Physician Online Credentialing Application Completion

by

Yancey B. Jones

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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Yancey B. Jones	Date
Russell E. McMahon, Faculty Advisor	Date
Larry Gilligan, Department Head	Date

Acknowledgements/Dedication

I would first like to thank my family, especially my wife, for sticking by me these last few years as I have worked to complete this degree. Without her, this would not have been possible. She has worked harder keeping our home in order and taking care of our children than I have in all my years in school. Thank you Sharon.

I would also like to thank the faculty of OCAS. Especially my Senior Design advisor, Professor McMahon who helped me to keep this project going in the right direction and Dr. Geonetta, my faculty advisor, for making sure that I took all the classes necessary for graduation.

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Abstract

Current American Accreditation HealthCare/Commission (URAC)[A] standards (2) and the National Committee for Quality Assurance (NCQA)[B] standards (14) specify that a provider must be credentialed every two years for their respective accreditations. Neither URAC nor NCQA accreditations are required for a Managed Care Organization[D] (MCO) to provide their services. However, NCQA claims, "More than three quarters of Americans enrolled in HMOs are in plans that have been reviewed by NCQA." (11). It would be a logical deduction that most (if not all) MCOs strive for accreditation by one or both of these accreditation organizations. It is also be logical to deduce that a provider[E] participates in more than one Managed Care Network[F]. As a former employee of Anthem Insurance Inc. and developer of Anthem's in-house credentialing software package, it is considered common knowledge that all MCOs credential their providers, regardless of accreditation status.

The Physician Online Credentialing Application Completion program is designed to aid physicians, office managers, and credentialing specialists in completing credentialing and recredentialing applications for multiple Managed Care Organizations (MCO). In most states, each MCO has its own credentialing or recredentialing application, even though the requested information is the same. This program will capture all the information required by each MCO using a single, comprehensive application. Since the program is Web based, it will allow access from any computer with an Internet connection and a Web browser that is HTML 3.2 compliant and will allow printing from within the browser via the Adobe Acrobat Reader plug in.

Physician Online Credentialing Application Completion

1. Statement of the Problem

Every two years, a physician receives a credentialing application from each Managed Care Organization (MCO) in which they participate. While the information for each is typically the same, the applications are different for most states and MCOs. Even in those states (such as Ohio) with a standardized application, each managed care organization and hospital must receive a separate copy and they can each require separate attachments (see Appendix A for an example).

1.1 Justification of Need

1.1.1 Provider Penalties for Not Submitting a Credentialing Application

If a provider does not return their credentialing application within the allotted time, their credentialed status would expire and they could no longer receive payment for claims. Depending on how long the went uncredentialed, the cost could add up to a substantial amount.

1.1.2 Credentialing Services

Currently, very few credentialing services focus on the provider. Several Credentialing Verification Organizations[G] (CVO) provide some services to the provider, however, their primary customers are the managed care organizations and the hospitals. The verification of credentials is the responsibility of the managed care organization or hospital, not the providers (2).

I have located only one company providing online credentialing services, Medsite (http://www.medsite.com). They only provide this service to Michigan, New York, and California and have a limited number of MCO applications available.

1.1.3 High Cost Associated with Completing the Application(s)

The cost to the practice can be computed as follows: number of applications/physician * 1.5 hours/application * number of physicians * hourly rate. A practice with twenty physicians and an Office Manager making $29,200 per year (16) would incur a cost of $4200.00/year spent on completing credentialing applications. This also means that the Office manager has spent 300 hours doing redundant work. These hours could arguably be spent doing other, more profitable work such as billing.

2. Supporting Resources

2.1 Internet Based Research

The Internet was my primary research method for finding similar types of programs. I am focused on web-enabled applications to determine what online software currently exists.

The two main accreditation bodies (NCQA and URAC) for MCOs have extensive information online. I used my current professional knowledge of credentialing in conjunction with the information found on their sites when necessary.

3. Description of the Solution

3.1 Criteria for the Solution

1. It must be easily and universally accessible. Any solution that does not provide easy access for the providers to their information for updating or viewing will not be of any benefit to them. It should also provide them with electronic notifications as necessary and due so in a timely fashion.
2. It must fulfill a need that exists and has no current solution.

3. It must be cost effective for the provider. A provider or practice probably will not pay for a service that would cost more than doing it themselves. This means that the credentialing service must be able to do it for less.
4. It should be scalable. A scalable solution allows for growth.

3.2 Solution

A three-tiered[H] application using a Web-based interface, using MS COM[I] middle tier objects (business rules), and database back-end based on the forthcoming Microsoft.NET architecture. The Microsoft.NET architecture is still in the development stages, some production applications are already released and others are in the beta stage. The .NET architecture allowed me to utilize my current programming skill set to create a compiled web-based application. A compiled web page, like a compiled application, executes faster than a scripted one.

This solution will satisfy all of the criteria in the following way.

1. A Web-base interface provides access to most computer platforms such as Unix, MacOS, Linux, Windows, and virtually any other modern operating system (OS). By limiting customers to a web interface, it guarantees that they have Internet access. An email address is easily obtainable for free if they do not already have one.
2. The reason that I focused only on providers with Internet access is because it will allow for electronic notification when certain items are due. (It is my opinion that email over standard mail or “snail mail” will help to eliminate late credentialing application to a high degree.)

3. The only Web-based interface available today serves only three states and a limited number of health plans. A universally accessible application should possess universal appeal and a three state solution has appeal in only three states. A three–tiered solution has the capability of adding more states and networks at any time without requiring extensive (if any) modifications to the interface.
4. By storing the information on a database, it means that the provider only has to enter most data once. Some information, such as license numbers, practice history, and insurance, changes on a periodic basis. However, this information is easily updateable via the web interface. A single point of entry helps to make it cost effective for the provider – one data set populating multiple applications.
5. Three-tiered application design was used for scalability. By separating the interface, business logic, and data, it allows for more simultaneous connections without experiencing any significant delays. As the application grows, in size and/or number of users, the different tiers can be separated onto dedicated servers.

3.3 User Profile

Office Managers and credentialing specialist are the target users of the program. A physician is a possible user, although it is unlikely that they would be filling out their own credentialing or recredentialing applications.

While this program is intended to be as intuitive as possible, it is recommended that the user have the following level of knowledge:

1. The user should know how to use a Web browser. They should know how to use a hyperlink to navigate and know how to use the address bar. They should know what the FORWARD and BACK buttons on their browser do.

2. The user should have at least a rudimentary knowledge of the credentialing process and of the terminology used by MCOs.
3. The user should know what MCOs their office has contracts with.

3.4 Design Protocols

The program consists of five sections; General Information, Customer Login, Data Entry, Application Printing, and Help. The Help section will be available from any screen in the program (see figure 1).

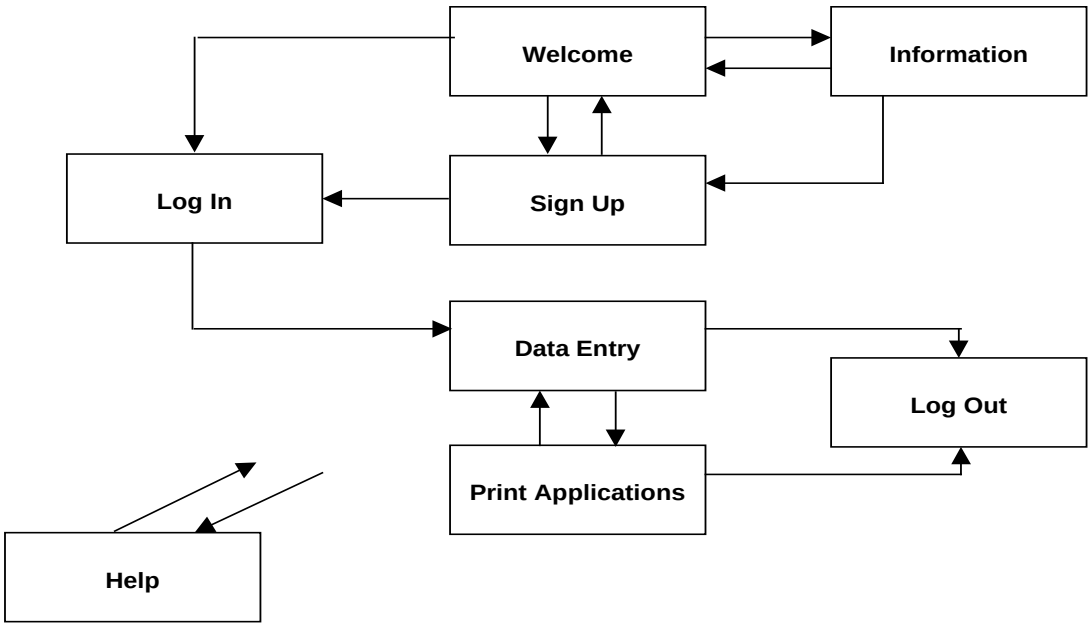

Figure 1. A general overview of the program flow.

The non-Web portion of the program consists of a DLL and a Microsoft SQL Server 2000 Database. The DLL performs a data merge within a Word 2000 document from SQL Server and then outputs the result to Adobe PDF format. The Adobe PDF file can then be printed directly from the Web page or downloaded to the client computer for printing at a later time.

A Credentialing number links the user's information together in the database. It is a SQL BIGINT (or INT32 in VB.NET) data type and it will be assigned to the user when they set up an account. Lookup tables will provide the values for any drop down or list boxes contained on the pages.

4. Objectives of the Project

4.1 Function

The Physician Online Credentialing Application Completion program is designed to aid physicians, office managers, and credentialing specialists in completing credentialing and recredentialing applications for multiple MCOs. In most states, each MCO has its own credentialing or recredentialing application, even though the requested information is the same. This program captures all the information required by each MCO using a single, comprehensive application. Since the program is Web-based, it allows access from any computer with an Internet connection and a Web browser that is HTML 3.2 compliant and allows printing from within the browser via the Adobe Acrobat Reader plug in.

4.2 Deliverables

The deliverables are the Web pages, database tables, internal code and documentation. The Web pages include the "Welcome" page, a "Sign Up" page, a "Log In" page, multiple data entry screens, the printing page, and the help pages. The standardized Ohio application will be available to print. Adding more will not involve any programming changes to the existing DLL, but will only require new entries into the database and a new DLL for that application to be created.

5. Design and Development

5.1 Timeline

See Appendix B for a breakdown of the project timeline.

5.2 Budget

The cost of the project includes the hardware related costs, the software related costs and a monthly recurring cost for the Internet connection through Zoomtown and Fuse. The total cost is $5014.00 plus a monthly cost of $39.99. Funding was not necessary since I already own the hardware and software. Appendix C contains a complete breakdown of the costs associated with this project.

5.2.1 Hardware Costs

The hardware is limited to a single server and one workstation built from individual components using the same keyboard, mouse and monitor via a KVM switch. Total hardware costs is $2226.00

5.2.2 Software Costs

The software includes Windows 2000 Server and Professional, SQL Server 2000, Visual Studio.NET and Adobe Acrobat. With the exception of Adobe Acrobat, all of the software is included with an MSDN Universal subscription. Total software related cost is $2748.00

5.2.3 Miscellaneous Costs

There is a monthly recurring cost of $39.99 for the full time Internet connection.

6. Proof of Design

The project has met all of the deliverables to a certain degree. The Web pages are complete but the printing is still not fully functional. Since Senior Design II, I think that

the printing has actually gotten less functional due to my unsuccessful efforts to correct major issues.

The proof of design rests with the project and what was accomplished. The goal of this Senior Design project was not to create a Physician Online Credentialing Application Completion program. The goal was to use a completely new, untested, and unfamiliar tool and write a functioning application. This project has accomplished that but it is not without its flaws.

6.1 Web Pages

Parts of the deliverables were the Web pages associated with the application. They consist of a Signup, Login, Logout, Help, a Default, and several form pages for modifying the data.

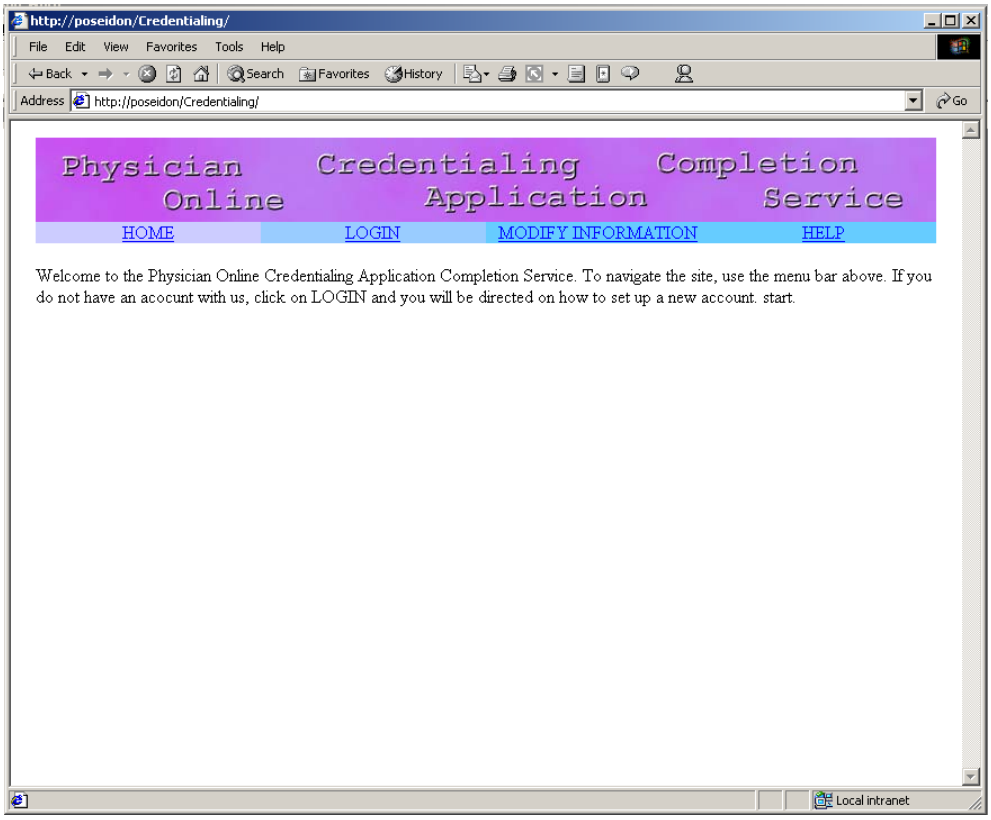

Figure 2. The default page for the site.

On the every page, there are four navigation menu items. The MODIFY INFORMATION and HELP areas are protected via CookieAuthentication on the Web site. Any attempt to go there will take the user directly to the Login page.

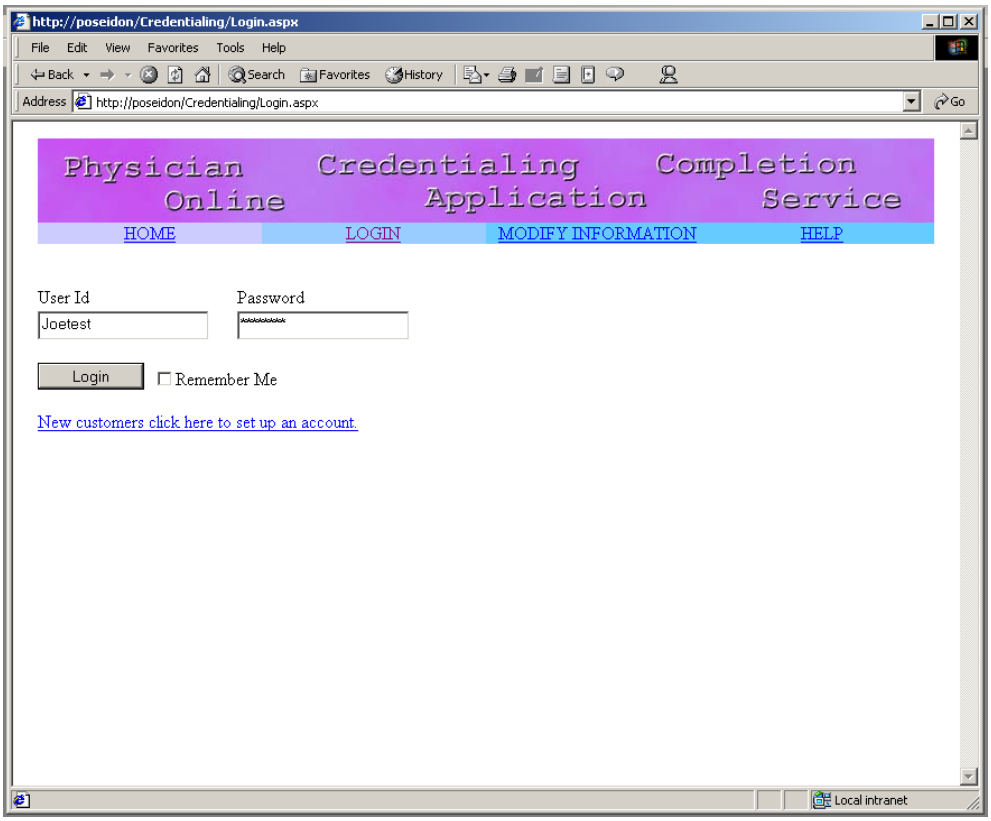

Figure 3. The Login page.

From the Login page (Figure 3), the user can go and set up a new account or if they have an account, they can log in. The “Remember Me” check box will place a cookie on the users system so that they do not have to log in again when they return to the site.

The Signup page (Figure 4) captures the users information and on a successful account creation, forwards them to the Home page.

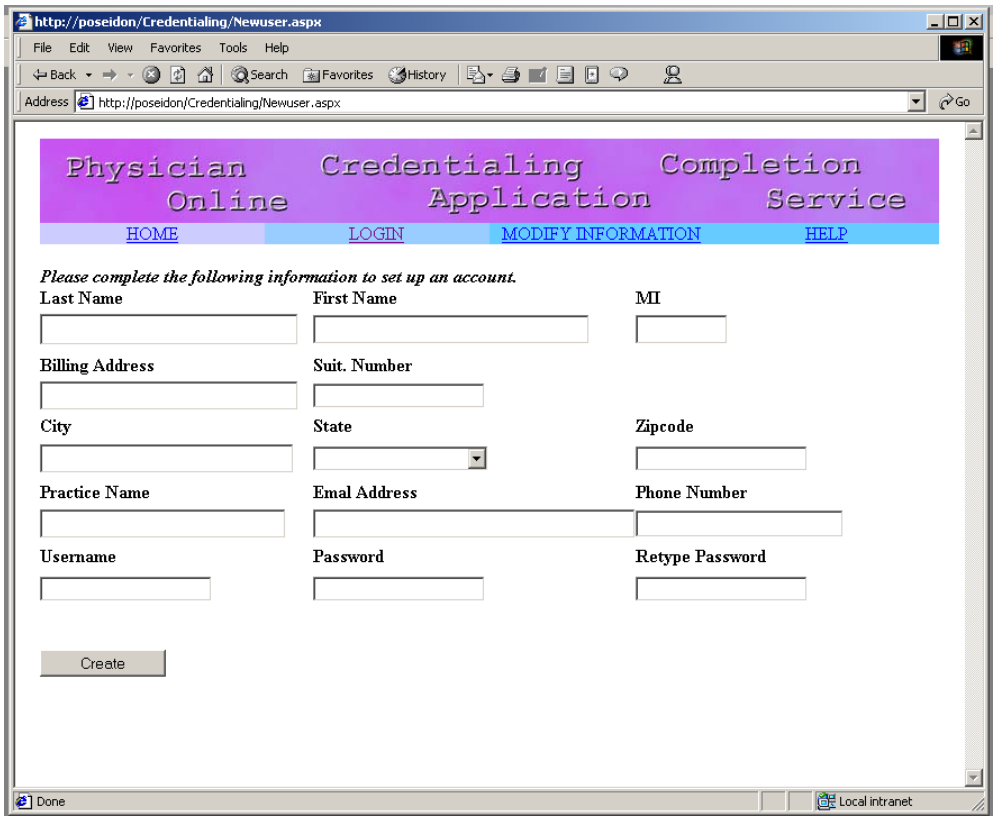

Figure 4. The Signup Page.

The following images (Figures 5 and 6) are of some of the data editing screens that included with this application. Each one is fully functional with standard operations for each page. When the page first loads, it is in view mode unless there is no data to display. To edit current data, the user must click the Edit button and it will unlock the data fields. Pressing the Cancel button at any time returns the screen to its default configuration. To save changes, the user must click on the Save button.

The Help page (Figure 7) is accessible from each page on the site by clicking on the HELP menu bar item. It comes up in a new window so that the user can view the data screen while reading the help.

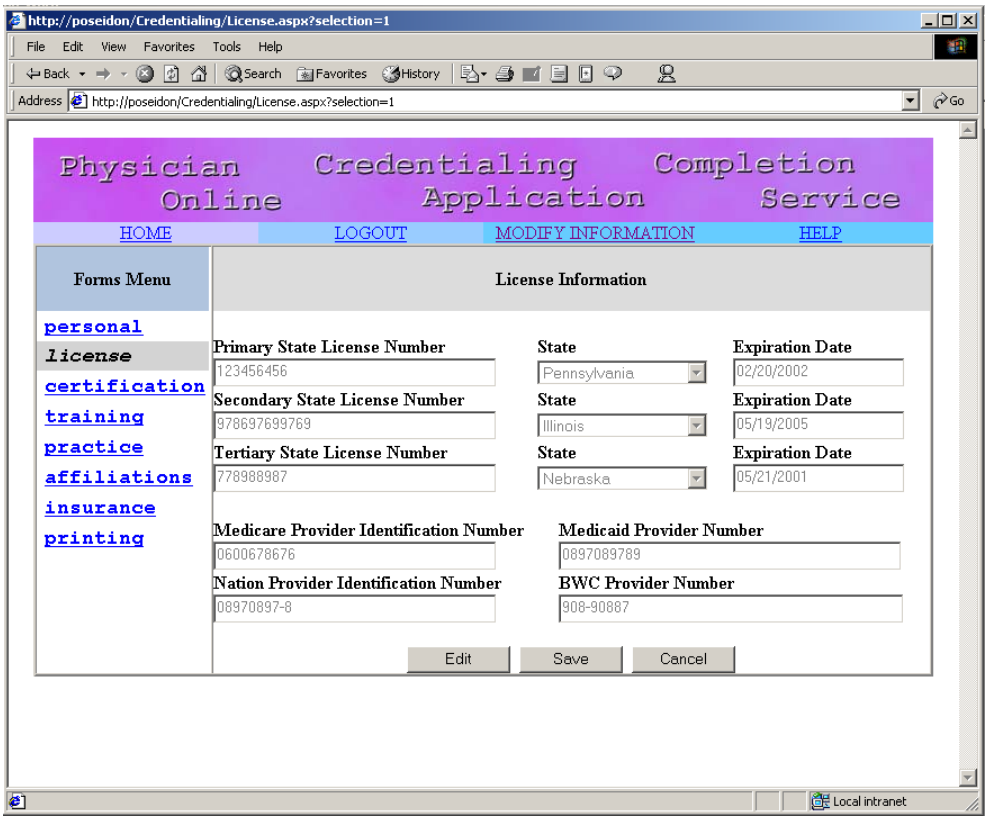

Figure 5. One of the data editing screens.

6.2 Database

The database consists of thirty-six tables and twenty-three stored procedures that are used by this application. Data access is done via an SQLConnection object from within the Web page DLL objects created by ASP.NET.

7. Conclusions and Recommendations

7.1 Conclusion

This project would have been much easier to complete if it were not done in a beta 1 language using unproven technology. The concept of the project is relatively straightforward but the actual implementation using APS.NET and VB.NET is more

difficult. ASP.NET and VB.NET are a completely different language than their ASP and Visual Basic 6.0 counterparts. The program functions as it should but there is at least one issue that has not been resolved to my satisfaction.

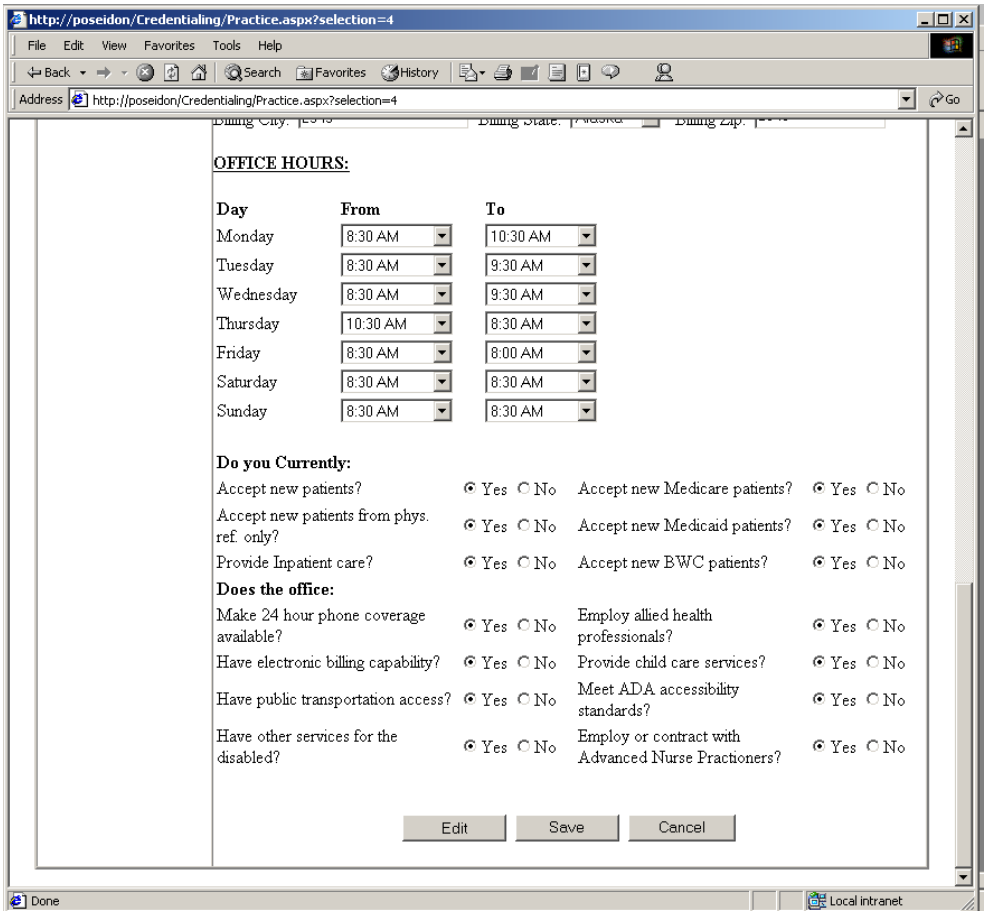

Figure 6. Part of a data editing screen in Edit mode.

I am not satisfied with the way the documents get printed from the application. The printing functions to some extent but there is an issue with Microsoft Word 2000, ASP.NET, and/or Adobe Acrobat 4.0, which makes it impossible for me to print straight from the Web application. I tried to create a workaround using a Windows NT Service

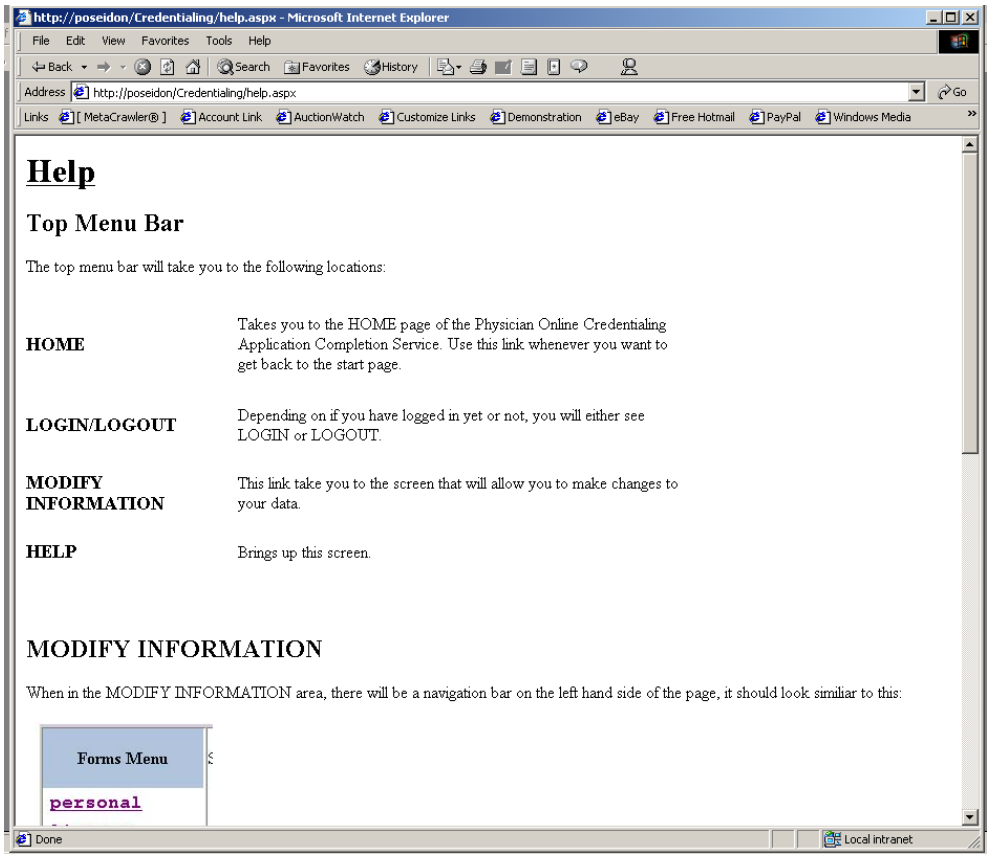

Figure 7. The Help page.

but it crashed routinely causing serious system instability. I am hoping that the beta 2 of Visual Studio.NET will fix this issue.

7.2 Recommendations

The Microsoft.NET platform is not ready for commercial use. There are still too many bugs in VB.NET and ASP.NET to roll out a commercial application in it. I have had numerous crashes and other issues to contend with over the course of this project. The beta 2 release is due out in June of 2001 and I am hoping that it will fix many of the issues that I encountered.

Beside a more stable environment, the Physician Online Credentialing Application Completion program also needs some added functionality to make it ready

for “prime time.” Currently, the users can only edit a single physician per login. This needs to be modified to allow multiple physicians to be edited. I am planning on implementing this in the future. There is also much that should be completed for validation of fields.

One major drawback is that many of the fields that should be drop down list boxes that get bound to a dataset are standard text boxes right now. In particular, the university and hospital names should be available from a drop down list but the price of the databases for this was too expensive for this project.

Appendix A

Appendix B

TIMELINE

Task Description	*Duration*	*Due Date*	*Start Date*	*Complete Date*	*Notes*
Create Database Tables	1 week	03/08/01	01/07/01	01/17/01	
Create Data Entry Screens	3 weeks	03/08/01	02/19/01	05/25/01	
Create Electronic Version of the standard Ohio Credentialing Application	1 week	03/08/01	01/01/01	01/05/01	
Create the Print Page	2 weeks	03/08/01	05/10/01	05/20/01	
Create the DLL for the Ohio Application	1 week	03/08/01	02/08/01	05/15/01	
Project Presentation	1 week	06/07/01	05/22/01	05/25/01	
Design/Create Login Screen	2 days	06/01	04/25/01	04/25/01	
Design/Create Sign Up Pages	1 week	06/01	05/25/01	05/25/01	
Design/Create Help Pages	3 weeks	06/01	05/25/01	05/25/01	
Test Site	1 week	06/01	05/26/01	06/02/01	
Bug Fixes	1 week	06/01	05/26/01	06/02/01	
Write Complete Project Documentation	2 weeks	06/01	06/01/01	06/04/01	
Final Presentation	1 week	06/01	06/01/01	01/07/01	

Appendix C

BUDGET

Hardware Costs:

SERVER

Component	Price
CPU: Intel P-III 700	$210.00
Memory: 384 MB PC-100 SDRAM	150.00
Storage:	
IBM 10.1 GB HD (SYSTEM)	98.00
IBM 18 GB HD (DATA)	145.00
Motherboard: Tyan S1854 Trinity	98.00
Network Card: 3com 905 TX 10/100[K]	42.00
Video Card: Generic S3 Video	22.00
Case: 300 WATT ATX Mid-Tower	48.00
TOTAL	**$813.00**

DEVELOPMENT WORKSTATION

Component	Price
CPU: AMD Thunderbird 1GHz	$198.00
Memory: 256 MB PC-133 SDRAM	105.00
Backup: Ricoh 6X4X24X CD-RW[L]	145.00
Storage: IBM 45 GB HD	168.00
Motherboard: Gigabyte VIA w/SB 128	145.00
Network Card: Phoebe Micro 10/100	13.00
Video Card: ATI Radeon 64 MB DDR	259.00
Case: 300 WATT ATX Mid-Tower	42.00
TOTAL	**$1075.00**

COMMON

Component	Price
Monitor: Sceptre Dragon Eye 19”	$300.00
Keyboard: Generic	8.00
Mouse: Logitech Scroll+	25.00
KVM: Linksys 2 port	45.00
TOTAL	**$378.00**

MISC

Component	Price
Zoomtown Internet Access	$29.99
Fuse ISP costs	10.00
TOTAL	**$39.99**

Software Costs:

WORKSTATION AND SERVER SOFTWARE

Software Package	Price
MSDN Universal Subscription	$2499.00
Adobe Acrobat 4.0	249.00
TOTAL	**$2748.00**

Total costs:

The total cost is $5014.00 plus a monthly cost of $39.99.

Notes

A. “URAC’s central mission is to promote the accountability of health care organizations, especially organizations that provide managed care services. Managed care quality is a critically important issue for patients, providers, regulators, and employers. The URAC accreditation process ensures that health care organizations have addressed quality in their structure and operations. Interested parties such as patients and employers can be confident that an accredited organization has the ability to provide high quality services.” (2)

B. “NCQA is an independent, non-profit organization whose mission is to evaluate and report on the quality of the nation’s managed care organizations.” (10)

C. Credentialing is the process of collecting and verifying information about a physician’s education, training, and experience in order to assess suitability for membership in a managed Care Network.

D. The term “Health Maintenance Organization” is an umbrella term for HMOs and all health plans that provide health care in return for pre-set monthly payments and coordinate care through a defined network of primary care physicians and hospitals.

E. A provider is a person or organization that provides medical services.

F. A Managed Care Network is the same as an insurance plan. One MCO may have multiple Managed Care Networks. The networks may be differentiated by benefits or geographical location of the subscriber.

G. A CVO does primary source verification, which means that they check the validity of credentials at the source rather than through another agent.

H. A three-tiered solution does not necessarily indicate a physical separation of tiers (although it can) but a separation of logic.

I. “The component Object Model (COM) is a software architecture that allows applications to be built from binary software components. COM is the underlying architecture that forms the foundation for higher-level software services, like those provided by OLE. OLE services span various aspects of commonly needed system functionality, including compound documents, custom controls, interapplication scripting, data transfer, and other software interactions.” (9)

J. The 10/100 designation indicates that it can function at both 10 Mbps and 100 Mbps.

K. When the speed ratings of a CD-RW are given as 6X/4X/24X, the 6X denotes the CD write speed, the 4X denotes the CD rewrite speed, and the 24X denotes the CD reed speed.

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