# CS132: Software Engineering
# HW2: UML Practice

In this homework we will use UML to describe the functionality of a system and specify its interactions with users. Please try to answer all the questions in English. When drawing UML diagrams, please use software recommended in class and submit a .pdf report with short description for each diagram. **Hand-drawn diagrams will receive penalties depending on their clarity**. Note that there are 100 pt for this homework, but on blackboard the score will be divided by 10.

## Part 1: UML Exercises

Your grandma is visiting you at ShanghaiTech and she's interested to know your life on campus. You showed her your campus card (校园一卡通) and she would like to know how it works. In this exercise, use UML diagrams to illustrate to your grandma what you can do with the campus card.

### Task 1: Who is using the system and what are the relationships among them? (25pt)

People play different roles on campus and their campus cards can do different things while sharing some common functionalities. In this task, use class diagram to illustrate these roles and their relationships. Make sure to add attributes and actions to each class.

### Task 2: What you can do with your campus card? (25pt)

The campus card is issued by Public Service. The cardholder can benefit from a large variety of services. Draw an use case diagram to illustrate what you can do with your campus card, from 1) a student's point of view and 2) a public service staff point of view. Make sure to illustrate the relationships among use cases.

Note: Please try to list all major use cases.

### Task 3: How do you eat in the cafeteria? (25pt)

Draw an activity diagram to illustrate the process for you to buy food in the cafeteria. Make sure to use Swim Lane to group activities for different roles. Note that your campus card may not have enough fund to pay for your meal.

### Task 4: How do you add fund to your campus card? (25pt)

Your grandma was amazed by the fact that you added fund to your campus card with just a few taps on your phone. Draw a sequence diagram to illustrate the interactions among you, Alipay, and the campus card database when you add fund to your campus card. Make sure to consider exceptions.

## Submission

The deadline of this homework is Nov 3$^{st}$ at 23:59. Please submit a .pdf file with name "CS132_HW2_YourName.pdf" electronically on BlackBoard. ***Please be noted that we do not accept late submission.***