## Drop Box Folder Structure

<table>
<thead>
<tr>
<th>Name</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Project Contract</td>
<td></td>
</tr>
<tr>
<td>2. Requirement Elicitation</td>
<td>--</td>
</tr>
<tr>
<td>3. System Analysis</td>
<td>--</td>
</tr>
<tr>
<td>4. Object Design</td>
<td>--</td>
</tr>
<tr>
<td>5. Project Rational (All Phases)</td>
<td>--</td>
</tr>
<tr>
<td>6. Testing (Code Included)</td>
<td>--</td>
</tr>
<tr>
<td>7. Final Project</td>
<td>--</td>
</tr>
</tbody>
</table>

Includes Individual Bio-Data Information
Class Project Discussion

Documents and project list

- Project Team names
- Project Team Leads
Project List

1. Online Shopping cart
2. Cell phone app?
3. Online SQL Database Engine
4. Inventory for a small company
5. Online Hotel Management System
6. Scheduler
7. Attendance System
Introduction to Software Engineering
What I asked and What did I get?

Ackowledgements to unknown author
Software Engineering Failures

• The explosion of the Ariane 5 (June 4\textsuperscript{th}. 1996)
  – $7bn Cost, Decade of development
  – 64 bit floating point conversion to a 16 bit signed integer
• Y2K Bug
• C-17 unnecessary complexity
  – $500 mm over budget
  – 19 onboard computers
  – 80 microprocessors and 6 different languages
• Mariner 1 (Venus flyby) 1962 July 22\textsuperscript{nd}. 
What is Software Engineering?

1. Modeling Activity

- Complexity through modeling
- **Focus on relevant** details
- Ignore other details not related to the problem
- Model is an *abstract representation* of the system that can answer questions about the system
- Size, Cost, Time, Complexity
- **Application Domain** and **Solution Domain**
- **OO** Methods combine App. Domain and Solution Domain modeling activates into one
Modeling Activity – Cost, Time & Scope

• Any one variable will impact other variables

• Adding people at the end of the project will cut short the project time?
What is Software Engineering?

2. **Problem Solving Activity**

- Through models we **search for a solution**
- **Best fit Method** (Trial and Error)
- Usually involves **5 simple steps**

- Formulate the problem
- Analyze the problem
- Search for the solutions
- Decide on the appropriate solution
- Specify the solution
What is Software Engineering?

2. Problem Solving Activity

Object – Oriented Software Development usually includes 6 steps

- Requirement Elicitation
- Analysis
- System Design
- Object Design
- Implementation
- Testing
3. **Knowledge Acquisition Activity**

- Knowledge acquisition is **NOT LINEAR**
- New knowledge about the system can through all the acquired knowledge
- Different Methodologies
  - Risk-based
  - Issue-based
4. Rationale Activity

- Why the solution was proposed is critical to capture
- Not easy activity
What is Software Engineering?

Modeling

Problem Solving

Rationale

Knowledge Acquisition

Software Engineering
Software Engineering Concepts

Software engineering concepts depicted as a UML class diagram. [Bruegge, Dutoit]

Projects – Activity – Tasks and Work Product
Work Product:

- Is an artifact produced during the development
- System
- Specification Document
- Operational Manual
- Status Reports
- Testing Manual
Roles and Responsibilities

• Client
  – Provide high level requirements
  – Scope
  – Fund
  – Set delivery time, quality

• User
  – Provide knowledge about the system
  – Feedback
  – Testing

• Project Manager
  – Overall management
  – Face to the Client

• Developer
  – Construction of the system
  – Testing

• Technical Writer
  – Documentation
  – Reference manual

• Support
  – Product support
  – Installation
Functional and Non Functional Requirement

• Functional
  – Specification a **system should** support
  – Need to have

• Non Functional
  – **Constraint** on the System
  – No direct relation to the function of the system
Software Engineering Development Activities

- Requirement Elicitation (Gathering)
- Analysis
- System Design
- Object Design
- Implementation
- Testing
Managing Software Development

• Communication
  – Time consuming activity
  – Critical for the project
• Rational Management
  – Justification – Complex activity
• Software Configuration
  – Version controls
  – Maintenance
• Project Management
  – Art
• Software Life Cycle
  – Putting it all together is the life cycle of the Software Development
Questions

?