Introduction to Software Engineering Assignment 2

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Titlepage

- Create a title page with ”Introduction to Software Engineering”, “Assignment 2”, your name, and date of completion.

Problem 1. Draw a UML Class diagram for the following

- A stack is a last-in, first-out storage structure for elements of type T with the familiar methods push(), pop(), top(), and isEmpty().
- There are two implementations of stacks: one implemented with an array (ArrayStack), the other with a list of elements (ListStack).
- Model the three stacks. Include all parameters. In UML, an array with elements of type T has the type T[] or T[m..n]). Make sure you model the list elements of ListStack such that all operations work.
- For extra credit, consider that pop() and top() may also throw StackEmptyException. Figure out how to model exceptions in UML by yourself (hint: use signals).

Problem 2: Draw a UML class diagram for the following

- A flight service system consists of the following: There are flights that fly from a named departure airport to a named destination airport. These flights are called flight numbers. A flight number indicates when the flight departs, and which airline operates it. A flight number uses an airplane model. An airplane model has a registration number, a status (in service, in maintenance, grounded), and a model name (for example Boeing777, Airbus380). It also has seats. A seat has a number (for example 32C). A seat may be located in first class, business class, or tourist class and may or may not be available. A flight is a flight number with a date when it will depart, a boarding time, and a gate. A flight will actually take place, while a flight number contains the data that is common to a set of flights.
- Now we get to the passengers. Of course, they have names and birthdates. They may also own one or more frequent flier cards. These cards record the miles flown and are updated with every flight. They are identified with unique FFC numbers. Passengers can buy tickets from the airlines. Each ticket consists of several coupons, each coupon is for a connecting flight in a certain class. When booking a flight, an available seat in the desired class is assigned to every coupon of the ticket.
- A passenger can bring luggage onto the flight. Each piece of luggage will receive a number and a weight, recorded on the coupons,

Problem 2 continued

- Make sure you use interface, inheritance, composition and aggregation where appropriate.
- Include multiplicities on relations. Multiplicities are optional on black and white diamonds. (why?)
- Draw the diagram without any associations crossing each other (it is possible!)
- You may use a drawing tool, Powerpoint, or draw by hand and take a photo. If the latter, make sure your handwriting is legible. What we can’t read we can’t grade.