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Course project
Energy Informatics
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Submission deadline: 12.02.2016

Work on the following tasks in groups of two students, prepare a 15 minutes presentation to present your findings and achievements for each part on Friday.

Part I: (Modeling, Analyzing & Implementation -Case study)

Develop a price comparator for electricity prices

1. Analyze a price comparison portal
2. Develop an informal data description for a tariff
3. Draw the class diagram
4. Translate description/diagram to Python class(es)
5. Develop methods needed for price comparison
 - Extend description
 - Extend diagram
 - Extend implementation

Part II: (Encryption)

Decrypt two secret messages (one easy, one harder). Both messages are written in english and are encrypted using a substitution cipher. Use statistical analysis of letter frequency to come up with the encryption key.

Part III: (Data analysis)

Analyze vote by roll call data from 2015 (but feel free to include 2014 for more significant results)

- a) Data available in xls-spreadsheets from www.bundestag.de, in particular
<https://www.bundestag.de/bundestag/plenum/abstimmung/2015>
- b) Questions
 - Which representatives were more often absent than average?
 - Which representatives vote differently than the majority of their fraction?
 - Which fraction's votes are most uniform?
 - Which are the ballots where the voting inside the fractions is less uniform than usual?
 - Is it true that DIE LINKEN. always vote against the government?
- c) But first clean up!
 - Representatives are indexed by name: discuss whether that is appropriate and develop alternatives

- The set of representatives is not constant throughout a parliamentary session
- Discuss the reasons, find out how the Bundestag deals with it, and develop an approach to cope with change in answering the questions