Software Development Life Cycle Models

CS 2720

Lecture 1.3
What is a life cycle model?

A software development life cycle model (or software process model, software development process, etc.) is “...a set of related activities that leads to the production of a software system.” (Sommerville, Chapter 2).
Two Process Families

We will separate processes into two loosely-defined categories: *plan-driven* and *change-driven*. 
The Waterfall Model (Royce, 1970)

A mainly-sequential model which emphasizes planning before implementation. The “original” version from Royce includes the stages:

1. System requirements
2. Software requirements
3. Analysis
4. Program design
5. Coding
6. Testing
7. Operations
The key aspect of the waterfall model is the sequential order in which the stages take place, not so much the *actual* stages. You will therefore see other variants. Our textbook uses the following stages:

1. Requirements definition
2. System and software design
3. Implementation and unit testing
4. Integration and system testing
5. Operation and maintenance
Each waterfall stage takes documents as input and produces new documents as output. Common inputs and outputs can be seen in MIL-STD-498. A few examples from this are . . .
Inputs and Outputs in Waterfall

1. System requirements: system/subsystem specification (SSS), interface requirements specification (IRS)
2. Software requirements: software requirement specification (SRS)
3. Analysis: System/subsystem design description (SSDD), interface design description (IDD)
4. Program design: software design description (SDD)
5. Coding: software product specification (SPS), software version description (SVD)
6. Testing: software test plan (STP), software test report (STR)
7. Operations: software installation plan (SIP), software user manual (SUM)
What good and bad aspects can you think of for the waterfall process model?