OCAS Consulting Firm
2220 Victory Parkway
Cincinnati, Ohio 45206-2839

November 23, 1998

Mr. Gary Stottlemyer
UC Langsam Library
465 Langsam Library
Cincinnati, Ohio 45221-0091

Dear Mr. Stottlemyer:

This report analyzed three solutions to replacing the library support email account LSOHelp. The description of the three solutions are based off three different criteria with one solution recommended for approval.

Please contact me if you have any questions.

Sincerely,

Jeffery Black
Engineering Consultant
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Replacement of the Degree Plan Program

Submitted to

IET Department
UC College of Applied Science
2220 Victory Parkway
Cincinnati, Ohio 45206

Prepared by

Jeffery Black

February 16, 2000

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INTRODUCTION

The Professional Practice and Career Placement (PPCP) Office of CAS have a web page and a DOS program to access and edit a student's degree plan. The student uses these programs to plan out their future quarters with their major. The student then prints out the degree plan and has it sign by his/her student advisor.

The online degree plan has problems with the user interface and how it presents the data back to the user. The field to input the class number is too small. The field only allows for seven characters. The UC class number has either eight or nine characters. The class name field does not allow for the full class name so you have to abbreviate the class name. The grades field only allows for one character to be inputted. UC uses +/- with their grading system so the grades field needs to be able to input two characters.

The DOS program is a 16-bit program, which will not run on the newer Pentium II(PII), and Pentium III(PIII) based workstations. The main computer lab on the fourth floor of Administration building will soon be updated to have all PII and PIII based workstations. Once the upgrade is complete, the DOS program will not be able to run on any of the computers in this lab.

The DOS program is using an old user interface, which is cumbersome to use and also discourages the students to not want to use the program as a way to access their degree plan. The interface does not have cut and paste functionality. If a student change sections and decides to take two quarters of classes or co-op in a row, the student must delete his/her whole degree plan and recreate this. The program does not let the student know the requirements for each class. A student may schedule his college career with out realizing that a class may have a needed requirement.

The DOS program is being stored on a 3 ½ floppy disk. 3 ½ floppy disk are not very reliable and can easily be destroyed. In the event that this happens, the degree plan is lost. The program does upload the degree plan to a database, but the program does not have the ability to download the degree plan to the disk. The student would have to buy a new disk and recreate the degree plan.

Background

The student's degree plan is a schedule of the student's classes for his/her career in college. The degree plan is divided into school quarters. Each quarter has the class number, class title, the amount of credit hours, and grade for each of the classes the student is taking for the quarter. If the student is away at co-op, the student would input co-op in the class title spot. After the student completes the quarter, the student has to use the program to edit his/her degree plan and fill in any class changes and to input the grades for the quarter.

The students have two ways of accessing their degree plan. The two ways are through the PPCP's web page or using a DOS program. Both methods of accessing the degree plan were developed by Academic Software, Inc.

METHODOLOGY FOR EVALUATING DEGREE PLAN PROGRAM

In evaluating the different types of email, I used several different methods for gathering the information. The research came mainly from researching other colleges and universities and observing their methods for creating their degree plans. I research the available software that may be used to create a new interface for developing the degree plan. I also used technical guides, technical standards, and vendor brochures found on the Internet to conduct the rest of the research needed for the report. This information allowed me to find prices and information on how other colleges and universities allow their students to develop their degree plan.

CRITERIA FOR SELECTING A DEGREE PLAN PROGRAM

I used three different criteria for establishing the needed functionality for a replacement of the degree plan program. The criteria are listed in order of importance:

- **Easily available to use**
- **Functionality of the user interface**
- **Small to no learning curve to use**
- **Cost to buy and implement any software and hardware**
- **Ease of installation and implication**

POSSIBLE SOLUTIONS

Solution Downloading a Simple Form from the Internet

An end user could download a simple form from the Internet to create and edit a student's degree plan. Students at CAS use the web for many things from research to registration to looking up class work for a particular class. The use of web pages would provide a very small learning curve for the student to understand how to download the degree plan document. The user interface would be very simple, straight forward, and not confusion for the end user. The developer can easily create a set of static web pages so the student can obtain a word document that can be filled out using Word 97 or 2000 and then printed so the student can get a signature from his/her adviser.

Static pages can easily be developed using Hypertext Markup Language(HTML). HTML is a simple language now commonly used to create the many web pages that is incorporated in the Internet. The developer uses tag names, arguments, and attributes to create a web page. A web browser like Internet Explorer or Netscape Navigator translates the tag names, arguments, and attributes to a format that is readable by the end user. A static page is a type of web page where the information on the web page never changes. The end user cannot input and receive information for that web server other than clicking on the links and anchors on the page. Static pages are good for displaying general information or downloading files that do not need input from the user's browser or the user them self.

The PPCP office already has a web server in production. The developer could create the web pages with a HTML editor like FrontPage or a text editor like notepad and place the pages on the server. The PPCP web administrator could place the link to the new web pages on the current PPCP web page. The new web pages would give the end user the information on who to download the degree plan document, open and fill out the document in Word97 or 2000, and printing the document. The end user could then take the document to his/her advisor for a signature.

Installation and Cost Downloading a Simple Form from the Internet

The degree plan document could be developed in Word97 or 2000. CAS has licenses for Office 2000 for all the computers in the 4th Floor Computer Lab and for the PPCP office so there is no need for installation and would be of no cost to developing the document.

The web pages can be created either on notepad or FrontPage. Notepad is a text editing program that is included on all operating systems developed by Microsoft and does not need a license to use. The 4th Floor Computer Lab at CAS has licenses for FrontPage on all the computers so there would be no installation or cost to create the web pages.

The web pages could be view by the end user using Internet Explorer or Netscape Navigator. Both programs are free for educational use so no cost of installation.

Solution Using the Current Degree Plan Program

The PPCP office already has a degree plan program implementing on both the web and a small program on a 3½ floppy. Both the web and the program versions have a decent user interface but have a small learning curve for the end user. The students usually have to go to their co-op advisor or experiment with the program to obtain the wanted effects.

The students first have to decide on using the web or use the program provided on the 3½ floppy. Both versions are not connected with each other so changes on one version will not show up on the other version. The student has to give their registration data(Name, address, etc) the first time they run the program. The student then goes on to type in the

number, title, credit hours, and the grade for each of the classes for each quarter. If they are away at coop, the student either types in the word Co-op in the 3½ program or they hit the yes radio button the web page version.

Installation and Cost of Using the Current Degree Plan Program

The program provided on the 3 ½ floppy does not need to be installed on a computer. It can be run from the disk on most DOS or Windows environment. The student is required to by the disk for the PPCP office at $5.00 a disk.

The web-accessed version of the degree plan program does not cost anything for the developer or the end user since it has already been implemented. The end user does need a web browser to use the web-accessed version. Web browsers like Internet Explorer and Netscape Navigator are free for educational use so there is no cost to implement them. If the end user uses the college's computer, the college's computers already have a web browser install, but an end user at home may need to install the browser on a home computer.

Solution Using Web Pages to Access a Database

Active Server Pages have the ability to connect a database with a web page. An end user can connect to a web page, input some commands and the web pages can run queries on a database to give the user a specific output from the database. Along with receiving an output from the database a user could also input and update the fields in a database.

The developer could create the database using SQL or Access. This database will allow the end user to input information about them self and input or output class information. The database will have queries set up to allow the user to perform many tasks from selecting a class from a list to viewing what classes the student has taken or still need to take.

The front end of the database or the user interface will be created using Active Server Pages(ASP). ASPs can be developed using Microsoft Interdev. The developer would have a login to the ASP's so that only students are allow to develop and change only their degree plan. The user interface will be developed so that the user will be able to enter their demographic data and class information. Other functions could be added to allow the student to update and change their class information, display their information in various formats, and run class requirement test.

Installation and Cost of the Web Pages to Access a Database

The Active Server Pages can be viewed using any web browser. The end user would be able to use any of the computer labs in CAS. At home, the end user may or may not have a web browser installed. The user can obtain a free copy of Internet Explorer or Netscape

Navigator. The user can also receive a free Internet provider through UC so he/she does not have to pay for the Internet access.

A SQL server is already running on the server so there would not be any cost or installation issues. The developer would be able to create the ASP using Microsoft Interdev. Microsoft Interdev is available on the computers in the 4th floor Computer Lab so there would not be installation or cost issues. The database can be created in SQL which is also available in the 4th floor Computer Lab.

CONCLUSIONS

I have made the following conclusions after evaluating the various solutions. I have made the following conclusions.

- All three solutions can be implemented without cost
- Using static web pages to download a degree plan document would be the easy to implement, but would no not be user friendly.
- The static web page would not have the ability of updating the degree plan via the Internet.
- Keeping the current web and DOS degree plan will not solve the current issues of the user interface but would be the easiest solution.
- Keeping the current DOS program will not solve the issue of not being able to run it from the 4th floor Computer Lab.
- Developing a new database access through ASP would solve the issues with the user interface
- The new database would be able to run any computer in CAS labs

RECOMMENDATION

I recommend developing a new database and have access to it through an ASP. The database could be created in Access and then easily translated into SQL. I can create the ASP using Microsoft Interdev to connect to the database. The user interface could have a login so students can only create and edit their own degree plan. Functionality like cut/paste or dropdown boxes for class names would be included. I would allow for the ability to exchange quarter schedules if a student changes sections. The degree plan program would be able to tell the student what requirements are needed for any of the classes on CAS campus. The ASP will have fields that can input the whole class number and grades. The ASP could as give the student an unofficial GPA so a student could see his GPA for his/her major and not necessarily for his/her college career.

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To: Senior Design Faculty
From: Jeffery Black
Re: Design Freeze for Senior Design Project
Date: August 27,2000

Introduction:

This project will allow a student to develop and maintain a degree plan. A degree plan is a record of all the classes the student has taken and will be taking in the future. The student must keep an updated record of his/her classes and grades each quarter for the Professional Practice and Career Placement office at OCAS. This final project will have a SQL database for the back-end, Access 2000 front-en for administrative purposes and a web-based front-end for student use. The web-based front-end will have a mixture of HTML and ASP pages that the students will used to access and maintain their degree plan. The students will be given a password to gain access to the web program. Once the students logon, the student will be able to change their personal information, add, update, and remove classes from their degree plan, and view available Co-op jobs within their major.

The target users for the degree plan program are the students at OCAS. Target users will vary in the amount of knowledge they have about browsing the Internet. Some users like IET students are expected to be knowledgeable about browsing the Internet and should be able to use the Web application fairly easily. Other students in fields that do not involve computers as much may have a short learning curve depending on their personal experience. With the Internet becoming more mainstream in society, most students should have enough experience browsing the Internet and will b able to use this web site.

Design Protocols:

The following text will describe the sequence of steps a user would see on the Web-based front-end:

Screen 1

The welcome page is the first page a user will see. This page welcomes the user to the page and gives a prompt for a user password. The page also has two links. The first link brings up a small window explaining to the user what the Degree Plan Builder is used for. The second link gives the user more information about receiving a password for the PPCP office to use the Web program.

Screen 2

The page after the student logs in to the home page for the Web application. From here the student can navigate to view his personal information or current degree plan, change any information or classes, and view current jobs. This page also gives the user access to the help pages for more information on how to navigate the site.

Screen 3

The first option for the user is to view his/her personal information. This page allows the student to view his/her current information stored in the database. The page places the information on a table that is viewed by the user. Under the table, the page gives the user the option to change the information or go back to the home page. The page also has a link to the help page which will send the user to the specific part of the help pages that gives information about the current page.

Screen 4

If the user decides to change his/her personal information, the user is sent to this page. This page gives the user several text boxes to input his/her demographic information. After placing the information into the textboxes, the user can select reset to clear the boxes, or OK to enter the data into the database. The screen will show the information one more time in a table to confirm from the user that the data is correct. If the user selects cancel, the application will allow the user to change the information again. If the user selects OK then the application will bring the user back to the homepage.

Screen 5

This screen shows the user his/her current classes in the degree plan. If the user currently has no classes in the degree plan, the screen will give the student two links. The first link will send the user to the homepage and the other link sends the user to the screen so he/she can place classes in the database. If the user has classes in the degree plan, the classes will be shown in a two-column table divided by each quarter. The screen will give links back to the homepage, the help page, and to another page which will have a printable view of the degree plan.

Screen 6

The user will use this screen to place classes in his/her degree plan. The screen will have various drop-down boxes and textboxes. The user will be able to pick which class he/she wants to take from a list on the drop-down box. The screen will automatically give the user the number for the class and number of credit hours. The user will also need to pick the month, year, which class to audit(if any), and may place a grade for the class if the class was already taken.

Screen 7

The Available Jobs screen shows the user available jobs within his major. The page determines the user's major and does a search of jobs marked available and in his major. The Screen shows the name of the company, contact information, name and information of the job available, and when the job is available.

Help Page

The help page will have information on how to add, update, and delete classes in a degree plan. The page will provide information about how to look for jobs, change the user's personal information and show examples of a completed degree plan. The page will be set up so when the user selects the help link for any page, the link will send the user to the information about the page they were sent from. If a student hits the help link on the Personal Information page the help page will go to the section that talks about how to input user information and how to change information already in the database.

The following describes the sequence of steps a user would see on the Access front-end:

Screen 1

This screen will open automatically when the user opens the link to the project. This page will be a home page and have links to the other input screens.

Screen2

This screen will allow the user to input class information. This screen will also allow the user to update or remove any current classes in the database.

Screen 3

The user will use this screen to input the students into the database so that the students may access the Web based front-end. This screen will also enable the suer to look at various reports on the students' information.

Screen 4

The user will use this screen to input information about the Co-op jobs. The user will also use this screen to update the availability status of the Co-op jobs for the Web based front-end and run reports that deal with Co-op jobs.

Timeline:

Fall Quarter 2000

September 4, 11

Research on using Access 2000 as a front end for SQL databases
Continued Research on ASP's and web page design

September 18,25

Continue research on Access 2000
Begin Creating Administration front end in Access 2000

October 9

- Complete research on Access 2000
- Finish the add, update and view classes and students functionality for the Admin Front-end
- Begin Reports for Statistic Uses.
- Begin Co-op Input Screen

October 16, 23

- Finish Reports and Co-op Input Screen
- Begin Help Pages for Access Front-End

November 6,1

- Begin Error Checking with Front-End
- Begin Beta Testing of Access Front-End
- Finish Help Pages

November 20, 27

- Fix known errors
- Beta-testing 2

December 4

- Finish Access 2000 Front-end
- Add Update Class information functionality to Web-based front-end

December 11, 18

- Add Check Prerequisites functionality
- Design theme to the web based front-end (color, navigation buttons, fonts, etc)

December 25

- Apply theme to the web front-end

Winter Quarter 2000

January 1,8

- Begin Beta-testing the Web-based front-end with OCAS students

January 15,22

- Begin final documentation
- Fix any bugs brought out through beta testing

January 29

- Continue testing Web front-end

February 5,12

- Continue debugging project

Go through programming code and clean it up(add comments etc.)

February 19, 26

Finish project and documentation
Prepare for final presentation

Budget:

Hardware Requirements	
Web Server*	$2,515.60
Database Server*	$2,991.00
Subtotal	$5,506.60

Software Requirements	
Visual InterDev 6.0**	$889.95
MS SQL Server 7.0**	$1,399.00
Internet Information Server 4.0	Comes with NT Server
MS Office 2000 Professional**	$599.00
MS NT 4.0 Server**	$809.00
Subtotal	$3,696.95
Total	$9,203.55

*Prices taken from www.micronpc.com
**Prices taken from www.microsoft.com

OMI College of Applied Science Fourth Floor Computer Lab has the software and hardware resources to complete the project.

Proof of Design:

Goal: To create and host a Web site where students can add, view and update their degree plan for use with the OCAS Professional Practice and Career Placement Office.

Completion Objectives:

1. Author a set of web pages for development and maintenance of a degree plan program
2. Both Web and Access front-ends will be design to run from any computer with minimum of a Pentium II with Internet Explorer 4.0 or greater and a high speed Internet connection.
3. The database back end will be design to run on SQL Server 7.0
4. The ASP pages will run on Microsoft IIS running on a NT Server 4.0 or higher.
5. Allow logon with a student id number
6. The Web pages will help to answer basic questions about what is a degree plan and how to develop one.

7. The Web page front-end will give students the ability to add, update and view their degree plan.
8. The Web-based front-end will have the ability to check prerequisites for classes.
9. The Web-based front-end will show available jobs per student's major.
10. The Access front-end will be designed to allow administrators to add, remove and update Co-op Companies, classes, and students.
11. The Access front end will allow administrators to keep track of a student's progress with both classes and Co-op quarters.
12. The Access front-end will give administrators statistics of the pay rates per student's major an student's current Co-op quarter