CSci 5801: Software Engineering I, Spring 2018
Project 1 – Waterfall Methodology
Software Design Document (SDD) for Voting System
Due Date: Monday, February 26 at 11:55 p.m.
50 points total

Special Instructions: You will be working in your small groups to complete this homework assignment. You should meet, skype, or talk on the phone (if unable to meet in person) about the requirements for the assignment. You will only turn in one assignment per group. You must include all names on your assignment with X500 names. Please use the name that is listed on the class roster so we will know who you are. You will upload your work to Moodle. Only one person should upload to Moodle. We expect you to turn in your Software Design Document (must be typed) and your diagrams (can be hand drawn—must be clear and legible). You will be allowed to upload multiple documents. Be aware that you will not be able to upload after 11:55 p.m. on Monday, February 26th. If you are not done, turn in what you have so we can give you partial credit.

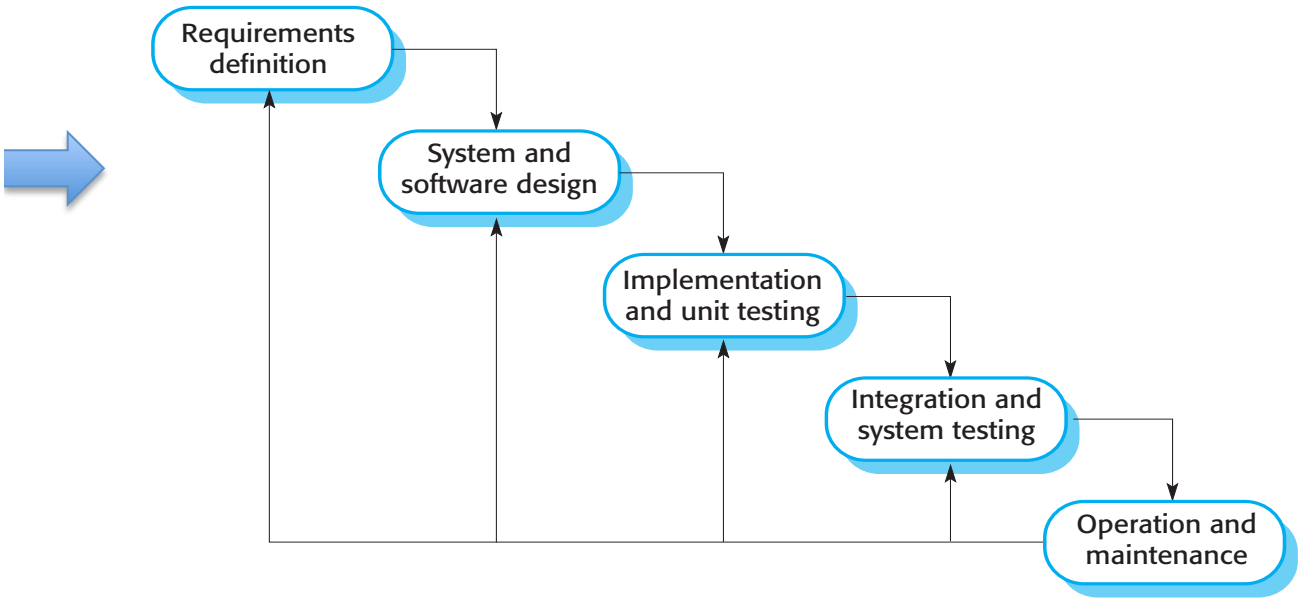
The Problem

There are numerous types of voting algorithms and in the United States, we typically use plurality voting where each voter is allowed to vote for only one candidate, and the candidate who polls the most votes is elected. It is rare for an election to be tied but if that occurs, there is typically a runoff between the tied candidates. For example, there have been three cases in history where there was a tie in the Electoral College for a presidential election. The House of Representatives then decided who was president by voting. For small sized, local elections a run-off may occur or even a coin flip can decide the outcome in some cases. Much research has been performed on voting theory and some believe that the Hare quota or Droop quota (ranked choice voting) is a better method than plurality. These types of voting algorithms are part of a family of algorithms called the single transferable voting (STV) systems.

You are tasked with creating a voting system that is capable of performing both plurality voting and an STV system using the Droop quota. The program user will indicate what voting algorithm should be used (i.e. plurality versus STV.)

Your Work for This Piece of the Project

You and your team have been assigned to the task of developing this voting system and you will be using the Waterfall methodology.



You and your team have finished the first part stage of the Waterfall process for the system. Now, you and your team will create the software design document (SDD) for this proposed voting system.

Your Project Task

Create your SDD along with the required diagrams. You will use the SDD template provided on Moodle and will need to provide information for all sections of this template.

Diagrams Required:

1) UML class diagram for the system

2) Sequence diagram for running the droop algorithm

3) UML activity diagram (process model) for running droop and plurality

You may include other diagrams as you see fit. Be sure to write clearly what is happening with your diagrams. Don't just draw the diagram.

Asking Questions

If you have questions about how to write the SDD, please bring questions to class on Wednesday, February 21st. I will set aside time to answer questions at the start of class.

Deliverables

You are required to turn in the your typed SDD along with all diagrams. The diagrams can be hand drawn but if do decide to hand draw them, you must ensure they are legible and easy to read.

Due Dates

Software design document (SDD) with diagrams due on: Monday, February 26 at 11:55 p.m.