CSSE 372 Software Project Management: Software Project Scheduling

Shawn Bohner
Office: Moench Room F212
Phone: (812) 877-8685
Email: bohner@rose-hulman.edu
Examination #1 Results

Average Score 82.70%
Median Score 85.00%
Lowest Score 64.50%
Highest Score 96.00%
Exam Reflections

- Long exam – favored the swift and prepared
- Most folks did well on most parts – no throw-outs
- Estimation probably the weakest point, but this is normal at this point in term
- Function Point part I was most lenient on as several folks were partially finished
### Exam 1 Stats (Comparative only – course grades will be determined later)

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Learning Outcomes: Schedule

Create and maintain a software project schedule.

- Recall Tasking from Work Breakdown Structure (WBS)
- Identify Scheduling in the SPM process
- Outline key elements of Scheduling activity
Mind if I pick up the pace?

SQUIRRELS + COFFEE

Dear god, help us.
Recall the schedule of tasks in the 1st homework. Now you have tasks that combine software components/capabilities and software process activities into a WBS.

What information do you need to do some ordering of the WBS tasks across a timeline?

- Think for 13.13 seconds…
- Turn to a neighbor and discuss it for a 46.87 seconds
Software Project Planning

- **Why** – Business Case/Scope
- **What** – Work Breakdown Structure
- **When** – Schedule
- **Who** – Staffing
- **Where** – Facilities
- **How Much** – Budget/Costs
Project Planning Process

1. Requirements Management
   - Negotiate Commitment
     - Decompose Requirements
       - Estimate Product Size
         - Estimate Project Resources
           - Develop Schedule
             - Does Plan Meet Need?
               - Yes: Obtain Commitment and Approval
               - No: Update Schedule

2. Negotiate Commitment

3. Decompose Requirements

WBS

4. Estimate Product Size

SLOC

5. Estimate Project Resources

WBS

6. Develop Schedule

7. Obtain Commitment and Approval

8. Project Tracking

Baseline Estimates

Enterprise Database
# PMI PMBOK & ISO 10006 Standard

## PROJECT EVOLUTION

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**Know What**

**Know How**
Recall: Software Project Planning

- **Introduction**: objectives of project and sets constraints
- **Project Organization**: way development team organized (roles, etc)
- **Estimation**: Effort, cost, schedule estimates & resource availability
- **Risk Management**: possible project risks, their likelihood of occurrence, and risk reduction strategies proposed
- **Hardware/Software**: support required for the development; if hardware to be bought, estimates of price and delivery schedule
- **Work Breakdown**: breakdown of project into activities / tasks, and identifies milestones / deliverables associated with each task
- **Project Schedule**: dependencies between activities, estimated time to reach each milestone, and allocation of resources to activities
- **Monitoring, Control, and Reporting**: management reports which should be produced, when, and the monitoring mechanism
Scheduling Principles 1/2

- **Compartmentalization**
  - The product and process must be decomposed into a manageable number of activities and tasks.

- **Interdependency**
  - Tasks that can be completed in parallel must be separated from those that must be completed serially.

- **Time allocation**
  - Every task has start and completion dates that take the task interdependencies into account.

- **Effort validation**
  - Project manager must ensure that on any given day there are enough staff members assigned to completed the tasks within the time estimated in the project plan.
Scheduling Principles  2/2

- **Defined Responsibilities**
  - Every scheduled task needs to be assigned to a specific team member

- **Defined outcomes**
  - Every task in the schedule needs to have a defined outcome (usually a work product or deliverable)

- **Defined milestones**
  - A milestone is accomplished when one or more work products from an engineering task have passed quality review
Activity Graph

Each activity has:
1. Precursor
2. Duration
3. Due date
4. End point (milestone or deliverable)

Each task has:
1. Start time
2. End time
3. Duration
How can you figure out the shortest time it would take to finish a project?

- Think for 11.6 seconds…
- Turn to a neighbor and discuss it for a 48.4 seconds
Critical Path Method (CPM)
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<th>Pre-cursor</th>
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EST = earliest start time, EFT = earliest finish time
LST = latest start time, LFT = latest finish time
Slack = (LST - EST) or (LFT - EFT)
Network-based Scheduling—Task on the Node

ES = earliest start, EF = earliest finish time

LS = latest start, LF = latest finish time

Slack = (LS - ES) or (LF - EF)

E = Effort (duration)
Diagramming Conventions

Diagram (a):
- Node A connected to Node C

Diagram (b):
- Node E connected to Node F, which is connected to Node G

Diagram (c):
- Node D connected to Node E and Node F
Dependency Relationships

FS: When A finishes, B may start

FF: When A finishes, B may finish

SS: When A starts, B may start

SF: When A starts, B may finish
Dependency Constraints

- Technical constraints
  - Discretionary constraints
  - Best practice constraints
  - Logical constraints
  - Unique requirements constraints

- Management constraints

- Inter-project constraints

- Date constraints (sound like class!)
  - No earlier than, No later than, On this date

- Lag variables
Elapsed Time (duration) versus Work (effort)

MODEL ASSUMPTIONS

* Individuals work at 75 percent efficiency rate.
* Unplanned interruptions account for 33 percent of clock time.
Homework and Reading Reminders

- Read Software Project Scheduling paper

- Complete Homework 4 – Software Risk Tables and Risk Sheets
  - Due by 11:5pm, Tuesday, October 2\textsuperscript{nd}, 2012