CS 1XA3: Intended Learning Outcomes

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Computer Science 1XA3 is an experiential learning based course designed to teach students common tools/skills utilized in the practice of software engineering while learning about underlying theoretical computer science concepts. Students are expected to already have a beginners knowledge of the python programming language (previuos or concurrent enrollment in CS 1MD3 is recommended)

CS 1XA3 has the following Intended Learning Outcomes, i.e.

- students should have the practical skills to
  - Use Un*x command line interfaces to navigate, create and manipulate filesystems
  - Analyze permissions and modes of Un*x filesystems
  - Apply changes to permissions and modes of Un*x filesystems
  - Use ssh/scp to access remote servers
  - Use the Un*x commands grep/find to locate files/text in large filesystems
  - Use the Un*x commands top*/ps/kill to manage system processes
  - Investigate network connections using the Un*x command netstat
  - Manage a code base using git version control
  - Design and implement a simple webpage using HTML, CSS and Javascript
  - Design and implement a simple web server application using the python Django framework
  - Design and implement a simple SQL database
- and students should have enough working knowledge of computer science concepts to
  - Recognize corresponding tree data structures in file systems
  - Recognize corresponding directed graph data structures in git revision commit history
  - Define regular expressions for string enumeration/matching
  - Recognize basic UI principals used in webpage design
  - Define conceptual models (using UML Diagrams) corresponding to module relationships in python code
  - Define basic relational algebra equations corresponding to SQL queries

Learning outcomes for practical skills are largely cummulative, i.e. use of command line tools will be necessary to use version control which will be necessary to manage your code to build webpages, which is in turn necessary to have a functioning server which is also in turn necessary to implement a database. Therefore evaluation of skills acquired will be reinforced by evaluation of subsequent skills. Furthermore learning outcomes for computer science concepts underly the use of corresponding practical skills