

Problem sheet 2

Course Fundamental Computer Science, Dr. Holger Kenn

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1.) Your task is to develop a calendar system for IUB. The calendar should hold entries for persons, portable devices and rooms so that the calendar can allocate a room for a meeting of a group of persons that need a certain number of portable devices. The following specification is given:

- Persons include students, staff and faculty.
- Portable devices include beamers, overhead projectors and slide projectors.
- Rooms include Lecture halls, seminar rooms, meeting rooms and offices.
- Persons have a name and a phone number attribute
- Students have a college attribute
- Staff has a department attribute and an office attribute
- Faculty has a school attribute and an office attribute
- Portable devices have a employee attribute that indicates which person is responsible for the device
- Slide projectors have a format attribute
- Beamers have a manufacturer attribute and a weight attribute
- Rooms used for teaching have a seats attribute
- Some rooms have a phone number attribute
- Rooms have a building attribute and a number attribute
- Offices have a person attribute

Create an UML diagram using generalisations to illustrate the different classes of calendar objects. Start with a "calendar object" as the most general type. Create Classes as necessary and give them appropriate names. (5p)

2.) Given the following use case description:

To hold a lecture for the lab course "Advanced Computer Science" the lecturer allocates a room, allocates a beamer and sends an invitation to all students of the course.

Each person object has an asynchronous operation called "invite". Each room and portable device object has an operation called "allocate". There is a "group" object that has the operation "invite" that sends an "invite"

message to all its members. What are the associations between the classes?
Draw an association diagram and draw a sequence diagram of a successful
lecture of the "Advanced Computer Science" lab course.

(5p)