Exam
- Posted in Moodle in Week Nine materials
- During Lecture (with exceptions)
- All exceptions must be cleared through me via email
- Bring a laptop
- Open book, open internet
- 50 minutes – Moodle will open and close the test
- About 30 questions
- 100 points or 10% of your final grade
- Password – either in lecture or your own copy

Linux Shell

- What is the Linux shell?
- Navigating the shell – using directories, files
  - pwd, mkdir, cd, ls, cp, rm, mv, rmdir
- Processing files
  - cat, more, head, tail, wc, grep, diff, sort, find
- Running programs
  - redirecting output, pipes, ps
- History of commands typed

Shell Scripting, Regex, Awk & Sed

- Shell Scripting
  - #! – shebang
  - Chmod
  - Variables, comments
- Regular Expressions
  - . [a-z] * ? + ^ $ \ [^] \< \> x\{m\}
- awk & sed
  - Processing files and records using regex
  - awk is a full-blown programming language
  - awk is good for searching input files/fields and reporting
  - sed is a less robust language
  - sed is good for modifying a streamed file

Version Control, git

- Version Control
  - Remote versus local repo
- Git
  - Init, status, diff
  - Working copy, staged file, commit
  - Checkout, head, merge

Project Management

- Project Management Principles
  - What makes a project a project?
  - What makes a project successful?
  - Triple constraint model
  - Managing scope

- Project Management Methodologies
  - Waterfall – its benefits
  - Agile, Scrum – its benefits
  - The agile manifesto – key principles
  - Daily Scrums: 15 minutes, 3 questions

- ## HTML
  - uses pre-defined tags
  - Markup language rendered by the browser

- ## CSS
  - Cascading Style Sheets
  - Hierarchy of applying style
  - 3 places to apply style
    - External
    - Internal in <style> in <head>
    - Internal in specific tags

Defining Requirements
- **What is a "Use Case"**
- **What are "functional" requirements versus "nonfunctional" requirements**

Full Stack Development
- **What does it mean?**
- **Elements of the stack**

- **Database Fundamentals**
  - Tables, Rows, Columns
  - Primary and Foreign keys
  - Data model
- SQL
  - Select statement
    - Where clause conditions (like, in)
    - Group functions, Group By, Having
    - SubQuery, Join, Outer Join
  - DDL – create, alter, drop
  - DML – insert, update, delete

- **Web Services**
  - http, xml, json, api

- **REST & SOAP**
  - REST is an architectural style
    - Stateless, layered, cacheable, scalable
    - Uniform interface methods (http), data format (json, xml)
    - ~70% of public APIs
  - SOAP is a protocol
    - Relies on XML
    - Requires WSDL
    - Less flexible than RESTful web services