

## Exercise sheet

1. Draw a **use case**, **Class** and **System Sequence** diagrams and a class diagram to represent the following system. Over the summer holiday, university students can book college hall accommodation online. They must specify their name, student number, course, year, and identify three college residences as their preferences.

The system makes an allocation of students to rooms before the start of the term, trying, where possible, to allocate students to a room in one of their preferred halls.

2. Assume an Internet shop has the *placeOrder* use case is described as follows:
  - The customer opens an order form in his/her web browser and selects a product as well as the amount he/she wants to buy.
  - The customer submits the form.
  - The system will send an order confirmation via email to the customer.
  - The system will check the magazine, to see if the requested amount is on stock.
    - If this is the case, the order is “shipped” immediately.
    - Otherwise
      - The system orders the missing goods via email from a major supplier.
      - If parts of the ordered goods are on stock, they are reserved for that order.
      - The system adds the order to the list of open orders.

Draw a **sequence diagram** for this use case.

### 3. Use Case

Your customer is tired of his employees who keep coming late from coffee brakes because it takes them ages to prepare and drink their coffee and to clean their equipment afterwards.

He asks you to design the prototype of a new revolutionary coffee machine that is both appealing to the eye and yet easy enough to handle even for an IT-specialist. During a brainstorming session on functional requirements, among the first use cases that are brought up there are things like *prepare*, *serve*, and *cleanUp*. While appearing simple at first glance, it soon turns out that the design must pay attention to a lot of details, so for each of the above mentioned use cases there will probably be several included use cases like *insertCoffee*, or *addMilk*. Also bear in mind that the coffee machine needs to be refilled, maintained. There might be power brakes or problems with the water supply. Try to cover as many boundary conditions as possible to ensure the office keeps running.

4. Draw a sequence diagram representing the process of making a phone call from a cell phone.