VIETNAM NATIONAL UNIVERSITY - HO CHI MINH CITY
HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY
FACULTY OF COMPUTER SCIENCE AND ENGINEERING

PRINCIPLES OF PROGRAMMING LANGUAGES - CO3005

ASSIGNMENT 4

Code Generation

HO CHI MINH CITY, 02/2024

ASSIGNMENT 4

Code Generation

Version 1.0

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 MP. 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 ZCode language.
- Download initial.zip and unzip it.
- If you would like to make your testcases in ZCode language, copy your ZCode.g4 to folder main/d96/parser and your ASTGeneration.py to folder main/zcode/astgen. Otherwise, you can build your testcases in AST like test 502 and 503.
- Modify main/zcode/codegen/CodeGenerator.py and main/zcode/codegen/Emitter.py to implement this assignment.
- Modify test/CodeGenSuite.py to create 100 testcases to test your code. Note that the entry function must be in the function whose name is "main.
- Can modify main/zcode/codegen/MachineCode.py to suit your implementation.

All testcases of this assignment is grammatically and semantically correct.

2 Submissions

As this assignment requires big resource to run so the pre-test cannot be set up as the previous assignments. You must check yourself your work before submission. The operating system when cheking your submission is Linux.

The deadline of assignment 4 is announced in the class website.
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.

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