IPRO 328

Developing a Computer Science Text with Practical Open-Ended Problems

Midterm Report

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1.0 Revised Objectives/Goals

1.1 Current Objectives Stated

The objective of this IPRO team is to improve upon an introductory computer science text developed last semester that focuses on critical thinking and problem solving. The key deliverables entailed in this undertaking specifically include:

- Improving chapter content and layout
- Adding/deleting/changing chapter figures
- Revising exercises (some open-ended)
- Updating exercise solutions to revised exercises
- Updating website

1.2 Current Objectives Compared to Original Objectives

The only objective that has changed since the project plan was published is that we no longer plan to improve the MEA problems. We feel that the MEA problems created last semester are adequate and do not need improvement. All other objectives including those pertaining to the book and website are still intact.

1.3 Reasons for Changes to Objectives Explained

The main reason for the removal of the MEA problem improvement objective was time. The team feels that there is not enough time to work on the MEA problems this semester and that it would be extremely inefficient to attempt it.

2.0 Revised Task / Event Schedule

2.1 Work Breakdown Schedule

Name	Start	Finish	Expected Hours
IPRO Deliverables	**01/25/2008**	**05/02/2008**	**230**
Project Plan	01/25/2008	02/22/2008	30
Midterm Report	03/03/2008	03/14/2008	20
Midterm Presentation	03/03/2008	03/14/2008	10
Final Report	04/21/2008	05/02/2008	30
IPRO Day Presentation	04/20/2008	04/25/2008	50
IPRO Day Poster	04/21/2008	04/25/2008	10
Code of Ethics	02/15/2008	03/07/2008	5
Website (including book portion)	04/18/2008	04/25/2008	30
Abstract	04/21/2008	04/25/2008	5
Meeting Minutes	01/25/2008	04/18/2008	30
CD-ROM	04/25/2008	05/02/2008	5
Team Debriefing	05/05/2008	05/16/2008	5
Book Review	**02/04/2008**	**04/25/2008**	**850**
Chapter 1 Editing	02/04/2008	02/25/2008	100
Chapter 2 Editing	02/11/2008	03/03/2008	100
Chapter 3 Editing	02/18/2008	03/10/2008	100
Chapter 4 Editing	02/25/2008	03/16/2008	100
Chapter 5 Editing	03/03/2008	03/31/2008	100
Chapter 6 Editing	03/10/2008	04/07/2008	100
Chapter 7 Editing	03/24/2008	04/14/2008	100
Chapter 8 Editing	03/31/2008	04/21/2008	100
Chapter 9 Editing	04/07/2008	04/21/2008	50
Total Hours Assigned			**1280**
Milestones	**03/14/2008**	**05/02/2008**	
Chapters 1-4 & Midterm Report	02/04/2008	03/16/2008	
Chapters 5-9	03/14/2008	04/28/2008	
Final Report and Deliverables Finished	03/14/2008	05/02/2008	
IPRO Day	03/14/2008	05/02/2008	

2.2 Task Rescheduling

The work tasks are overall unchanged from the original project plan. Each team has been collaborating successfully on their respective assignments, so team changes would be unnecessary. Secondly, the thought-out task definition does reflect the IPRO teams' intended destination, thus warranting no modification.

2.3 Summary Tasks Defined

- Proofread all chapters in the book
- Publish a website to both satisfy IPRO requirements and support the book, including instructor solutions and other resources
- Submit IPRO deliverables

2.4 Individual Tasks Defined

Due to the structure of the book, certain tasks will be repeated for each chapter. As such, for all of the chapters, the team will complete the following:
- Prepare presentation materials
- Improve and edit the text
- Solve exercises at the end of the chapter
- Improve exercises at the end of the chapter

To improve and edit the text, each chapter will undergo a three-week cycle of editing with seven phases:
- Day 1: The chapter will be presented and the team will agree to a general outline of the chapter
- Day 6: The exercise team will be assigned exercises at the end of the chapter
- Day 8: The exercise team will provide feedback on the exercises at the end of the chapter
- Day 11: The grading team will grade the exercises done by the exercise team and provide feedback on their performance. The editing sub-team will begin rewriting the chapter based on provided comments
- Day 17: The editing sub-team will finish rewriting the chapter make minor changes if necessary. The entire team will then begin looking at the final product and make minor suggestions
- Day 21: The final draft of the chapter will be completed.

The website will feature:
- Files for problems
- Further information and links
- Information on the IPRO

The following IPRO deliverables will be submitted:
- Syllabus
- Project Plan
- Midterm Report
- Midterm Presentation
- Website (will include book website)
- Weekly Reports
- IPRO Day Presentation
- IPRO Day Poster

- CD-ROM
- Final Report
- Meeting Minutes
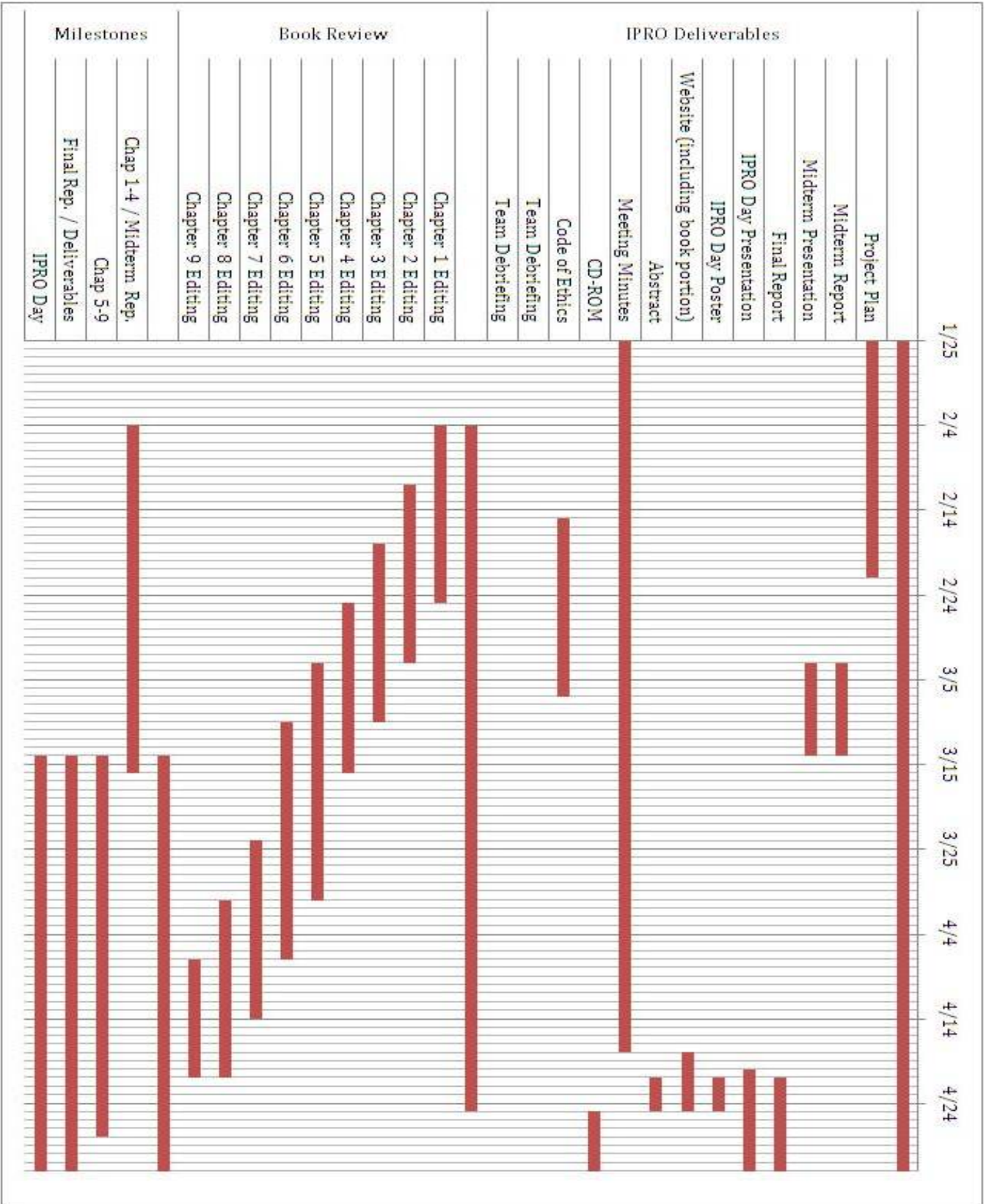- Code of Ethics
- Abstract

3.0 Duration of Tasks

3.1 Hours Spent and Revised Gantt Chart

Name	Expected Hours	Hours Spent*	Hours Remaining
IPRO Deliverables	**230**	**82**	**148**
Project Plan	30	30	0
Midterm Report	20	20	0
Midterm Presentation	10	10	0
Final Report	30	0	30
IPRO Day Presentation	50	0	50
IPRO Day Poster	10	0	10
Code of Ethics	5	5	0
Website (including book portion)	30	5	25
Abstract	5	0	5
Meeting Minutes	30	12	18
CD-ROM	5	0	5
Team Debriefing	5	0	5
Book Review	**850**	**330**	**520**
Chapter 1 Editing	100	100	0
Chapter 2 Editing	100	90	10
Chapter 3 Editing	100	70	30
Chapter 4 Editing	100	70	30
Chapter 5 Editing	100	0	100
Chapter 6 Editing	100	0	100
Chapter 7 Editing	100	0	100
Chapter 8 Editing	100	0	100
Chapter 9 Editing	50	0	50
Total Hours Assigned	**1280**	**412**	**868**

*Hours spent as of March 14

3.2 Updated Individual Tasks Durations
The remaining tasks are expected to take the amount of time predicted in the Project Plan. See chart on the next page.

4.0 Revised Accountability

4.1 Updated Sub Teams

Each individual member of each problem set team will be responsible for completing the exercises assigned to them at the end of each chapter. Since the submission of the project plan, Katherine has left the Exercise Team. The technical team will be responsible for preparing presentation materials, explaining the concepts in each chapter and grading homework problems. The chapter editing team will be responsible for taking suggestions, outlining and rewriting the chapters in the textbook. The size of each team besides the Editing Team does not instill the need for team leaders. The team leaders on the Editing Team are responsible for organizing and leading the subgroup meetings.

- Problem Set Team
- Technical Team: Led by Leland and Phil
- Website Development Team: Led by Harry
- IPRO Deliverables Team
- Editing Team: Led by Katherine and Roman

4.2 Updated Sub Team Responsibilities

- Book work, MEA research, and website will be assigned according to sub teams
- IPRO deliverables will be assigned as follows, and will be organized and managed by the IPRO Deliverables Team:

  - Project Plan: Harry
  - Midterm Report: Vivek
  - IPRO Day Poster: Noh, Seon
  - Final Report: Nick
  - Meeting Minutes: Harry
  - CD-ROM: Phil
  - Abstract: Pete
  - The IPRO Day Presentation will be a collaborative project involving the entire team, and Weekly Reports are done by everyone.

4.3 Updated Team Members Assigned to Sub Teams

The following is a listing of sub teams with team members assigned. An asterisk, *, denotes a team leader.

- Problem Set Teams
  - Nick, Vivek, Noh, Seon, Pete, David, Mike
- Technical Team
  - Leland, Phil
- Website Development Team
  - Harry*
- IPRO Deliverables Team
  - David, Nick, Katherine, Seon, Leland, Roman, Noh, Vivek, Phil, Pete, Mike, Harry
- Editing Team
  - Katherine*, Roman*, Phil, Harry

Only one team assignment has changed since the Project Plan. Katherine has left the Problem Set Team due to her increased roles in the Editing Team.

5.0 Resource Allocation

5.1 Updated Roles Allocated to Individual Members, and Relevant Roles to Fill

The roles, with the exceptions listed in section 4.3, are the same as they were described in the project plan.

- IPRO deliverables will be assigned as follows, and will be organized and managed by the IPRO Deliverables Team:

  - Project Plan: Harry
  - Midterm Report: Vivek
  - IPRO Day Poster: Noh, Seon
  - Final Report: Nick
  - Meeting Minutes: Harry
  - CD-ROM: Phil
  - Abstract: Pete
  - The IPRO Day Presentation will be a collaborative project involving the entire team, and Weekly Reports are done by everyone.

5.2 Updated Budget Provided

Since all work is original and produced by the IPRO team itself, there is no need for purchases, and as such, there is no financial budget for this project, except for occasional pizza. The team leader rewards the team with pizza whenever an IPRO deliverable is successfully completed. In terms of budgeting time, each member of the IPRO is expected to devote ten hours per week to the project. So far, the team has met this expectation, and no modification to the original resource allocation is necessary.

6.0 Results to Date

Problem Set Team
1. Finished exercises for chapters 1, 2, 3, and 4.
2. Reported time spent per exercise and ranked exercises: easy, medium, or hard.
3. Provided feedback to editing team about chapter content for chapters 1 and2.

The following is a table that summarizes the exercises of each chapter

Chapter	Number of Problems	Percent Easy, Medium, Hard	Average Time Spent per Problem
1	48	33%, 36%, 31%	19.5 minutes
2	49	45%, 39%, 16%	16.8 minutes

Technical Team
1. Revised and taught lecture notes (PowerPoint) for chapters 1, 2, 3, and 4.
2. Graded exercise submissions from problem set team for chapters 1, 2, 3, and 4.

3. Revised exercises for chapter 1. Revisions took 3.5 hours, and exercises were changed, added, or deleted if:
    A. Class average was less then 4 out of 5 for revised exercise, or
    B. The exercise was not relevant to chapter material

The following is a table that summarizes the exercises of each chapter

Chapter	Number of Problems	Average Grade per Exercise (out of 5)	Exercises Changed/Added/Deleted
1	48	4.125	9/2/4
2	49	4.458	

Website Development Team
1. An ergonomic layout for the website's features is complete. The team has already uploaded the book's content (book text, exercises, solutions, MEAs and useful links) to this website. The URL is: http://www.iit.edu/~ipro328f07/

IPRO Deliverables Team
1. The project plan is uploaded on IKnow. This plan has been carefully edited by all members of the IPRO team in the spirit of quality assurance. Additionally, the IPRO team's concentration on content made the project plan a well calibrated compass for the project's direction.
2. The Deliverables Team recently outputted the Code of Ethics. This document, perhaps the most important of all, establishes the IPRO team's accountability and responsibility for the various standards everyone must accept in order coalesce with the American spirit of capitalism. Furthermore, the team will have a better understanding of inauspicious pressures that undermine progress so as to obviate their effect through ethical decisions.
3. This midterm report, which has been heretofore managed well by the IPRO Deliverables Team, will undergo the rigor of the projects plan's review process so as to produce an accurate and descriptive account of our accomplishments, difficulties, solutions, and plans.

Editing Team
1. Outlines for chapters 1, 2, 3,4, and 5 are completed
2. Final drafts for chapter 1 and 2 are complete
3. First drafts for chapter 3 and 4 are complete

7.0 Monitoring of Project Status

7.1 Current Obstacles and Barriers

IPRO 328 has encountered a few trivial obstacles during the course of the semester. The obstacles included serious obstacles in communication and accountability had to have been dealt with. Fortunately, IPRO 328 has quickly cleared theses barriers.

Communication is a team faculty that is difficult to fully use. There exists a gamut of new technological channels for communication, and yet people are reluctant to talk to each other. Fortunately, the IPRO 328 advisor continually emphasized communication and the role it should take inside the IPRO team. Thus, the goals of debriefing each other, ascertaining whether or not team members have done their work, asking or offering help with no inhibition and sharing information was met in two weeks. Currently, IPRO 328 communicates daily, sometimes hourly, to accomplish tasks efficiently and on time.

There are a few trivial obstacles this team is facing. These are nothing out of the ordinary and expected to be easily surpassed with time and effort. For example, the emphasis on algorithms and problem-solving in the text is clearly an important goal. However, focusing on the general is often difficult. The team balances practical Ruby knowledge with general algorithm and problem solving knowledge by collaborating and reviewing each chapter. Also, it is very easy to mention terms that are so familiar to the writers but so obscure to the students. This is a problem for every book, and is handled by either asking a freshman's advice, or carefully reviewing the text for assumptions. These obstacles are being handled by the team and are worthy to mention because they persist through the book's development.

7.2 Future Obstacles and Barriers

There is a definite time constraint put on this team because nine chapters must be edited before the end of the semester and only about two have been done so far. However, with plan listed in 2.4, the chapters will be completed in a timely fashion because we will be working on more than one chapter at a time.

Determining if the book is being written in a cohesive manner before all the chapters are complete will be another difficult obstacle to overcome. Since, we have only one specific editing team, the book should come out in a single voice and tone. By allowing the other teams to partaking in the editing, inconsistencies in the text can be more easily found. To remedy any inconsistencies the editing team must collaborate to fix the text in manner that fits the rest of the text. If this is done well, the chapters will be consistent and thus, more coherent.

The question of whether or not the book will be accepted for publishing is irrelevant. There are numerous outlets for information, like online publishing, that ensure a place for valuable products such as this book. This book is intended for computer science students and instructors who will be the final judicators of IPRO 328's deliverables. The IPRO's goals will intelligently guide production to deliver an outstanding product.