `test/CodeGenSuite.py` to create 100 testcases to test your code.

## 2 Submissions

The operating system when cheking 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