Laboratory in Fundamental Computer Science 1

Syllabus Number 3C213
Basic Major Subjects
Elective Requisites 1 credit

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1. Course Description

It is very important for computer science students to understand CPU (Central Processing Unit) and programming in assembly languages. This course adopts a virtual CPU(Central Processing Unit) COMET2 and an assembly language CASL2 defined for the fundamental information technology engineer examination in Japan. After reviewing binary and logical operations, students learn programming in an assembly language CASL2 using an original simulator WCASL2. The course covers the following:
-Instructions of CASL2 such as load, store, arithmetic and logical operations, compare, jump, shift, call, push, pop, input and output.
-Concept of index register, stack and sub-routine.
-Process of bit-string data.
Students will learn with LMS contents and enrich their understanding through taking quizzes on LMS and writing programs.
This course is related to diploma policy DP4C.

2. Course Objectives

This course aims to provide students with an in-depth understanding of the CPU, which is the most important element of a computer system and programming in an assembly language. To be precise, at the end of the course, students are expected to do following:
- To explain names and roles of the elements which compose CPU
- To explain typical machine instructions of CPU.
- To write simple programs in an assembly language.
- To explain how to implement subroutine calls.

3. Grading Policy

Quizzes and programming works are given in every class. Feedback on the works are given on the same day, or at least before the next class. Feedbacks on reports are given via LMS.
The criteria for passing are to be accepted all required quizzes and programming works, and to score 60% points on the final examination.
The final grade of students who passed will be calculated according to the following process: final examination 40%, reports 30%, quizzes and programming works 50%, and a report 10%.

4. Textbook and Reference

Textbook
No textbooks.

5. Requirements(Assignments)

Learning materials will appear on LMS a week before the class. Prepare for a class well using LMS. More precisely, after reading text on LMS or viewing lecture videos, take self-tests. After every class, students must pass a set of quizzes on LMS before the next class. Approximately, the preparation will take one hour and the home work and review will take one hour.

6. Note

Learning materials are provided via LMS. This is a required course of JABEE program and corresponds to item 4-3 in the middle classification of learning goals. The course is conducted in Japanese.

7. Schedule

Outline of virtual computer COMET II and assembly language CASL II.
CASL II programming using jump instructions.
CASL II programming with repetition processing.
CASL II programming using indexed addressing.
CASL II programming using logical operation and shift instruction.
Stack and subroutine.
Final examination and excises.