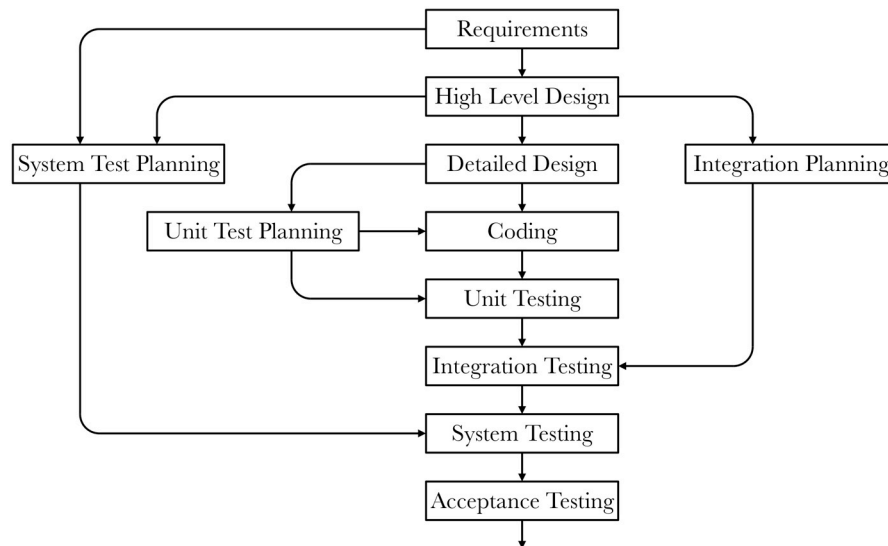


Homework 1

- 1.1. [20 points] The process in the figure below is a variant of Infosys's development process, circa 1996 (Jalote [2002]). Compare the process with each of the following. In each case, discuss the similarities (if any) and the differences (if any).
- Waterfall Processes
 - V-Processes
 - Iterative Processes



- 1.2. [20 points] A 2015 usage survey identified the following as the top five Agile techniques (percentages refer to the organizations that practiced the technique):
- Daily Standup 83%
 - Prioritized Backlogs 82%
 - Short Iterations 79%
 - Retrospectives 74%
 - Iteration Planning 69%

For each technique, describe

- the purpose or role of the technique.
- how the technique is practiced.

1.3. [20 points] For each of the following statements, answer whether it is True or False

- a) Very few projects have been completed using plan-driven processes.
- b) With a waterfall process, testing comes very late in the process.
- c) Plan-driven processes call for careful up-front planning, so there are fewer errors.
- d) A disadvantage of plan-driven processes is that they are inefficient and unsuccessful around constantly changing requirements.
- e) With an iterative process, each delivery builds on the last.
- f) The techniques in agile processes began with the Agile Manifesto.
- g) With agile processes, project timelines can be hard to predict.
- h) Agile processes are great for when you are not sure of the target of a project.
- i) Pair programming doubles the cost of a project.
- j) Sprint planning is essentially the same as iteration planning.

1.4. [20 points] Describe how you would do iterative development of *Moo*, a century-old game. When the game begins, the program thinks of a secret number made up of 4 different random digits, say 4271. The program then invites the player to make guesses about the secret number. With each guess, the program provides feedback about the goodness of the guess. Two of the digits in the guess 1234 appear in the secret 4271: the digit 2 is in the secret number and is in the right position; the digits 1 and 4 are in the secret, but either one is in the wrong position.

Call a right digit in the right position a *bull* and a right digit in the wrong position a *cow*. With secret 4271, the game might proceed as follows:

```
Moo: Decipher the secret number
guess: 1234
1 bull, 2 cows
guess: 5678
1 bull, 0 cows
...
```

The game ends when the guess matches the secret number

```
Guess: 4271
4 bulls, 0 cows
```