Object Oriented Design

UML

Dr. Seán Russell

School of Computer Science,
University College Dublin

Lecture 01

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- Software development is a difficult task
- After the failure of many software projects, people began to study **how** we develop software
- The result of this study was many methodologies describing how to complete the process

- Methodologies typically define a number of phases/actions that should be performed
- They also usually described what the outputs of these phases/actions should be
  - These outputs can be documents, or some of the many types of diagrams
- These outputs represent an abstract model of the system being coded
- The results of one action/phase are usually used as an input to the next action/phase
  - After each action/phase the model should be more detailed

- The following are the most common activities performed as part of a methodology
  - Requirements gathering/specification
  - Analysis
  - Design
  - Implementation
  - Testing
  - Maintenance

- Methodologies describe more than just the activities that should be carried out
- They also typically specify the **language** that the model should be in
  - This includes the notation that we use to describe the system

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- UML is the dominant modelling language in industry
- UML defines a language for modelling systems
- UML does not define a process
- It is intended to be used with different methodologies

- Terminology used when talking about UML is often very confusing
- The word 'model' can have different meanings
  - It may mean of information stored about the system being developed
  - It may mean a collection of diagrams created for the same purpose
  - It may mean a single diagram

- **Class diagram**
- **Sequence diagram**
- **Use case diagram**
- **Object diagram**
- Collaboration diagram
- Statechart diagram
- Activity diagram
- Component diagram
- Deployment diagram

- When learning UML, we need to learn two related concepts

1. The model elements and how they can be used
2. The different types of diagrams