

Exercise Sheet 5

Presentation Topic: Estimation (2 Students)

You are going to develop a web page to collect and organize quotes. After conducting a requirements phase the following functionality is known:

1. User can log-in to the site with a username and password.
2. User accounts may have one of the following types: user or administrator.
3. Only logged in users can add new quotes, add tags to existing quotes or rate them (1–5 stars).
4. Users (even not logged in) can browse through the list of quotes, search for them or browse by tags.
5. When you load the start page a random quote is shown.

Function-Point-Analysis defines the Function Points as the sum as follows:

Program Characteristics	Complexity			Σ
	Low	Medium	High	
External Inputs	$_ \times 3$	$_ \times 4$	$_ \times 6$	
External Outputs	$_ \times 4$	$_ \times 5$	$_ \times 7$	
External Queries	$_ \times 3$	$_ \times 4$	$_ \times 6$	
Internal Logical Files	$_ \times 7$	$_ \times 10$	$_ \times 15$	
External Interface Files	$_ \times 5$	$_ \times 7$	$_ \times 10$	
				<i>FP</i>

1. Estimate all factors used to compute *FP*! (Ignore “Low”, “Medium”, “High” and set everything to “Low”.) It has to be clear, how you got to the counts. Therefore draw a system architecture or make a table and provide arguments!
2. Compute *FP*!

Presentation Topic: UML (2 Students)

In the lectures we discussed several UML diagrams. Please look up and elaborate on: notation, UML view, and advantages and disadvantages of the following types:

- Use Case Diagram,
- Activity Diagram,
- Sequence Diagram,
- Class Diagram!

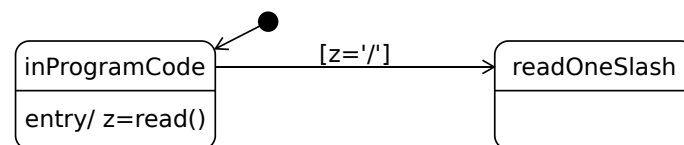
Presentation Topic: state diagram (2 Students)

Investigate into UML state diagrams and present purpose, notation, possibilities, and limitations of this diagram type.

Draw the UML state diagram for a filter, that takes (valid) C++ code, deletes all comments and outputs the rest.

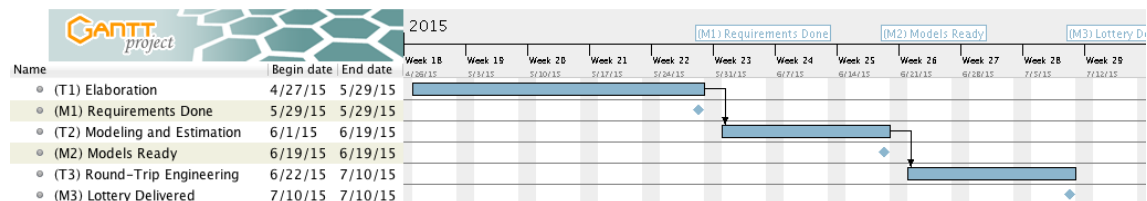
- Explain why a state diagram is necessary for that.
- You should filter single and multi line comments.
- Every line ends with EOLN, the whole file with EOF.
- Be aware of strings like: "Hello /* world".
- You may read the next character with `z = read()` and with `write(z)` will write the character stored in variable `z` to the output stream.

You may use the following state diagram snippet as a starting point:



Lottery Game

Here again the Gantt Chart with the 3 milestones (blue diamonds) of your little lottery project.



After the first milestone which was mainly about use cases, project setup and requirements, there is now a 3 week long phase regarding modeling and estimation. This ends in another milestone where the following is to be presented to your tutor:

- a first estimation
- 2 sequence diagrams (based on 2 use cases)
- one class diagram (analysis model, real world objects, domain model)
- one class diagram (design model, including implementation knowledge, with **at least 5 classes!!!**)

To make things easier, you may assume only 2 numbers are selected by the player and drawn by the lottery game. Please state all single actions in the sequence diagram – “The player enters all numbers” is not sufficient!