Software Engineering

Sheet

Use case diagram

1. [Business actors](https://www.uml-diagrams.org/use-case-actor.html#business-actor) are Passenger, Tour Guide, Minor (Child), Passenger with Special Needs (e.g. with disabilities), all playing **external roles** in relation to airport business.

[Business use cases](https://www.uml-diagrams.org/use-case.html#business-use-case) are Individual Check-In, Group Check-In (for groups of tourists), Security Screening, etc. - representing business functions or processes taking place in airport and serving the needs of passengers.

Business use cases Baggage Check-in and Baggage Handling extend Check-In use cases, because passenger might have no luggage, so baggage check-in and handling are optional.

Draw use case diagram

2. Draw use case diagram for Webmail System Use Case Model.

3. Draw the use case diagram and use case table for ‘Login’ to a ‘School Management System’.

4. Draw the use case diagram for an ATM, then write use case table for two functions.

5. As the head of information systems for a college you are tasked with developing a new student registration system. The college would like a new system to replace its older system developed. The new system will allow students to register for courses and view report from personal computers/Mobile phone attached to the campus LAN/ Wi-Fi. Professors will be able to access the system to sign up to teach courses as well as record grades.

Due to a decrease in federal funding, the college cannot afford to replace the entire system at once. The college will keep the existing course catalog database where all course information is maintained. The college has in an open SQL database and can access to this database from college’s Unix servers. The legacy system performance is rather poor, so the new system must ensure that access to the data on the legacy system occurs in a timely manner. The new system will access course information from the legacy database but will not update it. The registrar’s office will continue to maintain course information through another system.

At the beginning of each semester, students may request a course catalogue containing a list of course offerings for the semester. Information about each course, such as professor, department, and prerequisites, will be included to help students make informed decisions.

The new system will allow students to select four course offerings for the coming semester. In addition, each student will indicate two alternative choices in case the student cannot be assigned to a primary selection. Course offerings will have a maximum of ten students and a minimum of three students. A course offering with fewer than three students will be canceled. For each semester, there is a period that students can change their schedule. Students must be able to access the system during this time to add or drop courses. Once the registration process is completed for a student, the registration system sends information to the billing system so the student can be billed for the semester. If a course fills up during the actual registration process, the student must be notified of the change before submitting the schedule for processing.

At the end of the semester, the student will be able to access the system to view an electronic report card. Since student grades are sensitive information, the system must employ extra security measures to prevent unauthorized access.

Professors must be able to access the on-line system to indicate which courses they will be teaching. They will also need to see which students signed up for their course offerings. In addition, the professors will be able to record the grades for the students in each class.

Draw use case diagram

6. Web Customer actor uses some web site to make purchases online. Top level use cases are View Items, Make Purchase and Client Register. View Items use case could be used by customer as top level use case if customer only wants to find and see some products. This use case could also be used as a part of Make Purchase use case. Client Register use case allows customer to register on the web site, for example to get some coupons or be invited to private sales. Note that, Checkout use case is included use case not available by itself - checkout is part of making purchase.

7. A company specializing in consumer electronics requires an order processing system to be developed that is easy-to-use by its employees, and provides a good response time of less than five seconds. Orders are received from customers online who must state the items and expected delivery deadlines. The orders are recorded and prioritized according to stock availability, transport capacity, delivery deadlines, and time of order. The output from the system will be the price of the order, and the delivery date. The customer then has the option to confirm or reject the order. Draw use case diagram