

**The Reading Online
Learning & Collaboration Portal**

By

Justin J. Bland and Lisa Beth Waters

Submitted to
the Faculty of the Information Engineering Technology Program
in Partial Fulfillment of the Requirements for
the Degree of Bachelor of Science
in Information Engineering Technology

University of Cincinnati
College of Applied Science
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Table of Contents

Signatures	2
Acknowledgements	3
1.1 Problem Statement	7
1.2 Solution Definition	8
1.3 User Profile	8
1.3.1 Reading Junior/Senior High School Students	8
1.3.2 Reading Junior/Senior High School Faculty	9
1.3.3 Reading Junior/Senior High School Administration	9
2.0 Project Design Protocols	10
3.0 Project Deliverables	10
4.0 Proof of Design	11
4.0.1 Microsoft Server 2003	11
4.0.2 Microsoft Virtual Server	11
4.0.3 Microsoft SQL Server 2003	13
4.0.4 Microsoft SharePoint Portal 2003	14
5.0 Conclusion	16
Appendix A - Budget	17
Appendix B - Timeline	19
Appendix C - Division of Labor	20
Appendix D - Use Case Diagram	21
Appendix E - Site Map	22
Works Cited	23

List of Figures

Figure 4.1	Virtual Server Central Administration	11
Figure 4.2	Computers contained in watersbland.com domain	12
Figure 4.3	Groups and Users for Senior Design Project in Active Directory	13
Figure 4.4	SQL Databases used by SharePoint	14
Figure 4.5	Login Prompt to Reading Online Learning & Collaboration Portal	15
Figure 4.6	Reading Online Learning & Collaboration Portal main page	15
Figure 6	HP Server Pricing	17
Figure 7	Microsoft Software Pricing	18
Figure 8	Project Timeline - Microsoft Project Plan	19
Figure 9	Division of Labor	20
Figure 10	Use Case Diagram	22
Figure 11	Site Map	23

Abstract

We have designed a Web-based Learning & Collaboration Portal for Reading Junior/Senior High School using Microsoft's SharePoint Portal 2003 software. The Portal is personalized especially for Reading Junior/Senior High School and has been customized to fit their needs. Using this Web-based Learning & Collaboration Portal, students and teachers have unique usernames and passwords to log in with to automatically navigate them to their personalized group Portal. This is a place that students are able to retrieve assignments as well as information supplemental to those assignments, receive announcements, and communicate with other students or teachers via threading. Via the Portal teachers have the option to easily post assignments and/or announcements for their students. Teachers can also use this to communicate and collaborate with each other. The solution that we have designed will increase productivity, embracing the full power of the internet by giving the students and teachers access to learning resources from any place at any time.

1. Project Description and Intended Use

The solution we have designed for Reading Junior/Senior High School is a personalized Learning & Collaboration Portal. This was created using Microsoft's Share Point Portal 2003 software. The Portal was personalized especially for Reading Junior/Senior High School and has been customized to fit their needs.

Using this Web-based Learning & Collaboration Portal, students and teachers have unique usernames and passwords to log in with to get to their personalized group Portal. This is a place that students can retrieve assignments as well as information supplemental to those assignments, receive announcements, and communicate with other students or teachers the discussion board. Via the Portal teachers will have the option to easily post assignments, documents supplemental to assignments, and announcements for the students. Teachers can also use this to communicate and collaborate on documents with other teachers and administration members.

1.1 Problem Statement

In the past the students and faculty at Reading Junior/Senior High used a system called the "Homework Hotline" for students to retrieve homework assignments. To access the Homework Hotline, a student had to dial a telephone number and enter an access code. From this point they were guided by automated menus to choose courses and assignments. Teachers and students had issues interacting with this system. The Homework Hotline was not very user friendly, had a slow response time, and had very limited functionality. The Schools wished to have a system that was more user-friendly and at the same time had a higher level of functionality. (1)

1.2 Solution Definition

After considering Reading's problem, the solution we have produced is a personalized portal called The Reading Online Learning & Collaboration Portal. Using this Web-based portal, students and teachers now have unique usernames and passwords to log in with to get to their personalized group page. This is a place that students could retrieve assignments as well as information supplemental to those assignments, receive announcements, and communicate with other students or teachers via the discussion boards. Via The Reading Online Learning and Collaboration Portal, teachers have the option to easily post assignments, supplemental information to accompany the assignments, and/or announcements for the students. Teachers can also use this to communicate and collaborate with each other.

1.3 User Profile

The users of The Reading Junior/Senior High School Online Learning and Collaboration Portal are students, faculty members, as well as the Administration at Reading Junior/Senior High School.

1.3.1 Reading Junior/Senior High School Students

Students can use the portal to check for posted assignments and announcements as well as a place to collaborate for group projects. This will also be a place that provides general information for students pertaining to their classes such as course curriculum, calendar of events, etc. Each student is able to do the following things:

- Log in / Log out
- See courses they are taking
- Click course name to see all course content.
 - Syllabus
 - Assignments
 - Announcements
 - Discussion Board

- View school wide current announcements
- View school wide current events
- Personal Tasks
 - View, add, delete, edit

1.3.2 Reading Junior/Senior High School Faculty

Teachers at Reading Junior/Senior High School have the ability to set up a special page for each course they are teaching. They can decide the core content of each page they construct. It is up to their discretion what types of information they choose to post to their portal site for students use.

Faculty members are able to do the following things:

- Log in / Log out
- See courses they are teaching
- Click course name to view/add/delete/edit course content
 - Syllabus, assignments, announcements, and discussion board
- Shared Documents- Upload new or view and add to existing documents
- View school wide current announcements
- View school wide current events
- Personal Tasks
 - View, add, delete, edit

1.3.3 Reading Junior/Senior High School Administration

Members of Reading Junior/Senior High School Administration will have the ability to add events and announcements as well as to view individual courses' pages. It will be up to their discretion what types of information they choose to post for all portal users to view.

Administration should be able to do the following things:

- Log in / Log out
- Add, delete, edit, or view school wide current events
- Add, delete, edit, or view school wide current announcements
- Shared Documents- Upload new or view and add to existing documents
- View list of all courses being taught and their content, including
 - Syllabus , assignments, announcements, and discussion board

2.0 Project Design Protocols

Several design protocols were used in the completion of the Reading Junior/Senior High School Online Learning & Collaboration Portal. There are four major components of the final product. The entire project is run on Microsoft Server 2003 as a base operating system. The functionality is based on the following:

- Microsoft Virtual Server 2003, to simulate an actual production environment
- Microsoft SharePoint Portal 2003
- SQL Server 2003, to provide highest functionality and allow the portal software to run at its maximum potential.

3.0 Project Deliverables

- Active Directory Integration/Authentication
- SQL Server Integration
- Build Portal
 - Design should follow Reading school colors scheme.
- Users should be able to do the following tasks:
 - Student Capabilities
 - Log in / Log out
 - See courses they are taking
 - Click course name to see all course content.
 - Syllabus
 - Assignments
 - Announcements (add where permissible)
 - Discussion Board
 - View school wide current announcements
 - View school wide current events
 - Faculty Capabilities
 - Log in / Log out
 - See courses they are teaching
 - Click course name to view/add/delete/edit course content and permissions
 - Syllabus
 - Assignments
 - Announcements
 - Discussion Board
 - View school wide current announcements
 - View school wide current events
 - School Administration Capabilities
 - Log in / Log out
 - Add, delete, edit, or view school wide current events
 - Add, delete, edit, or view school wide current announcements

- Add, delete, edit, or view entries in the school contacts
- View list of all courses being taught and their content, including
 - Syllabus
 - Assignments
 - Announcements
 - Discussion Board
- Complete and find final paper Complete display board for Tech Expo
- Present final project to Senior Design III audience

4.0 Proof of Design

4.0.1 Microsoft Server 2003

Our main server, located in the networking lab on the 3rd floor of the Science Building on the campus of the College of Applied Science, is running Microsoft Server 2003 as its base operating system.

4.0.2 Microsoft Virtual Server

Microsoft's Virtual Server software allows permits simulation of the appropriate environment that the actual product would need in production. There are three virtual server machines, all also running Microsoft Server 2003 as their operating system, serving different specific functions for the project (See figure 4.1).

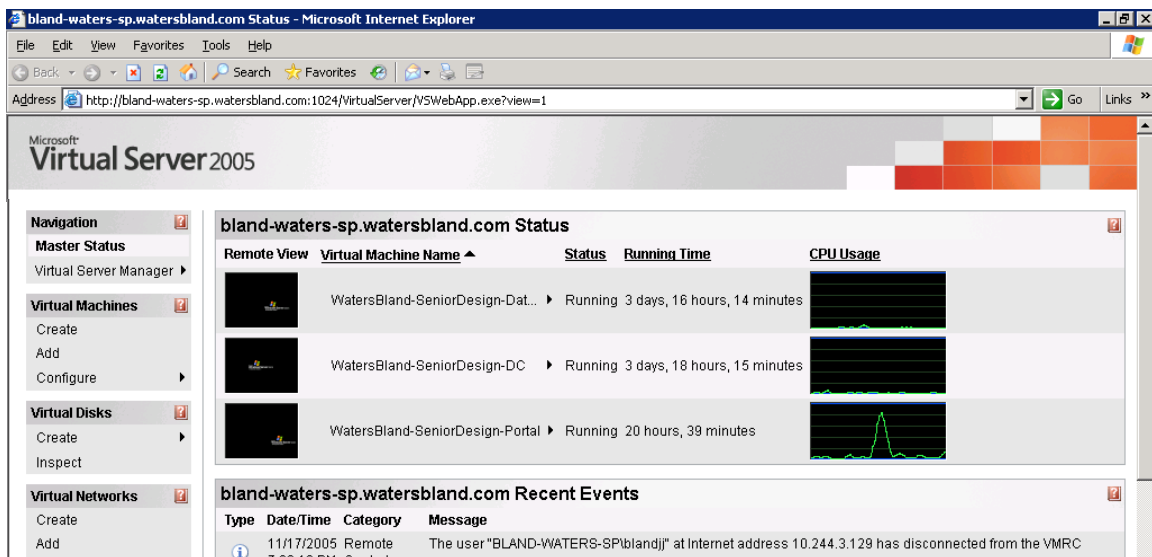


Figure 4.1 Virtual Server Central Administration

One server is running as a dedicated SQL Server system. Another is running as a Domain Controller to control the active directory and authentication to servers within the watersbland.com domain, as illustrated in figure 4.2.

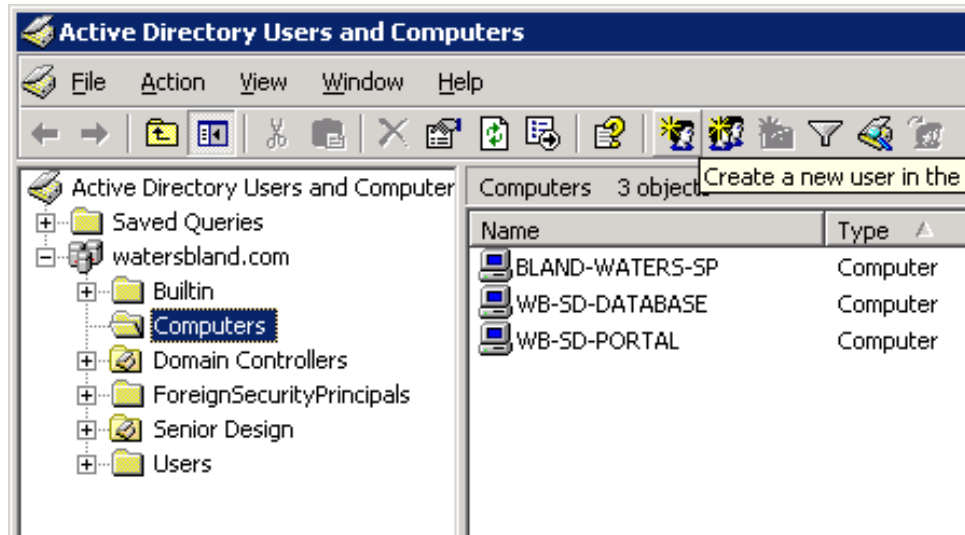


Figure 4.2 – Computers contained in watersbland.com domain

The final server is a virtual server, also running the Microsoft Server 2003 operating system and is hosting the actual portal. Users have been added to the Senior Design Organizational Unit. The users consist of student, teacher, and administrator accounts, each also belonging to its respective security group as seen in Figure 4.3 on the next page.

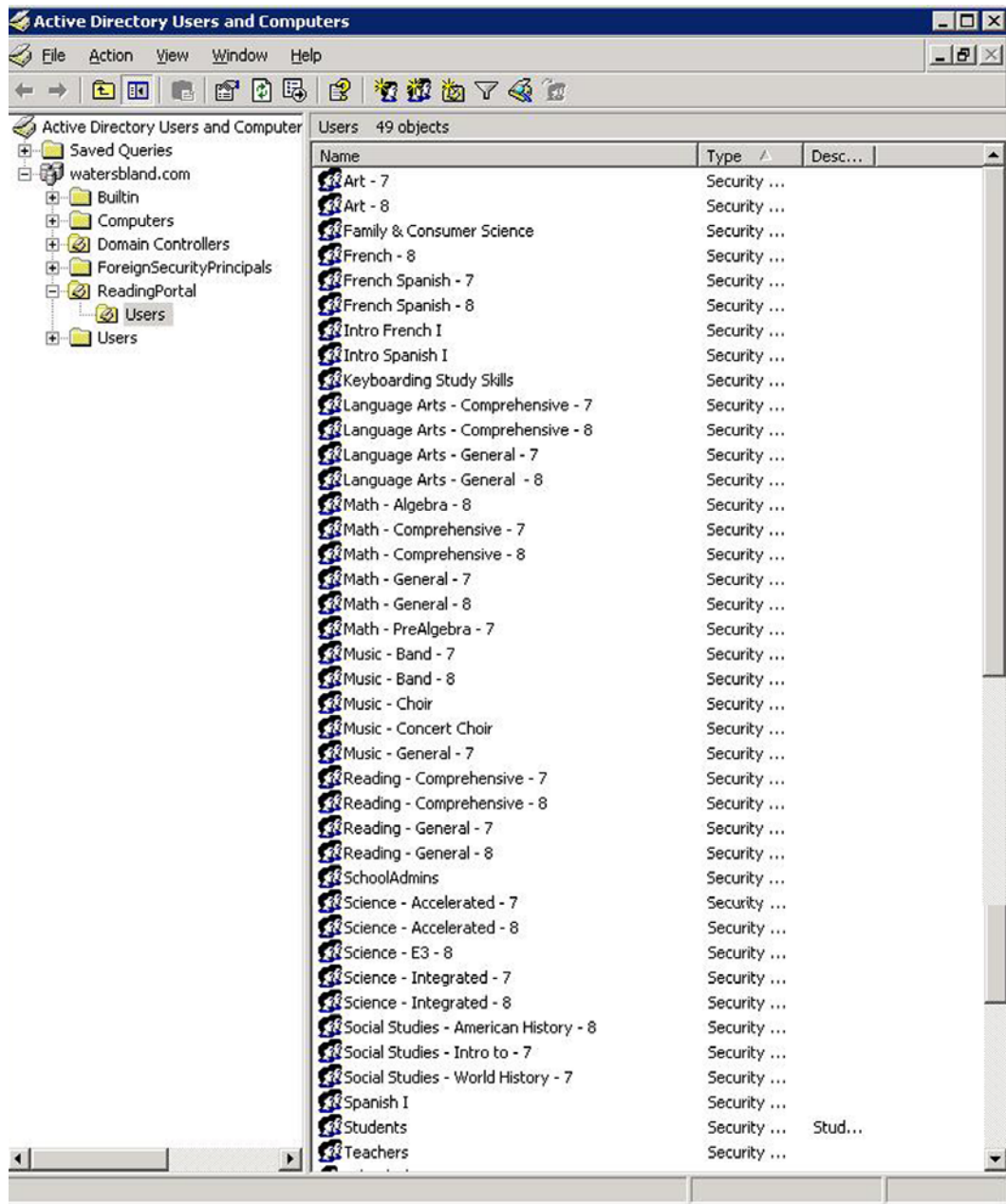


Figure 4.3 – Groups and Users for Senior Design Project in Active Directory

4.0.3 Microsoft SQL Server 2003

Microsoft SharePoint Portal 2003 can be installed using its own database, and is the software default. However in reality, a reliable system will need to be using SQL Server functionality to handle the load to allow it to run at full capacity. SQL Server is running on its own virtual server

machine and is the only thing that is be running on that virtual box for performance reasons. The SharePoint software automatically generates the databases it needs to interact with in SQL, and those are illustrated in Figure 4.4 below.

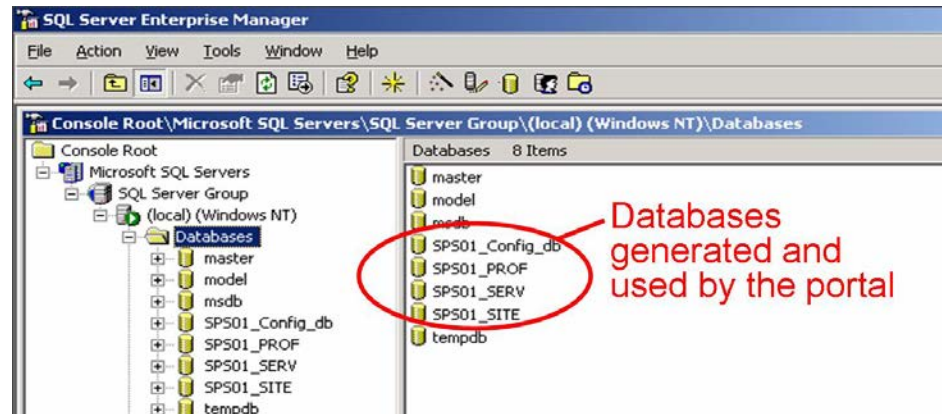


Figure 4.4 SQL Databases used by SharePoint

4.0.4 Microsoft SharePoint Portal 2003

The heart of our project, the SharePoint Portal software, is running on yet another virtual server machine. This is where all of the main operations take place. The other two servers are simply used for the behind the scenes work.

The SharePoint Portal software permitted creation of custom page designs in accordance with the Reading School System's color scheme which is red and white, along with a custom logo created for this specific product.

Once a user chooses to navigate to the portal, they are prompted to login, as seen in Figure 4.5.



Figure 4.5 Login Prompt to Reading Online Learning & Collaboration Portal

The user is authenticated and directed to the front page of the portal, as depicted in Figure 4.6 below, from where additional navigation can be chosen.

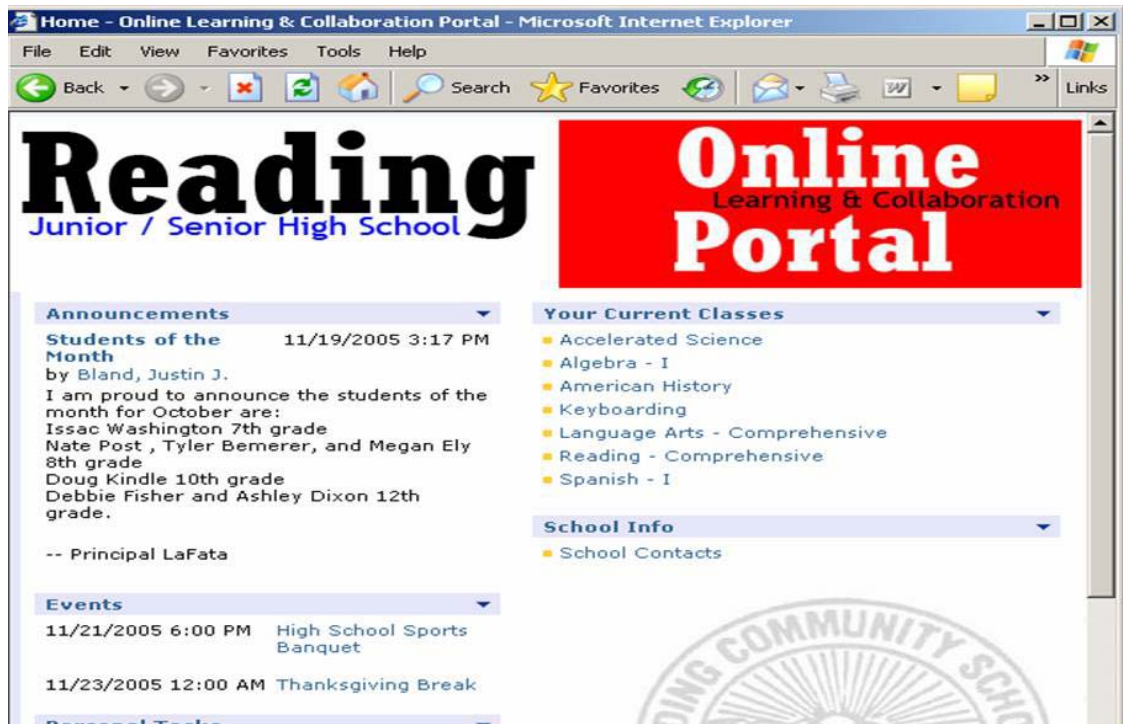


Figure 4.6 – Reading Online Learning & Collaboration Portal main page

5.0 Conclusion

The Online Learning & Collaboration Portal exceeds the functionality of the Homework Hotline which was previously in place at Reading Junior/Senior High School. The site has been deemed as “user friendly” by the teachers and students that assisted in the pilot test of the product (1) and far surpasses the previous method. The base technology of the project, Microsoft SharePoint Portal 2003, is a technology that is easily scalable to the growth of the school. Using the Online Learning and Collaboration Portal will also help to prepare college bound students with familiarity of an academic suite, as 75% of the nation’s top universities use Blackboard Academic Suite (7) to enhance teaching and learning. Software suites such as these have become “mission critical applications at education institutions around the world” (7) and will be giving the students at Reading a jump start in their college careers.

Appendix A
Budget

Solution Resources

To complete the Online Learning and Collaboration Portal there are several hardware and software resources that will be necessary to develop and to maintain the end product. Some of these resources will be able to be purchased at a fraction of the retail cost because Reading City Schools is a member of Microsoft’s MSDN Academic Alliance, which is a membership program that allows academic institutions to use software for educational purposes at a reduced cost.

Hardware

For hosting the Web Portal and all of its components we are recommending that the school purchase a ProLiant ML 150 G2. Hewlett-Packard (HP) offers an education discount for certain hardware and by taking advantage of this offer Reading can get a server from HP’s National Educational Pricelist at a fraction of the retail price (2). This server will optimize the use of the Online & Collaboration Portal. See Figure 6 for the hardware pricing breakdown.

Figure 6 – HP Server Pricing (2)

Hardware	Manufacturer	Price
ProLiant ML 150 G2	Hewlett-Packard	\$925.00

Software

Several different types of software will be essential to the projects competition. Taking into effect cost efficiency will be very important for the school. We are recommending that they purchase Windows Small Business Server 2003 – Premier Edition because this contains Microsoft Front Page 2003, Microsoft SQL Server 2000 (6), and Microsoft SharePoint Services, all of which will be necessary for the project. An additional, one time purchase of Microsoft’s SharePoint Portal Server 2003 will also be

required, this will come at a discounted rate through the schools MSDN Academic Alliance membership (3). See Figure 7 for the software pricing breakdown.

Figure 7 – Microsoft Software Pricing (3)

Software	Developer	Price
Windows Small Business Server 2003	Microsoft	\$1298.00
SharePoint Portal Server 2003	Microsoft	*\$1577.00
Total		\$2875.00

* Discounted price through MSDN Academic Alliance membership.

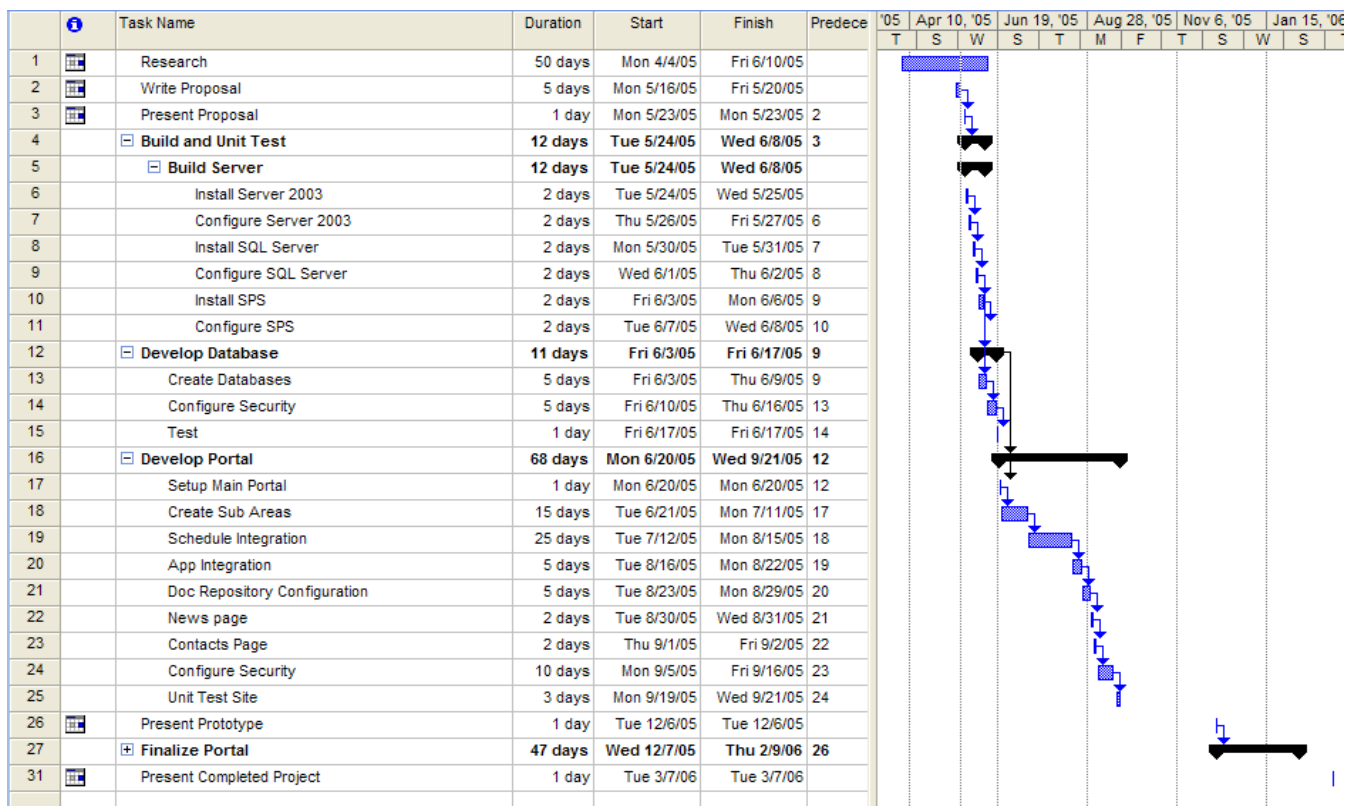
Total Budget for Project in Production

Total pricing including software and hardware for project implementation would be an estimated \$3800.

Appendix B Timeline

We have detailed our project in a Microsoft Project Plan (depicted in figure 8) and from that you will see that this project has taken less than 200 days to complete.

Figure 8 Project Timeline - Microsoft Project Plan

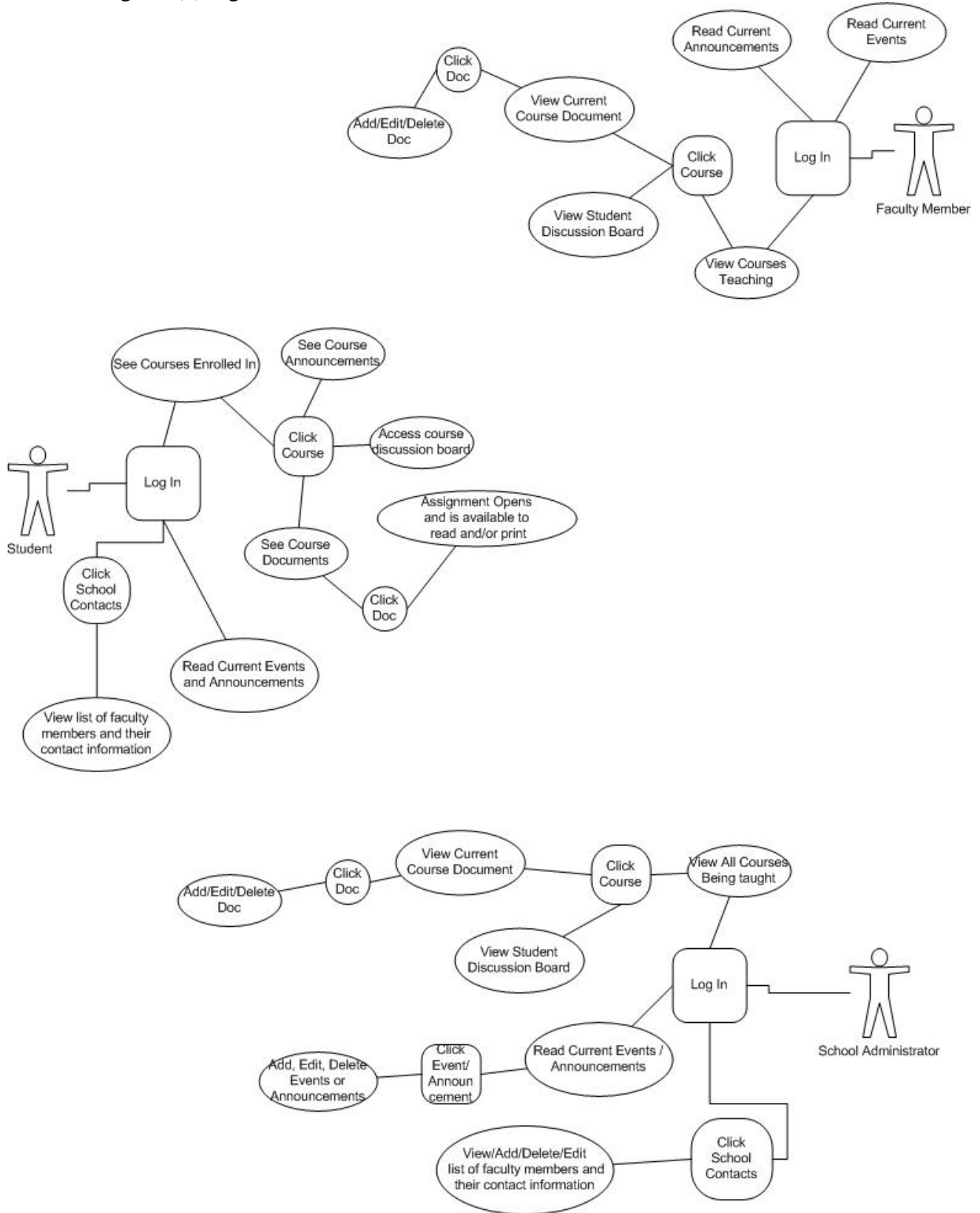


Appendix C
 Division of Labor (Figure 9)

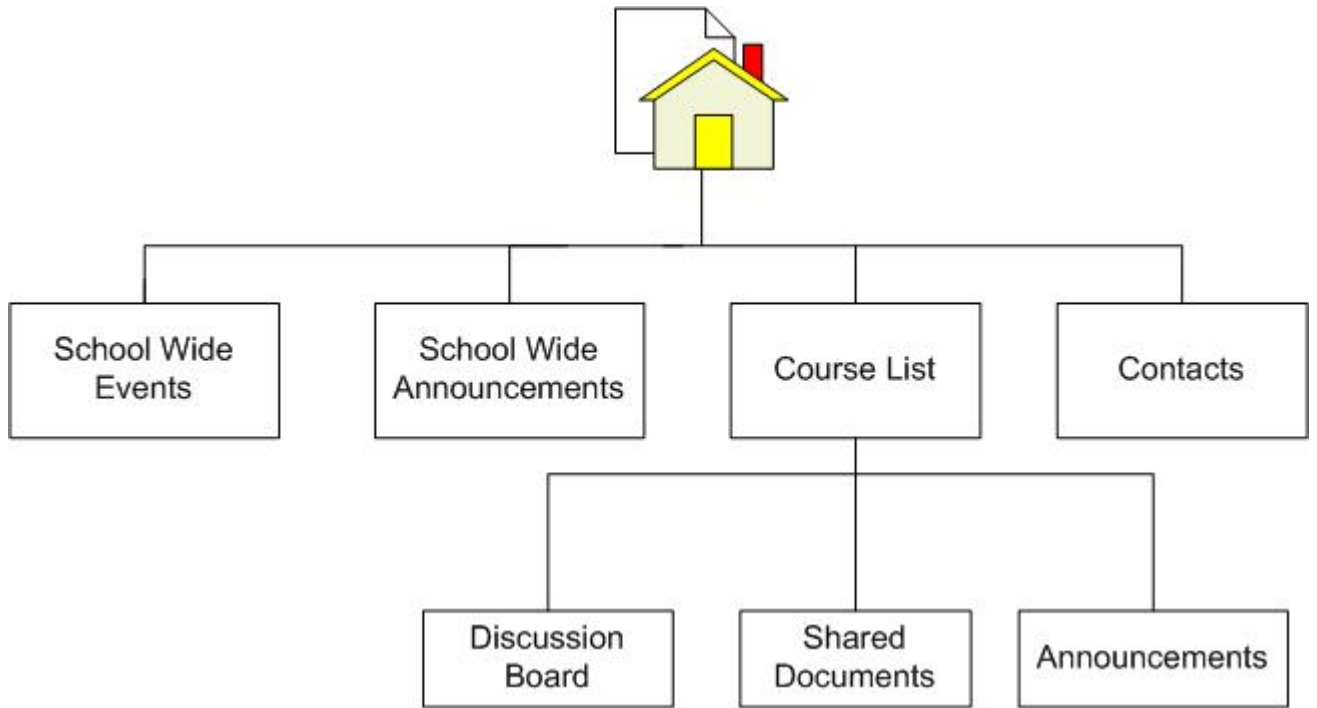
<i>Task</i>	<i>Lisa Beth</i>	<i>Justin</i>
Main Server Set Up - Physical Box		X
Server Set Up - Portal		X
Server Set Up - Database		X
Server Set Up - Domain Controller	X	
Active Directory Installation	X	
SQL Server 2000 Installation	X	
SQL Server Patching	X	X
SharePoint Portal Installation		X
SharePoint Portal Configuration		X
Portal Build	X	X
Portal Design	X	X
Portal - User Integration		X
Active Directory - User Integration	X	
Testing	X	X
Write Ups	XX	X

Figure 9 – Division of Labor

Appendix D
 Use Case Diagram (1) Figure 10



Appendix E
Site Map – Figure 11



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