<u>Overall Description on Project Assignments</u>

Computer Organization
Fall Semester, 2018

(*. Detailed plan and deadlines are subject to change.)

■ **Overall**

➢ The students of CS311 will have **three project assignments** in this semester. This course project will lead the students to a deeper understanding of computer organization. In the project assignments, a simulation program called *SimpleScalar* and a performance benchmark tool called *MiBench* will be used.

➢ The first assignment will be done individually, and the second and third one will be done as a team. The students will be encouraged to form a team **up to three students** after mid-term exam.

■ **First Assignment: Experimental Environment Setting**

➢ As a first step of the course project, the students will create a test environment and learn how to execute SimpleScalar and MiBench. TAs will distribute a pre-built virtual machine image for experiments. On the virtual machine, the students should perform simple experiments with the simulation and benchmark tool. After the experiments, the student should analyze and summarize the experimental results as a report.

➢ Expected submission deadline: 4th, October.

■ **Second Assignment: Pipeline and Hazard**

➢ Most of modern processors adopts the pipeline structure, and it is an essential part to handle the instructions and data in the processor. In the second assignments, the students will observe the internal pipeline structure of processors, and it helps the students understand how the pipeline works and how to solve hazard problems through some experiments. After the experiments, the students should analyze and summarize the experimental results as a report.

➢ Expected submission deadline: 8th, November.

■ Third Assignment: Cache Replacement Policy

➢ Another crucial element of modern processor is cache memory. Cache memory is a small but super-fast memory. To maintain this small-sized memory efficiently, only important data should be stored in the area. Cache replacement policy determines which data is kept in it, and the students will learn how the policy works through this assignment. This assignment also requires a report containing the analyzed experimental results.

➢ Expected submission deadline: 29th, November.

■ Plagiarism

➢ Do not copy others' submissions including source codes and reports.

➢ Do not manipulate the experimental results.

➢ All inappropriate behaviors including above-listed ones are regarded as plagiarism.

➢ Submissions considered as plagiarism will be graded as zero point.