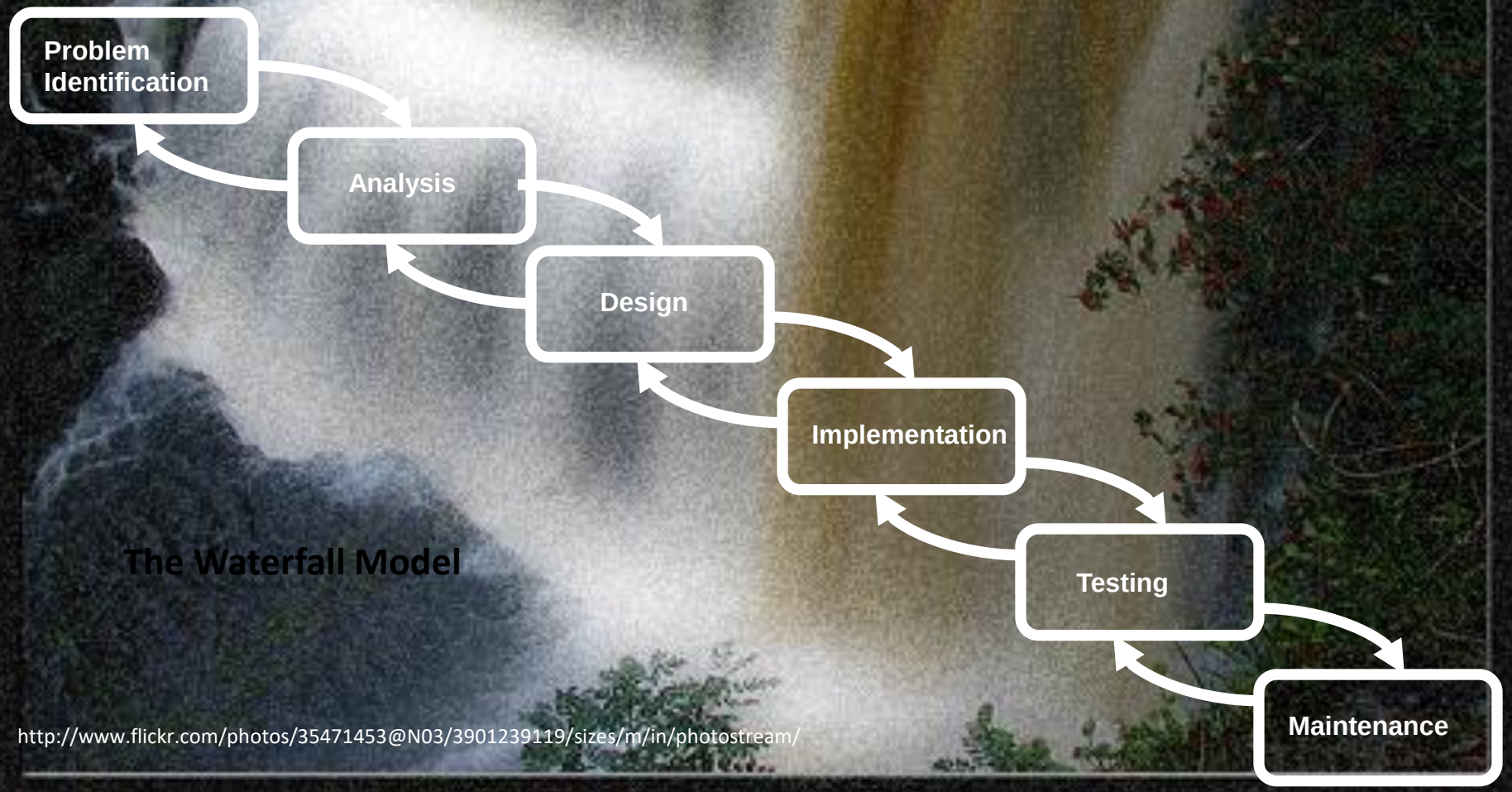
Software Creation

Not in Zybook

Waterfall Model

Program Development



The Waterfall Model

http://www.flickr.com/photos/35471453@N03/3901239119/sizes/m/in/photostream/

Problem Identification

- Work with a customer to understand the problem
- In this class: Read the lab assignment and ask questions to make sure that you understand the problem

www.ecolibrary.org

www.chicagotribune.com

Analysis

- Look at different alternatives from a system's point of view
- In this class: determine what the inputs (data) and outputs (result) are

Design

- In this class:
  - Determine how to get the inputs
  - Determine how to present the outputs
  - Develop the algorithm
    - A step-by-step way to solve a problem
  - Usually done with structure charts, pseudocode, or flowcharts
  - We'll use an outline form in this class

Procedural Design

- Procedural design is centered on procedures or functions
- Uses top-down design method. Take the large problem and break it down into smaller problems.
- Details the steps that are required in order to solve the problem

Object-Oriented Design

- Object-oriented design is centered on objects
- Objects are programming elements that contain data and procedures (functions) that operate on the data
- Identify elements involved in the problem and model them one at a time until you have a model of the entire problem

Implementation

- Write the program
- In this class: Write the program
  - Write small amounts of code at a time
  - Run often
  - Debug as you go

Testing

- All systems are tested together to make sure that the system works as a whole
- In this class: Test with all kinds of data

Maintenance

- Keeps the system working once it has been put into production
- In this class: On at least one assignment, we will go back to a previous assignment and add functionality

Putting it all together

How do I actually write a program?

Problem Statement

- Average 2 test grades entered by the user and display the result

Design (on board or doc cam)

- First solve it yourself. Twice. Or 3 times.

Identify variables (board or doc cam)

- Which are input variables?
- Which are output variables?

Steps in the calculation? (board or doc cam)

Write steps as comments in your program

Write the Program

- Write the code to accomplish the task identified in the comment
- Test it and correct if needed before moving on to the next comment
- Note: You do not have to complete the sections in order

Test It!

What happens now?