CSC207H
Software Design and Development
Key Features of Agile Development

User stories to drive design

Lightweight, evolving design as code is written and features are added

Continuous unit testing

Pair programming

Continuous refactoring
A scrum team works on month-long sprints. In each sprint, the team implements a subset of features selected from a product backlog.
Why Scrum?

We like to think of development as predictable

... but it’s not.

The customer can change his or her mind.

Unexpected challenges will arise.

Some tasks will be easier or harder than anticipated.

- Scrum is designed to make the team deliver quickly and respond flexibly to challenges.
Roles

Product owner: voice of the customer

ScrumMaster: primary job is to remove impediments to the ability of the team to deliver the goal

Team: has the responsibility to deliver the product

Users: the people who use the software you'll build

Stakeholders: people that will enable the project; not directly involved except every now and then

Managers: people that will set up the environment for the product development organization
Sprints

The product owner produces the first version of the product backlog -- a list of features to implement.

Each cycle, the team chooses which items from the product backlog to move to the sprint backlog. Time estimates are attached to each item.

During the sprint: daily team meetings (seriously)

At end of sprint, new features are complete: documented and tested and ready for release.

Product increment: something shippable.
Gathering Requirements: User Stories

A collection of stories can define what the program is supposed to do.

Uses:

- Help you to understand what the user wants from the program.
- Used to generate time estimates and prioritize development activities.
- Acts as a reference when discussing software features with the client.
Example User Stories

Students can purchase monthly parking passes online.

Parking passes can be paid via credit cards.

Parking passes can be paid via PayPal™.

Professors can input student marks.

Students can obtain their current seminar schedule.

Students can order official transcripts.

Students can only enroll in seminars for which they have prerequisites.

Transcripts will be available online via a standard browser.
Product Backlog

A list of all tasks needing to be completed.
The list is in priority order, and each item has a size.

The product owner prioritizes this list.

The backlog contains:

- bugs, user stories, enhancements, issues, questions
Estimating Size

How big is a feature?

Each item has a priority and an estimate of work.

Estimates are not in hours, but in relative size!

Some people use Fibonacci numbers: 1, 2, 3, 5, 8, 13, 21.

Find the smallest item on the backlog and give it a 1, find the largest item on the backlog; give it a 21, and so on.

Estimating size is a difficult task!
For each sprint, the team should select a set of features to implement.

These features are selected from the product backlog.

The goal is to select a set that can be finished within the time period of the sprint.
When is a Feature Finished?

At the end of each sprint, the tasks in the sprint backlog should be finished.

“Finished” means fully documented and fully tested.

To repeat:
Testing must be integrated throughout the sprint.

The final product should be clean, working, easily extensible code.