MICHIGAN STATE UNIVERSITY

01/27: Schedule and Teamwork

The Capstone Experience

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From Students…
…to Professionals

Schedule and Teamwork

- Schedule
- Teamwork

Capstone Work Requirements

- Every team member should be working all the time.
- Work on all parts in parallel.
  - Hardware / Software
  - Front End / Back End
  - Web / iOS / Android
- Work in advance.
  - Mitigate risks.
  - Get hardware working.
  - Install and test systems.
  - Write Hello World tests.

Schedules

- Schedules > All-Hands Meeting
- Schedules > Major Milestones
  - 01/20: Status Report Presentations
  - 02/01: Project Plan Presentations
  - 02/24: Alpha Presentations
  - 04/05: Beta Presentations
  - 04/25: Project Videos
  - 04/27: All Deliverables
  - 04/29: Design Day

Are there fixed milestones in the "real" world?

Project Parts

- Break Down Project
  - Main Parts
  - Sub-Parts
  - Sub-Sub-Parts
  - Etc…
- Categorize
  - Risks
  - Dependencies
    - Particularly Risk Dependencies
    - Determines Schedule Order
  - Priorities
- Worry About
  - Interfaces Between Parts
  - Integration of Parts

Building A Project Schedule

- Start With Fixed Course Milestones
  - See Schedules > Major Milestones
  - Read About Each
- Estimate Times for Tasks for Parts
  - Building
  - Integrating
  - Testing
- Assign Tasks to Team Members
- Must Keep Everyone Busy All the Time
- Use “Short” Deadlines (E.g., 2-3 Days) Why?
- Document and Track
  - Microsoft Project?
  - Collaboration Tool?

Estimating Time for Tasks

- Rough Estimate
  - Intuition
  - Experience
- Refined Estimate
  - Prototype or Partial Build
  - Extrapolation
  - E.g., 2 Days to Build 1 → 6 Days to Build 3
- Keys
  - Be Realistic
  - Include Buffer Time if Unsure
- Adjust Schedule Accordingly

Typical Build Cycle

Until Project Done Do

1. Divide Next Big Task Into Little Tasks
2. Assign Little Tasks to Team Members
3. Complete Little Tasks
   a. Implement
   b. Test
4. Integrate Little Tasks Into Big Task
5. Test Big Task

Very Important

High Priority Risks Get High Priority Scheduling

Version Control

- Versioning
  - Discrete “Internal” Versions (States)
  - May Correspond to Builds
- Version Control Systems
  - Check Code In and Out
  - Mark Specific States as Versions
- Motivation
  - Build Breaks System
  - Revert to Earlier Build
  - Avoid Bridge Burning
- Examples
  - GitHub
  - Visual SourceSafe

Can Be Serious Problem

Living Schedule

- Schedule Is Dynamic
  - Unforeseen Problems
  - Added Features (Avoid Feature Creep)
  - Etc..
- Track Your Progress
  - Microsoft Project?
  - Collaboration Tool?
- Revisit Schedule Often
  - Weekly Team Meetings
  - Weekly Triage Meetings with Instructors
  - Identify Slippage
  - Hold Each Other Accountable (or Contact Instructors)
  - Set Corrective Action
  - Adjust Schedule

Schedule and Teamwork

✓Schedule

➢Teamwork

Team Organization

- Up to Each Team
- Organize into Roles
  - Client Contact
  - Program Manager
  - Developer
  - Tester
  - Systems Administrator
  - Etc…
- Everyone must make significant technical contributions to their team's project, including significant software contributions.

Team Dynamics

- Key to Success
- Significant Component of Course Grade
- Address Problems Immediately
  - Within Team
  - With Instructors
- Be Ready to Discuss During Interviews

Grading

- Team (70%)
  - Project Plan Document & Presentation 10
  - Alpha Presentation 10
  - Beta Presentation 10
  - Project Video 10
  - Project Software & Documentation 25
  - Design Day 05
  - Total 70
- Individual (30%)
  - Technical Contribution 10
  - Team Contribution 10
  - Team Evaluation 05
  - Meeting Attendance & Preparation 05 ← Can Be Negative
  - Total 30

Grading

- Final Grade Sum Of…
  - Individual Total
  - % of Team Total Based on Team Contribution
- Grand Total =

  (Individual Total)

  +

  (Team Total) * (Team Contribution) / 10.0
- *Nota Bene*: Your Team Contribution will have a very significant effect on your final grade.

Grading

Effect of Team Contribution					
Technical Contribution	Team Contribution	Team Evaluation	Meeting Attendance	Team Total	Grand Total
10	10	5	5	70	100
10	9	5	5	70	92
10	8	5	5	70	84
10	7	5	5	70	76
10	6	5	5	70	68
10	5	5	5	70	60
10	4	5	5	70	52
10	3	5	5	70	44
10	2	5	5	70	36
10	1	5	5	70	28
10	0	5	5	70	20
Nota Bene: Assumes Perfect Score In Every Other Category					

Grading

- In order to be eligible to earn a non-zero final course grade, you must earn at least 50% in every one of the grading categories given above. That is, in order to be eligible to earn a non-zero final course grade, you must earn at least the minimal grades given below.
- Minimal Team Grade Requirements
  - Project Plan Document & Presentation 5.0 / 10.0
  - Alpha Presentation 5.0 / 10.0
  - Beta Presentation 5.0 / 10.0
  - Project Video 5.0 / 10.0
  - Project Software & Documentation 12.5 / 25.0
  - Design Day 2.5 / 05.0
- Minimal Individual Grade Requirements
  - Technical Contribution 5.0 / 10.0
  - Team Contribution 5.0 / 10.0
  - Team Evaluation 2.5 / 05.0
  - ~~Meeting Attendance & Preparation 2.5 / 05.0~~

Grading

[5 of 7]

- In the capstone course, absence does not make your teammates' hearts grow fonder.
  - Nonresponsive
    - Email
    - Slack
    - Microsoft Teams Messages
    - Etc.
  - Miss Meetings
    - All-Hands
    - Triage
    - Client
    - Team
  - Miss Work ← **Key**
    - In Lab and/or Online with Teammates
    - During Sprints
    - Before Major Milestones

Grading

Unacceptable Excuses for Not Contributing

- They never asked me to do anything.
- They never let me do anything.
- I wrote 1000's of lines of code, but they weren't included in the project.
- My features were not included in the project.
- I work 40 hours per week at my job.
- I live 60 minutes from MSU.
- I didn't want to work on this project team.
- I ranked this project last.
- I did a lot of research about stuff that we never used.
- I was busy interviewing.
- Etc…

Grading

[7 of 7]

- We reserve the right to make changes with sufficient notice.
- No special consideration will be given for final grades, including but not limited to
  - effect on GPA,
  - status in any academic program including CSE,
  - financial aid,
  - rank in the armed forces,
  - job while a student at MSU,
  - job after anticipated graduation from MSU,
  - graduation,
  - mortgage,
  - wedding,
  - visa status,
  - effect on graduate school application,
  - or anything else.

Team of Peers

Effective Team Members

- Relate as Equals
- Have Specific Roles and Responsibilities
- Respect Specific Roles and Responsibilities
- Empowers Individuals in Their Roles
- Have Specific Skills
- Hold Each Other Accountable
- Drive Consensus-Based Decision-Making
- Give All Members a Stake in the Project

Potential Problems

Over and/or Under

- Bearing
- Qualified
- Achiever
- Etc…

Team Evaluation Form

- 5% of Final Grade
- Rate Each Team Member
  - Describe the technical contributions (or lack thereof) of each team member. That is, describe what each team member contributed as a software developer to your project. Be specific. Contributions may include things like architecture, design, algorithms and code. Include comments about the quality of their work.
  - Describe the team contributions (or lack thereof) of each team member. That is, describe what each team member contributed as a team member to your team. Be specific. Include comments about attendance at meetings, timeliness of completing work, commitment to the project, reliability and effort put forth.
  - In the table above, you rated one of your team members as the **worst** team member. Why? Be specific.
  - In the table above, you rated one of your team members as the **best** team member. Why? Be specific.

Team Problems

- Can Be
  - Really Hard
  - Awkward
  - Frustrating
- Addressing Problems
  - ASAP
  - Directly
  - Respectfully
  - Maturely
- Resolving Problems
  - Internally First
  - Instructors Next
- “Bad” Team Not an Acceptable Excuse
- Instructors
  - Can Help
  - Have Limited Experience with Time Travel

We don’t have one of these.

Schedule and Teamwork

✓Schedule

✓Teamwork

Miscellany

- Missing Meetings
  - “WiFi Problems”
  - Illness
- Capstone Project Requirements
  - Significant Software System
  - Keep 5 to 6 CSE Majors Working All Semester
  - Instructors Decide What’s Acceptable, Not Sponsors

What's ahead? [1 of 3]

- Upcoming Meetings
  - ~~01/18: Risks and Prototypes~~
  - ~~01/20: Team Status Report Presentations~~
  - 01/25: Project Plan
  - 01/27: Schedule and Teamwork
  - 01/31: Project Plan Document and Slide Decks Due
  - 02/01: Team Project Plan Presentations
  - 02/03: Team Project Plan Presentations
  - 02/08: Team Project Plan Presentations

10% of Team Grade

What's ahead? [2 of 3]

- Major Milestones
  - 02/01: Team Project Plan Presentations
  - 02/25: Team Alpha Presentations
  - 04/05: Team Beta Presentations
  - 04/25: Project Videos
  - 04/27: All Deliverables

What's ahead? [3 of 3]

- Project Plan Document and Slide Deck
  - Due Monday, January 31
  - Read Submission Instructions Carefully
    - Slide Deck in Template
    - Document in James' Email
- Project Plan Presentation Schedule
  - Every Team Must Be Prepared to Present on First Day
  - Schedule Posted Evening Before First Presentation
- Project Plan Presentation Conflicts
  - Request from Dr. D. via Email
  - For Interview that Can Be Verified and Cannot be Scheduled Another Time
  - Due by COB Today
- Split All-Hands Meetings
  - Split by Brenden's and Luke's Channels
  - James' Teams Split Between Channels
- Each Team Presents
  - One team member will use Microsoft Teams to…
    - Share PowerPoint Presentation
    - Advance the PowerPoint Slide Deck
  - All Team Members Audio and Video On
  - At Most 14 Minutes Including "Setup" Time (Rehearse Timing)
  - Multiple Team Speakers
  - Rehearse