Mandatory Assignment 1: Requirements

- Work done in groups of 2 or 3 persons.
- You should address the following problem steps:
  1. Control to avoid bumping and deadlock
  2. SPIN verification
  3. On/off barrier
  4. Alternative monitor solutions
  5. Removal/restoration (cancel problem)
- Solutions must be functional *and correct*.
- Analyses and solutions must be clearly and concisely presented.
- 12/15 pages + appendices.
- Deadline: **Thursday October 23, 12.45**

Concurrent Programming

Dogma

> Properties must hold for *any* interleaving of atomic actions

- Race conditions are latent "bombs" in your program

Beware

- Never update shared variables without protection.
- Protect *all related variables* in single atomic actions.
- Imagine arbitrary sleeps anywhere.
- Think in terms of *large atomic actions*
- Use monitors whenever possible
- Supplement testing with *code inspection*

Reporting

Goal

The report should convince the reader (= teacher) that:

- You have identified the central problems
- You have knowledge about a number of solution principles
- Your have made a deliberate choice of solution
- Your have soundly implemented the solution idea
- You are aware of common implementation pitfalls
- You know and correctly use the relevant (Danish) terminology

Report Sections

For each problem (here step), consider:

Analysis
- Get a good understanding of problem. Decompose.
- State solution properties.

Discussion
- Outline possible solutions.
- Compare them.

Design
- Make a qualified choice.
- State overall solution *idea*.
- Present abstract solution.
- (Verify properties.)

Implemenation
- Ad-hoc or standard techniques?
- Emphasize important details.
- Use code excerpts.

Reporting Advice

Rule no. 1

Please the reader

Specifics

- Use a readable layout.
- Follow reporting guidelines and constraints.
- Do not repeat the problem text.
- Apply theory when relevant.
- The report should be to the point. Select highlights.
- Easy navigation: Give precise references to code.
- Code must be well-commented — just in case