Exercise 1
KV Product Line Engineering (343.354)
SS 2016

On the next page is a list of capabilities to be provided by a fictitious instant messaging applications software product line. Based on this information, create a variability model:

- **Draw a feature diagram *or* create a decision model**
  - For feature diagrams, use a feature modelling tool, e.g., Feature IDE (http://wwwiti.cs.uni-magdeburg.de/iti_db/research/featureide/)
  - For decision models, use the following tabular notation (d1-d4 are examples)

Name	*Question*	*Range & Cardinality*	*Visibility Condition*	*Rule*	*Description*
d1	Do you want/need...?	`yes|no`	`true`	-	additional info on d1
d2	Which of...?	`A|B|C (2:3)`	`d3 > 1`	-	additional info on d2
d3	How many X?	`>=1 && <=5`	`d1 == true`	`if (d3 > 1) then { setValue(d4; true);}`	additional info on d3
d4	Are there more than one X...?	`yes|no`	`isTaken(d3)`	-	additional info on d4
...	...	`...`	`...`	...	...

    - For conditions, use simple Boolean statements like used in the example above
      - Helper-function `isTaken(decision)` evaluates to `true` if decision has been taken, no matter with which value
    - Rules should follow the following pattern: `if (statement) then { function();}`
      - functions are: `setValue(decision, value);` `reset(decision);`
- The given list of capabilities is not organized or sorted in any way. Try to figure out the dependencies among the given capabilities: Which capabilities are mandatory? Which are optional? Which alternative? Which capabilities require/exclude each other?
- Be realistic! Define dependencies that make sense!
- Explicitly **document and describe your design ideas**: Why did you model features/decisions and dependencies the way you did?
- Also shortly **describe the benefits and drawbacks of the notation you used**.
- Send your work (the variability model + the text describing your design ideas, the normal course, and benefits/drawbacks) as one PDF (**Lastname_MatrNr_E1.pdf**) to rick.rabiser@jku.at no later than **4th April 2016 (12:00, noon)**. This is a strict deadline!
  - Please take care of the layout and resolution of your model! It should be readable in print out form and not require zooming to 500% in the PDF!

The fictitious instant messaging applications software product line and its capabilities

The fictitious product line of instant messaging applications (such as Skype or Google Hangouts) provides the following capabilities:

- All instant messaging applications allow the user to manage his/her account (account management), to manage his/her contacts (contact management), to send messages to each contact (instant messaging), and to (Audio) call each contact via VOIP.
- Some instant messaging applications also allow the user to define status messages (via the account management feature).
- Some instant messaging applications also support Video calls among contacts.
- Every instant messaging application supports participating in group chats (several contacts exchanging instant messages with each other concurrently). Only some instant messaging applications allow users to organize (initiate) such group chats themselves.
- Some instant messaging applications support importing and exporting contacts via the contact management feature.
- All instant messaging application support searching for contacts via the contact management.
- Contacts can be stored locally or, alternatively, online. If online contact management is chosen, searching for contacts provides additional capabilities (extended web search).
- Some instant messaging applications allow users to send arbitrary files to contacts (file sharing).
- Some instant messaging applications also allow users sharing their screen (screen sharing) with selected contacts. This feature only works if file sharing is available.