Luleå University of Technology February 13, 2012
Computer Science
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"SimBiz$^{\text{TM}}$! - Simulate your own Business!"

– Lab 5 Design Review –

Bring all team members and a UML diagram that shows your design. Be prepared to explain in detail how you will solve the problem.

Make sure that:

1. Your program includes

   - a general Discrete Event-Driven Simulator (DEDS) that contains:
     - something that keeps track of events and can always say which event is about to happen,
     - something that repeatedly makes the next event that is about to happen happen,
     - something that describes an "event" in an abstract way, so that it's possible to talk about an event without actually knowing what effect it has;
   - application-specific parts in terms of
     - a state S,
     - a set E of concrete events such that each event defines what happens to the state when the event occurs.
   - a main program that starts a DEDS with an appropriate application-specific start state and event set.

2. Different kinds of simulations could be run without changing the DEDS.

   - To run a car wash simulation, one makes use of a start state S_1 and a start event E_1. To instead run a simulation of a tennis match we need another state, say, S_2 and a set of tennis events $E_2, E_3, \ldots, E_n$, etc.
   - Application-specific states are all "states", but apart from what they have in common with all the other states, they could also contain additional information.
   - Application-specific events are all "events", and they all contain a method that transforms a state to reflect the change made when the event happens. Although they all have this method, it is implemented differently for different kind of events.
   - The DEDS should treat all states and event sets the same way. (In fact, does the DEDS even need to know what simulation it carries out..?!)

3. It is possible to have more than one simulation running at the same time (you do not need to implement this but your design should support it if someone else wants to use your code to create several event queues and do so).

About the car wash simulator:

1. Where in the program is the output printed? How? What if we like to have one queue simulation that prints to the screen and one that prints to a file running at the same time?

2. How are the initial parameters set (and changed, if one likes to do so)?

3. How does the simulator keep track of each individual car? How does it keep track of the number of cars that have been created?

4. How, and when, are the queueing times, car wash machine idle times, etc. calculated and updated?