Project Description

Objectives

- Work in a group of size 4 or 5 people
- Make use of the methods and tools discussed in the course

Purpose

The purpose of this project is to provide the basis for applying what you are learning in class to a software project as you learn.

Group Project Description

All students in Software Engineering Methods and Tools are required to complete a group project. Each group will comprise 4 or 5 people. Time will be provided during class to form teams and discuss project ideas. Teams must submit a project proposal, which must meet certain minimum standards (see Minimum Project Standards below), and have that proposal approved by the instructor.

Groups may choose to do the default project as described below or propose a project of their own description.

Rules:

- Team must consist of 4 or 5 team members.
- If you use pair programming, then when you commit to the code base you must have the name of your pair in the commit message to receive credit towards participating frequently to the repository.
- Peer Evaluation - putting all the same # in everything does not count as filling out a peer evaluation. Be sure to fill out the explanation of the peer evaluation on how your team did overall or issues with your fellow team members.
- If multiple team members submit there is a penalty (coordinate!)

Default Project

- Create an issues tracking log for 3308 so that students can submit their issues with grades or whatnot, the instructor and TAs can then assign people to the task, designate when resolved and auto-email the student the resolution notes, and students can log back in to see the progress on their issues.

Logistics

Project Part 1 - ***Proposal Submission + Repository***

One member of your team *only* must submit to Moodle the following (in this order):

- **Who:** List of people on the team
- **Title:** Title of the project
- **Description:** Short Description of the project (help explain to us what you are doing)
- **Vision statement:** (what you would tell potential customers) Be sure to follow the guidelines from lecture!
- **Motivation:** for working on this particular project (Why would you develop this?)
- **Risks:** to project completion
  (these could include:
  - Working environment or language new to some team members,
  - No prior experience working with the people on the team,
  - Lack of availability of some needed resource, etc.)

  as well as a mitigation strategy for dealing with the risk
- **VCS:** Name of the version control software repository you will use.
- **VCS Link:** Link to your repository. Make sure instructor & TAs have access.
  - *Repository must contain your Part 1*
- Submit a pdf file named: **ProjectTitle_Part_1.pdf** *where ProjectTitle is the name of your project.*

Project Part 2 – ***Project Tracker and Requirements***

A huge part of software development goes into planning, whether planning up front as in Waterfall or planning every sprint in Agile. Planning consists of the requirements for a project and project tracking software to keep track as you go (among other things). You may opt for a Waterfall or Agile (or mash-up) approach for the project (you can change your methodology during the project as you wish).

One member of your team must submit to Moodle the following (in this order):

- **Title**: of project
- **Vision:** from Project Part 1 Proposal
- **Who:** List of people on the team
- **List of requirements**: for the project
    - 4 Separate tables for the requirements:
        - Business Requirements
        - User Requirements
        - Functional Requirements
        - Non-Functional Requirements
    - Each requirement must have a unique ID number
    - Written in the Agile format ("As a [user], I want to [do X] so that I [can do Y]")
    - Each requirement must have a size. You have two options for sizing:
        - Agile sizing – story points
        - Time estimate to complete

      All stories should be sized to be completed in less than 8 hours (approximately, and something equivalent to a day or less in Agile story points). If your story is bigger than that, then break it up into smaller stories.
    - [optional] you can add priority (Critical, High, Med, Low, Nice-to-have)
    - [optional] you can add topic/area (e.g., Login, Profile, DB, etc.)
    - [optional] you can add user type (e.g., Admin, end user, potential customer,...)
- **Methodology:** Waterfall, iterfall, Agile, mash-up of …
- **Project Tracking software:** you will use
- **Link to project tracking software:** make sure instructor and TAs have access
- **Project plan:** created from your Project Tracking software. Copy-paste the plan (or screenshot of) into the .pdf document.
    - *and Part 2 files.*
- VCS has your part 2 file in it.
- Submit a pdf file named: **ProjectTitle_Part_2.pdf** *where ProjectTitle is the name of your project.*
- **Extra Credit:**
  For 1 point of extra credit towards your project grade, you can add a section on market analysis to your Part 2 submission.
    - Market analysis is typically done when starting your own business or buying a business to fully understand how your product or service compares to other similar products or services already on the market. This is required for anyone entering TechStars or other startup incubators, and if you go to your local SBDC (Small Business Development Center, which usually has mostly retiree volunteers who have successfully started or ran businesses who offer free advice *if you bring in a Business Plan)*.
    - You will need to fill out the following template:

Market Analysis

<< This section covers market research and competitor analysis. It must demonstrate that there is a viable market and that you can beat the competition in the market for sales. >>

Target Market

<< The market to which you are planning to sell the product or service. Analyze the segments of this market as follows:

- Size of each market segment
- Is the segment growing or declining?
- Characteristics of potential customers in each segment >>

Profile of Competitors

<<Analysis of your competitors in the market:

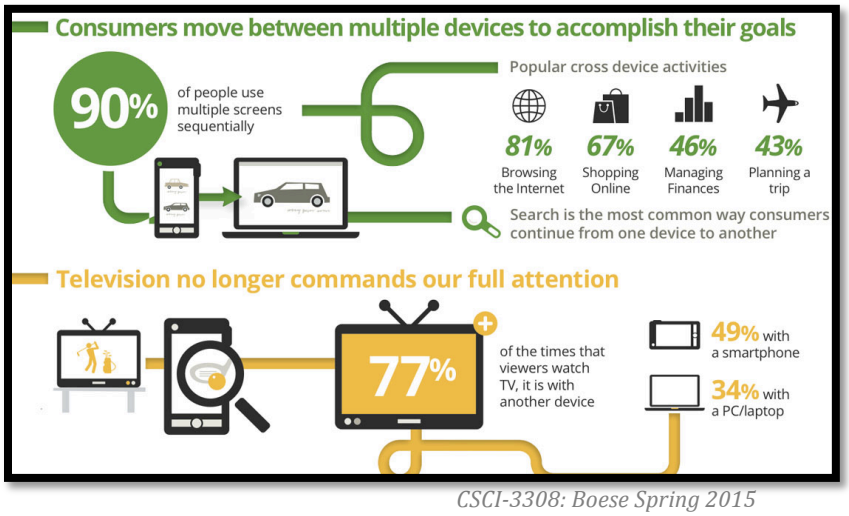
- What are the competing products and services?
- Profile of key players (company size, turnover, profitability etc) and their market share
- Advantages and disadvantages of the competitors' offerings >>

Competitive Advantage

<< This is your assessment of why potential customers will choose to buy your product in place of those profiled above. Advantages may include:

- Unique features
- Price
- New technologies or systems
- Better value to customers in terms of efficiency or ROI or cost/benefit ratios
- Greater compatibility with existing systems
- Include any independent validation or case studies >>

- **Extra Credit:**
  You can get an additional 1 point extra credit if you create an infographic detailing this market analysis information as well (*you must do the market analysis extra credit before you can get credit for doing an infographic).*
  An infographic is not a bar or pie chart!
  If you steal something from the internet this would violate the honor policy!
  - Example infographic



Project Part 3 – ***Database*** (or get permission to do an individual assignment on this topic)
Databases are widely used in most applications for storing information. Most databases use a relational database, though NoSQL databases prevail for large data sets.
Your diagram may change by the end of the project and that is OK. You do not have to have your database set up yet, this project part is a design of the database.

One member of your team must submit to Moodle the following (in this order):

- **Title**: of project
- **Vision:** from Project Part 1 Proposal
- **Who:** List of people on the team
- **Database:** Name of database you will use
- **E-R Diagram**: entity-relationship diagram of your database. You must use a tool to create this, you cannot draw by hand on paper or whiteboard.
  This must show
  - Entities (tables in your database)
  - Primary keys
  - Foreign keys
  - Relationships between entities using one of the two styles presented
- VCS has your part 3 file in it.
- Submit a pdf file named: **ProjectTitle_Part_3.pdf** *where ProjectTitle is the name of your project.*

Project Part 4 –***Stand-up Meeting***

The purpose is to experience an Agile-format daily stand-up meeting. In industry we usually take turns answer the following 3 questions:

1. What did you do yesterday?
2. What are you doing today?
3. Are there any obstacles stopping you from doing your tasks?

We will modify this slightly to be "last week" and "next week" since you are probably not working on the project every day.

1. What did you do last week?
2. What are you doing next week?
3. Are there any obstacles stopping you from doing your tasks?

These questions are not asked during the meeting. Someone just starts:
"Yesterday I worked on setting up the database so we can add the tables. Today I will be working on creating the tables we need. No obstacles." Then the next person goes.

Obstacles are specifically things that that *someone else needs to finish* as they are preventing you from completing the tasks currently assigned to you. Therefore, "I don't know Angular.js so I need to learn it" is not an obstacle because you can fix that. "I need the DBA to create the tables so I can start adding the data into the database" is an obstacle. This

One member of your team will sign up for a time for the whole team to participate in a stand-up meeting. Each member of the team will be assigned an individual grade for participating. If a team member does not show up there will be a group penalty (*unless the team member has dropped the course, then your score will not be affected*). Times slots are only 5 minutes long (these meetings go fast!) so don't be late!

Sign-ups for this project part will occur over a month or so during the semester.

When you attend the stand-up, you must present a piece of paper with your team name and a list of all members on the team (first and last name). There is nothing to submit in Moodle for this part of the project.

Project Part 5 –*Interview Grading Meeting*

Each person will sign up individually for an interview grading meeting. During interview grading sessions, individual group members will be asked to demonstrate or provide evidence of application of the tools/methods described in class to their group's project.

Project Part 6 –***Testing***

The purpose is to create two types of tests for your project:

- Automated unit tests
- User Acceptance Test plans

1. Automated test cases
   - Provide link to the tool you use to automate testing, or explain how to run the automated test cases, or schedule time with the TAs to demonstrate your automated tests.
   - Provide a copy of the output showing the results of the automated test cases running.
2. User Acceptance Test plans
   The purpose of these tests is to have a formatted plan that you could provide to users to go through the steps in using your application and report whether it was successful or not.
   - Provide at least 5 test cases formatted similar to the following:

Project Name:

Test Case Template

Test Case ID: Fun_10	**Test Designed by:** <Name>
Test Priority (Low/Medium/High): Med	**Test Designed date:** <Date>
Module Name: Google login screen	**Test Executed by:** <Name>
Test Title: Verify login with valid username and password	**Test Execution date:** <Date>
Description: Test the Google login page	

Pre-conditions: User has valid username and password
Dependencies:

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	Navigate to login page	User= xxxxxx@gmail.com	User should be able to login	User is navigated to	Pass	
2	Provide valid username	Password: 1234		dashboard with successful		
3	Provide valid password			login		
4	Click on Login button					

Post-conditions:
User is validated with database and successfully login to account. The account session details are logged in database

One member of your team must submit to Moodle the following (in this order):

- **Title**: of project
- **Vision:** from Project Part 1 Proposal
- **Who:** List of people on the team
- **Automated Tests:** Explanation and screenshot (see above)
- **User Acceptance Tests**: Copy of at least 5 UAT plans
- VCS has your part 6 file in it.
- Submit a pdf file named: **ProjectTitle_Part_6.pdf** *where ProjectTitle is the name of your project.*

Project Part 7 –***Auto-doc***

The purpose is to run an auto-documenter on your code base. While Doxygen is very common (and Javadoc is used for Java), you may need (or want) to use another documenter. Make sure you choose a documenter that produces both a pdf and an html-based website.

One member of your team must submit to Moodle the following (in this order):

- **Title**: of project
- **Vision:** from Project Part 1 Proposal
- **Who:** List of people on the team
- **Auto-documenter:** Which program did you use
- **Link to Source code documented as a pdf file in your VCS**: Should be able to create a full .pdf with all your code and comments.
- **Link to Source code documented as an HTML site in your VCS**: clickable html files
- VCS has your part 7 file in it.
- Submit a pdf file named: **ProjectTitle_Part_7.pdf** *where ProjectTitle is the name of your project.*

Project Part 8 - ***Presentation***
The purpose of the presentations is to practice presentation skills, inspire your colleagues, and discuss the challenges you faced and how you got through them.

Group Project Presentation Description
Your presentation requires all members to be present and standing up front. Each team member should discuss something about the project during the presentation.

You should cover the following items in whatever creative way you wish

- Title of the project
- Names of each person in the group
- All the tools your group used
    - Name of the tool, logo, and purpose (e.g., Project Tracking, VCS)
    - Your group's rating on how useful/good this tool/methodology was (ranked 1..5 where 5 stars is best and 1 star is useless)
    - Methodologies
        - Iterative, Waterfall, Agile, TDD, pair programming, peer code reviews, other…
    - Expected tools
        - Project Tracker
        - VCS Repository
        - Database
        - Testing
        - Auto-documenter
        - Deployment environment
    - (Optional) Additional tools you may have used
        - IDEs (e.g., Eclipse, Code::Blocks, xCode)
        - Frameworks (e.g., Laravel, Yii)
- Demo your project
- Challenges you encountered, and how you overcame them and how it may have affected your original project plans.

You only have around 5-7 minutes (see Moodle for exact amount) to present! *(including setup time)*
Hint: Because you have a limited amount of time to present, make use of images – remember, a picture says a thousand words! Designing good pictures/infographics can really enhance a presentation! You can show a picture of your repository or project tracker, etc. to show how you made use of the tools. Be sure to use a minimum of 20-point font for all text so everyone can read it.

Presentations should appear as if created by a single person but should clearly demonstrate that all team members were involved. A group or company should always present a unified front to a client/customer/etc. Therefore be sure there is consistency throughout your presentation (theme, colors, fonts, grammar, tense [past/present], etc).

Presentations will be during the last week of classes. Labs are cancelled that week, and instead additional group presentation times are available on Wednesday in the normal

lecture room. If your team can all make Wednesday then please sign up for a Wednesday time slot.

Please respect each other: On presentation days, please do not enter or leave the lecture room while a group is in the middle of presenting. Please wait until they finish and the next group starts setting up so as not to disrupt their presentation.

One member of your team must submit to Moodle the following:

- Copy of the presentation (must include names of each person in the group)

- VCS has your part 8 file in it.
- Submit a pdf file named: **ProjectTitle_Part_8.pdf** *where ProjectTitle is the name of your project.*

Project Part 9 - ***Final Submission***

You must deploy your project to some server and store your project source code, test cases, and documents in a revision system. To submit your project, one member of your team must submit to Moodle a document with the names of everyone in your group and a link to these materials and access permission.

To submit your project, one member of your team must submit to Moodle under "P9: Final Project Submission & Report" a single .PDF document with the following in the order provided as a *list or table* (not an essay!):
(Links should be click-able from the .PDF document)

- **Title:** of the project
- **Who:** Names of each person in the group
- **Methodologies:** used *(Iterative, Waterfall, Agile, TDD, pair programming, peer code reviews, other…)*
- **Project Tracker:** Link to your Project Tracker *(Liz and TAs have access)*
- **Project Plan:** Screenshot of your final project plan from your project tracker software.
- **VCS:** Link to your VCS Repository *(Liz and TAs have access)*
  We will check to ensure the following are stored in your VCS Repository:
  - Source code *(throughout the semester)*
  - Test cases
  - Auto-documenter documents
- **VCS Screenshot:** Show a screenshot of each member's contributions throughout the semester: e.g.,

- **Deployment:** Link to deployment environment *(or show TAs)*
- Completed project as described in initial project proposal (or as negotiated during term)? List all differences from initial project proposal.

Be sure to:

- Ensure Liz and the TAs all have access to all links for grading (see Moodle for emails)
- Tag your repo with "Spring 2015 Final Submission" (make sure to push your tag to your repo)
- Include a README in your repo:
  - Describe repo organization
  - Describe where to find and/or how to build the docs
  - Describe how to build/run/test/etc code
  - If using a CI system, provide link to the CI status page

Project Part 10 - ***Peer Evaluation + Project Reflection***
This portion of the project must be completed individually. The first part is to fill out an evaluation of your peers on the project. The second part is to answer a common potential interview question about working in teams.

All members of the group must submit individually

- Peer evaluation in Moodle under "P10: Peer Evaluations". Submit as the spreadsheet (not a pdf).
- Note: putting all the same # in everything or per person or the like does not count as filling out a peer evaluation.
- Be sure to fill out the explanation of the peer evaluation on how your team did overall or issues with your fellow team members.
- Write a short paragraph answering one of these following potential interview questions based on your experiences this semester on the team project. Grading will be based on the quality of your answer and how well you handle team dynamics. BE HONEST. An interviewer can always figure out if you are lying, and once that happens they will question everything else you say and have on your resume. The goal of this exercise is to prep you for interviewing.
    a. Give an example of when you worked in a team and there was conflict or disagreement. How did you handle it? Did you reach a consensus? What would you do differently next time?
    b. Give an example of when you worked in a team and one member always dominated the meetings and discussions. What did you do to help the rest of the team become more involved? What would you do differently next time?
    c. Give an example of when you worked in a team and one member refused to do any work. How did you handle the situation? What would you do differently next time?

PROJECT GRADING
Total project grade is 100 pts. Distributed as follows:

10 pts for Part 1 Project Proposal + Repository
17 pts for Part 2 Requirements & Project Tracker + 1 or 2 XC
13 pts for Part 3 Database
10 pts for Part 4 Stand-up Meeting
5 pts for Part 5 Interview Grading Meeting
- Individual score for grading meeting

10 pts for Part 6 Testing
10 pts for Part 7 Auto-doc
10 pts for Part 8 Presentation
10 pts for Part 9 Final Project submission
Part 10 Peer Evaluation (incorporated as factor of final individual project grade)
5 pts for Part 10 Team Dynamics interview question