Project Scheduliing

CSCI 3300/5300

Before starting the project

- Plan
 - Identify activities
 - Work Breakdown Structure (WBS)
- Estimate
 - Determine the size and duration of activities
- Schedule
 - Add specific start and end dates, dependencies, resources





Estimate duration

- Analogous estimating
 - Use data from previous similar projects to estimate tasks
 - Requires having data from previous similar projects
- Parametric estimating
 - Uses a statistical relationship to calculate an estimate for activity
 - Typically multiplies quantity by rate:
 - Example: Running new cable in a building take the amount of cable and multiply it by amount of time it takes to install a unit of cable
- Three point estimating
 - Program Evaluation and Review Technique (PERT estimating)
 - Accounts of uncertainty of the estimate
 - Expected duration = [Optimistic Est + 4 (Most likely Est) + Pessimistic Est]/6

Pros and Cons of different estimating techniques

Pair up and discuss Pros and Cons of the three techniques below, as they are applied to software project estimation [3 minutes]:

- Analogous Estimating
- Parametric Estimating
- Three Point Estimating

Planning Poker

- Consensus based estimating technique
- Product owner describes a user story or a feature
- Each player has a deck of cards with values: 0, 1, 2, 3, 5, 8, 13, 20, 40, 100
- Cards represent story points
- Players discuss the feature and ask clarifying questions
- Players privately select a card to represent his/her estimate
- All cards are revealed at the same time
- If all players select the same value, that becomes the estimate
- If not, players discuss their estimates: high and low bidders must explain their decision
- Process continues until consensus is reached



Planning Poker Alternative

- Reading assigned to graduate students
- All are welcome to read

Consider the following WBS with estimates

- 1. Collect Requirements [20 days]
- 2. Design and implement system
 - 1. Design/implement user interfaces [10 days]
 - 2. Design/implement database [5 days]
 - 3. Design/implement back-end logic [30 days]
 - 4. Integrate components [20 days]
- 3. System Testing

 - Define test plan [5 days]
 Implement tests [10 days]
 - 3. Execute tests and fix bugs [10 days]
- 4. Support training
 - 1. Prepare training materials [5 days]
 - 2. Conduct the training [1 day]
- 5. Deploy system to customer [5 days]

Pair up and discuss potential issues with this WBS and estimates

Develop Schedule

- Identify dependencies between tasks
- Example: System testing cannot start until Integration testing is complete
- Determine critical path the longest string of dependencies



What's the latest we can start on activity?											
Activity	Description	Dependency	Duration	Early Start	Early Finish	Late Start	Late Finish				
1	Buy hardware	none	5								
2	Test hardware	1	5								
	Collect										
3	requirements	none	10								
4	Design solution	3	15								
5	Implement and Test	5	60								
6	Install Hardware	1	3								
7	Deploy software	5, 6	3								
8	Train users	7	1								
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W	/hat's the	latest w	ve can	start	on act	ivity?			
Activity	Description	Dependency	Duration	Early Start	Early Finish	Late Start	Late Finish		
1	Buy hardware	none	5	1	5	73	77		
2	Test hardware	1	5	6	10	78	82		
3	Collect requirements	none	10	1	10	1	10		
4	Design solution	3	15	11	25	11	25		
5	Implement and Test	5	60	26	85	26	85		
6	Install Hardware	1	3	11	13	83	85		
7	Deploy software	5, 6	3	86	88	86	88		
8	Train users	7	1	89	90	89	90		
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How fast will we complete this project

- Depends on:
 - Available resources
 - Work schedule
 - Vacation schedule
 - Estimation accuracy
 - Unexpected events