

# Part I

Assume that you are about to open a 24-hour coffee shop on the Chulalongkorn University campus called “Too Late To Sleep”. The coffee shop must provide services to all members of Chulalongkorn University (no entrance fee) and to outsiders (charge for entrance).

**1.1) Identify users and roles of all persons involved in the coffee shop (i.e., different types of customers, non-customers, etc.).**

- Ans.**
- **Barista:** Makes beverages, sells items from the cabinet, and handles cashier duties.
  - **Chulalongkorn customer:** A member of Chulalongkorn University who visits the coffee shop.
  - **Outsider customer:** Someone who is not a member of Chulalongkorn University but visits the coffee shop
  - **Entrance door security:** Maintains order, charges Outsider customers an entrance fee, and verifies the authenticity of Chulalongkorn member identity cards.
  - **Janitor:** Responsible for cleaning and maintaining the coffee shop to ensure a tidy and welcoming environment.

**1.2) You can physically design the shop any way you like. Identify the services (resources) you want to support your different customers and whether or not you would like to create different zones with different services (resources). Your shop must at least have: one entrance door, one bathroom, one coffee service area, and places to sit. You may add anything else you'd like. Describe the services (resources) in your shop.**

- Ans**
- **Entrance door:** Allows passage only to those approved by security; all others are blocked by the gate.
  - **Bathroom:** Accessible to all customers in the coffee shop
  - **Coffee cashier area:** Area where baristas prepare beverages, take orders, and process payments.
  - **Seating Area:** A space where customers can relax and enjoy their time.
  - **Study room:** A place where students and teachers can quietly read and study.
  - **Staff area:** Contains storage for cleaning supplies and lockers for the coffee shop crew.

**1.3) Identify resources that require access**

- Ans** Entrance door, Coffee cashier area, Study room, Staff area.

**1.4) Apply your knowledge to design the authorization system (e.g. access control) for your customers.**

- Ans**
- **Entrance Door:** Chulalongkorn members need to scan their identity card. Outsider customers must pay using a QR code at the entrance door and show the receipt to security to gain entry.
  - **Coffee cashier** area: Access is granted by scanning a barista card.
  - **Study room:** Access is granted by scanning a Chulalongkorn identity card.
  - **Staff area:** Access is granted by biometric authentication.

## Part II

Assuming that you are now in charge of a new Registration Systems of Chulalongkorn University, please finish the following exercise.

**2.1) Identify users and roles of persons related to the service**

- Ans**
- **Instructors:** Provide course lectures to their students and grade their performance.
  - **Students:** Register for courses, attend classes, and strive to do their best.
  - **Teacher assistant:** Supports instructors by assisting with leading discussions, and helping students understand course material.
  - **Academic advisors:** Provide guidance to students on course selection, academic planning, and career goals to help them succeed in their studies.
  - **Registrar's Office Staff:** Manage student records, grades, and transcripts, and oversee course registrations.

**2.2) Identify resources (data and objects)**

- Ans**
- Course information
  - Course requirements
  - Student personal information
  - Student grade
  - Academic resources (Room, Hall, Laboratory equipment, etc.)

**2.3) Identify functions (actions for resources)**

- Ans**
- [read/edit] Course information
  - [read/edit] Course information

- [read/edit] Student personal information
- [read/edit] Student grade
- [reserve] Academic resources

**2.4) Apply your knowledge to design the authorization system. Please specify whether the user (role) should be allowed to access the resource (read and write). Translate your design into an access control matrix.**

**Ans**

	Course information	Course requirements	Student personal information	Student grade	Academic resources
Instructors	Read, Write	Read, Write	-	Write	Reserve
Students	Read	Read	Read, Write	Read	-
Teacher assistant	Read, Write	Read	-	-	Reserve
Academic advisors	Read	Read	-	-	-
Registrar's Office Staff	Read	Read	Read	Read	-