IPRO 328:

Testing and Improving a New Text for Teaching Computer Science

Team Members:

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Peter Schmitz CS, Michael Tilatti AE, Harry Tran BME

Student Advisor: Yacin Nadji

Faculty Advisor: David Grossman

Background: Traditional Texts

- Long and imposing

- Out of touch with student needs

- Out of touch with industry

Problem:
Create an effective Text

- Phase one (last semester):
  - Finish initial draft

- Phase two (this semester):
  - Assess and improve
    - Text itself
    - Teaching Tools
    - Problem Sets

Objectives

- **Text itself**
  - ☐ Revise or rewrite all 8 Chapters

- **Teaching Tools**
  - ☐ Create and test slides

- **Problem Sets**
  - ☐ Test and revise for all 8 Chapters

Innovative Approach

- Simulated a classroom experience
  - Mixed majors (8 total), nationalities, genders

- Comments fueled revisions to:
  - Text
  - Presentation Slides
  - Problem Sets

- Interdependent subteams were created

Code of Ethics and Multicultural Awareness

- **Overarching Standard**
  - Submit only original work
  - Never lose sight of multicultural audience
  - Never act unfairly

- **Paradigm of Code of Ethics**
  - Multicultural examples and exercises
    - Directions, simple games, etc.
  - All content original and created with audience in mind

Project Plan

IPRO Deliverable	Start	Finish
Project Plan	1/25/2008	2/22/2008
Midterm Report	3/3/2008	3/14/2008
Midterm Presentation	3/3/2008	3/14/2008
Final Report	4/21/2008	5/2/2008
IPRO Day Presentation	4/20/2008	5/25/2008
IPRO Day Poster	4/21/2008	4/25/2008
Code of Ethics	2/15/2008	3/7/2008
Website	4/18/2008	4/25/2008
Abstract	4/21/2008	4/25/2008
Meeting Minutes	1/25/2008	4/18/2008
CD-ROM	4/25/2008	5/2/2008
Team Debriefing	5/5/2008	5/26/2008

Planned

Milestones	Start	Finish
Chapters 1 - 4 and Midterm report	2/4/2008	3/16/2008
Chapters 5 - 8	3/14/2008	4/28/2008
Final Report and Deliverables	3/14/2008	5/2/2008

Actual

Milestones	Finish
Chapters 1 - 4 and Midterm report	**3/30/2008**
Chapters 5 - 10	**4/28/2008**
Final Report and Deliverables	**5/2/2008**

Division of Labor – Initial

- **Text**
  - Editing Subteam (Chapters 1 to 8)

- **Teaching Tools**
  - Teaching Subteam

- **Problem Sets**
  - Problem Set Subteam

Division of Labor – Final

- **Text**
  - ☐ Editing Subteam 1 (Chapters 1 to 8)
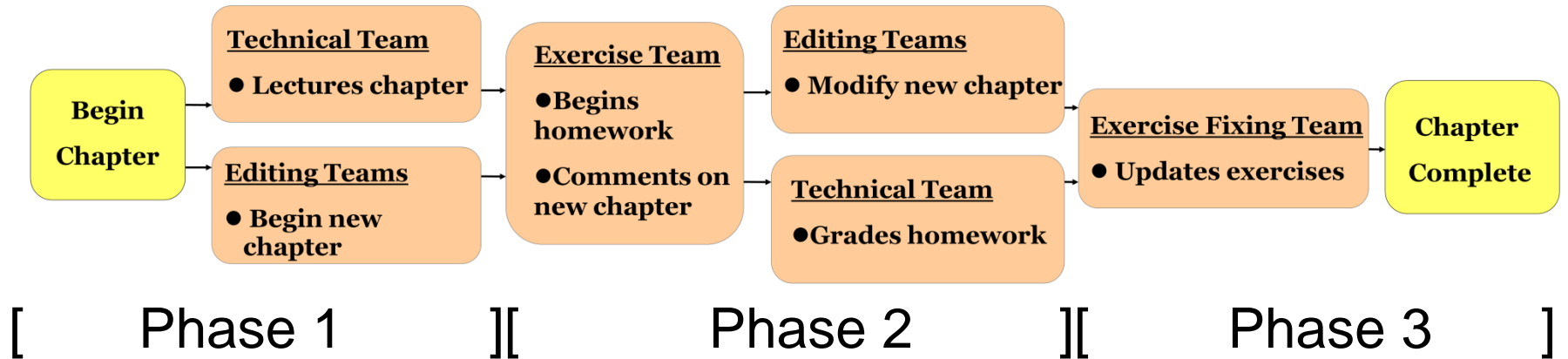 - ☐ Editing Subteam 2 (Chapters 9 & 10)
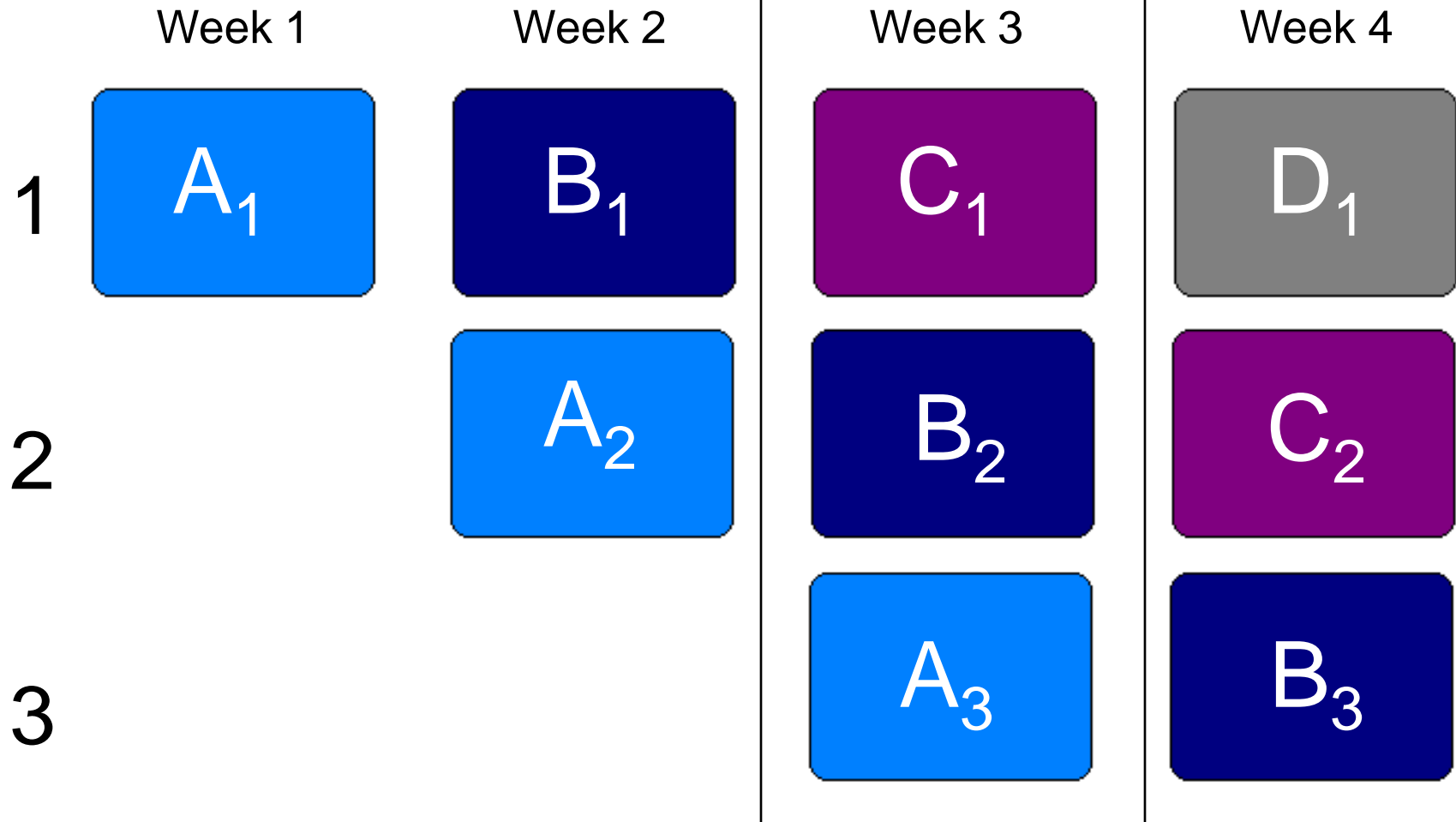
- **Teaching Tools**
  - ☐ Teaching Subteam

- **Problem Sets**
  - ☐ Problem Solving Subteam
  - ☐ Problem Revision Subteam

Project Flow

Three Week Cycle

Begin Chapter	**Technical Team** ● Lectures chapter	**Exercise Team** ●Begins homework ●Comments on new chapter	**Editing Teams** ● Modify new chapter
	Editing Teams ● Begin new chapter		**Technical Team** ●Grades homework

Exercise Fixing Team
● Updates exercises

Chapter Complete

[Phase 1   ][Phase 2   ][Phase 3   ]

Project Flow

	Week 1	Week 2	Week 3	Week 4
1	A_1	B_1	C_1	D_1
2		A_2	B_2	C_2
3			A_3	B_3

Meeting Structure and Deadlines

- Monday Class
  - Final Chapter A
  - Revised Problem Set A
  - Lecture Chapter C
  - Draft Chapter C
- Thursday Online Chat
  - Chapter C Comments 1
  - Revised Chapter B
  - Averaged 45 min in length
- Sunday
  - Chapter B Comments 2
  - Problem Set C

Week 3

1 C

2 B

3 A

Time and Money Spent

- Time
  - Total: 1,100.9 hours
  - Average/person: 91.7 hours
  - Average/week: 100.1 hours
  - Average/week/person: 8.3 hours

- Cost
  - Photocopies
  - Covered by the CS Dept.
  - Cost equivalent to typical CS course

Results – Text

- Total Changes: 1,015
  - Insertions: 497
  - Deletions: 518

- Incorporated Comments
  - Average/person/ch
    - CS 4.7
    - Non-CS 8.2

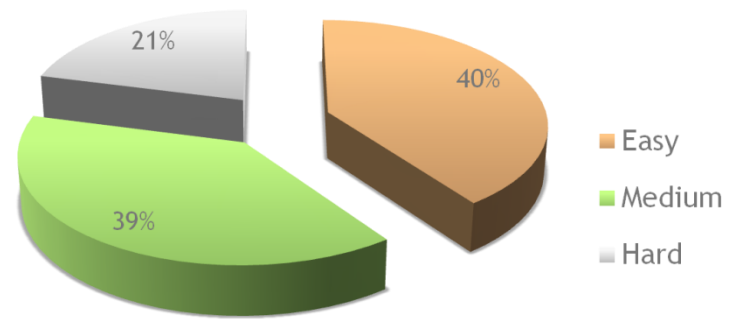| Team Member	Major	Average Points Per Chapter
Allen, David Charles	Non-CS	12.2
Tilatti, Michael	Non-CS	11
Kwak, Noh Hyup	Non-CS	8.5
Jeong, Seon	Non-CS	7.9
Patel, Vivek	Non-CS	6.8
Tran, Harry	Non-CS	6.5
Rymek, Phil	CS	5.5
Hammes, Katherine	Non-CS	5
Kofman, Roman	CS	5
Bathum, Nicholas	CS	4.75
Johnson, Leland	CS	4.3
Schmitz, Peter	CS	4.125

Results – Teaching Materials

- Total Lecture Slides Created: 197

- Average Slides/Chapter: 21.9

- Mock Lectures and Slides Completed for 9 Chapters

Results – Problem Sets

- **Total Problems 189**
- **Exercise Changes**
  - ☐ Changed 23
  - ☐ Added 35
  - ☐ Deleted 14
- **Total time spent 88.1 hrs**
  - ☐ Average/problem 18 minutes
  - ☐ Average grade 4.15/5

Pie chart: Easy 40%, Medium 39%, Hard 21%

Results – Overall

- Text itself
  - Revised or rewrote 7 Chapters
  - Created 3 additional Chapters

- Teaching Tools
  - Created and tested 197 slides

- Problem Sets
  - Tested and revised for 8 Chapters
  - Created for 1 additional Chapter

Questions?