

EPICS Spring 2015

Hoosier Veterans Assistance Foundation (HVAF)

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GUI Design/Programming: Edward Wilde, Class of 2018

Hoosier Veterans Assistance Foundation

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Summary

Hoosiers Veterans Assistance Foundation (HVAF)

HVAF is a 501(c)(3) non-profit organization dedicated to eliminating homelessness for veterans and their families through prevention, education, supportive services, and advocacy. Incorporated in 1993 as the Indiana Chapter of the Far From Home Foundation, Inc., HVAF completed its first housing project in 1996, establishing a supportive housing unit for five homeless veterans in Indianapolis. In 1998, the Indiana Chapter became Hoosier Veterans Assistance Foundation (HVAF). In 2006, we continued our mission to provide these services, but we did so under a slightly different name. We have retained the acronym and logo, but have changed our name to HVAF of Indiana, Inc. to address a broader variety of veteran needs. (Haenlein, HVAF)

EPICS @ Butler

Engineering Projects in Community Service (EPICS) is a unique program in which teams of undergraduates are designing, building, and deploying real systems to solve engineering-based problems for local non-profit organizations. (Scheib, EPICS)

OutReach Program

Our mission as an EPICS team was to work with HVAF in order to create an electronic form application. This application is made up of a Windows Form Application from Visual Studio and a database constructed by SQL 14.

This application can be used to input and search data of new and returning clients of HVAF. It provides efficiency, convenience, and ease.

Objectives

HVAF's Current Problem

The HVAF Headquarters in Indiana has been around for several decades. Since its inception it has been storing client data in handwritten documents. This process has been slow, impractical, and difficult to keep up. It requires storage space, paper, and hours of wasted time for searching for a returning client's data.

EPICS Team Mission

Our EPICS team met with an HVAF representative named Mike Mullins who guided us through the problem and gave us an idea of the great potential of this project. We realized how beneficial this could be, and the idea was simple.

In order to fix the current system of keeping data, our mission was to build an electronic form to store and search the data. This would save HVAF both time and resources.

Spring 2015 Dossier

Documentation is incredibly important in any project, especially when it is to be passed to a future team to be worked on. With that knowledge, this dossier is to be presented to the future teams with the contents of what has been done and what is necessary for future beneficial modifications.

Requirements

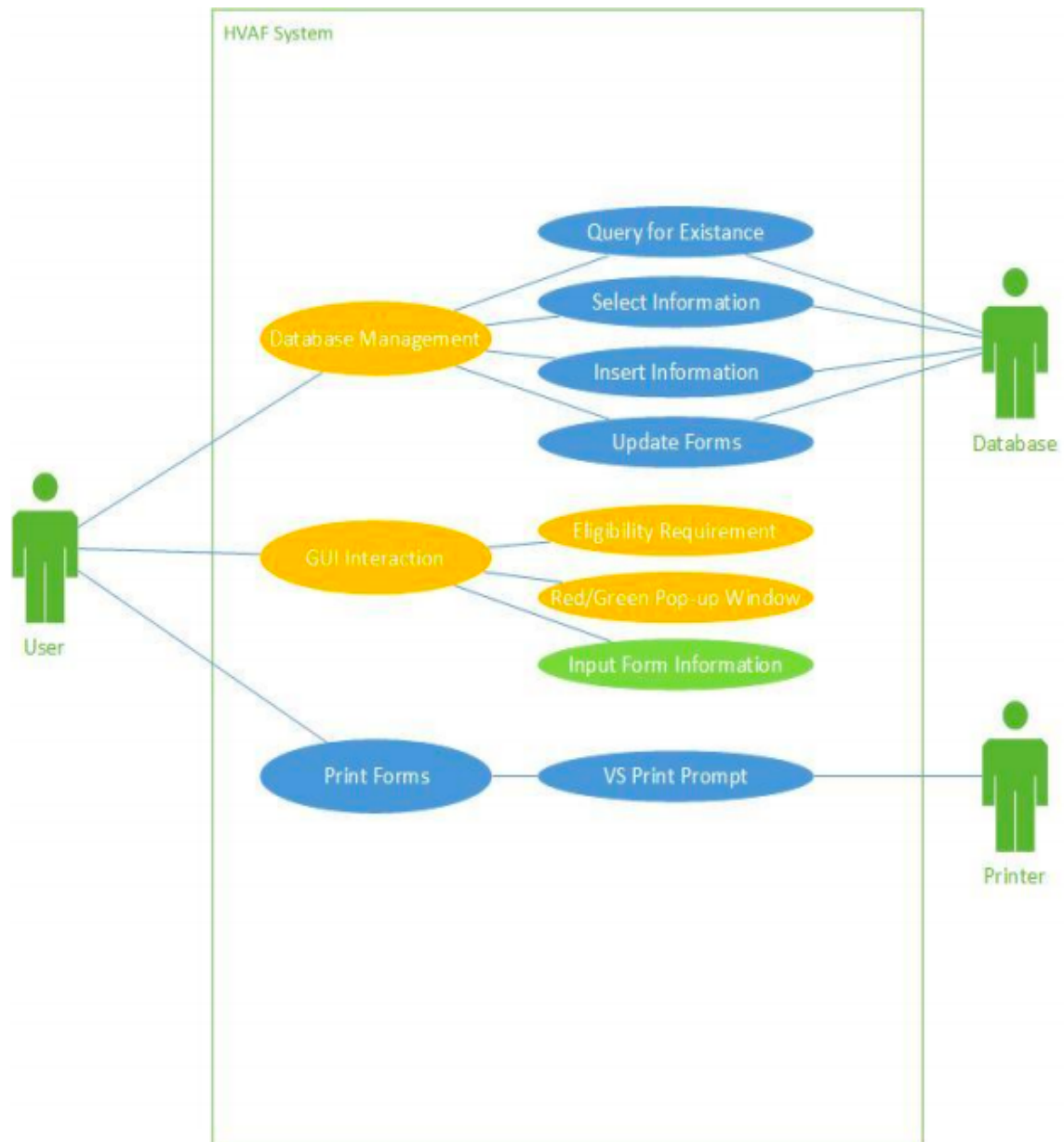
Finished Requirements

- Outreach Program - Gui Interaction
 - All necessary fields to take in client data
 - Easy user interface
 - Printable text file with services requested data
- Database Management
 - Insert form information into database
 - Query for returning client's information

Future Requirements

- Outreach Program Updates
 - Bug Fixes
 - Print button for text file
 - Implementation of Message Boxes for user convenience
 - Better comments
- Convert to a web form
- Optimize for mobile devices
- Develop a live queue that tracks current forms to improve the process
- Implement E-Signature to confirm receipt of goods and services
- Encryption among the form and database
- Implement barcode to record clock in/out time

Architecture



(Weber, EPICS)

Design

OutReach Program

The “OutReach Program” that we created is very straightforward and convenient for the volunteers to input client information. We begin with our Client Search page with the option to find an existing client or to create a new client (A.1.1 Client Search). If the user clicks “Search for Client” then a form will bring up that client’s information and show if the client is eligible for any services. If the client is eligible then the program fills multiple information fields, but clears some fields for the user to update. If the person requesting services is not a returning client, then the user has the option to click “New Client.” If this happens, the Personal Information page appears with multiple fields for the user to input the clients information (A.1.2 Personal Information). Once the Personal Information page is completely filled, then the user can go to the Financial Information page (A.1.3 Financial Information). Here, the user will finish completing the form with the client’s information. Once this is done, the user is able to go to the Services Requested page (A.1.4 Services Requested). Multiple separate windows can be opened by checking certain services.

In the main form we also have links on the left side for ease of control. There is also a progress bar at the bottom left side of the form to show the user how far they are with the client and once everything has been filled, then a submit button is visible near the progress bar for the user to submit all of the information up to the database.

In order to progress to the next page of the form, the current page must have all of the required information filled out completely. If it is not filled, then there are red markings that show the user which fields still have yet to be completed. Once all fields are complete, the user is able to click “Next” to go to the next page.

(Miller, EPICS)

OutReach Database

One of the semester goals was to establish a connection to a SQL Server database to store all the information gathered by the program. This was accomplished by creating a database in SQL Server 2014 with eleven tables in total, one for the personal information of each client, one for their financial information, and nine other tables, with each one managing a particular service offered by HVAF. (A.1.5 Database Structure)

Upon submission of information for a new client, the program simply writes all the pertinent information to the database in the proper tables. When an existing client is searched for and the database is queried successfully, the program remembers a client has been searched. This allows the existing record for that client to be rewritten with any changes to personal or financial information being recorded without the use of duplicate records. This feature also allows the program to keep track of the last date of visit of each client.

Every time a table entry is queried or written, the program uses new connection variables and new record set variables to accomplish the task. After the submit button is clicked with a new or existing user, the program restarts itself to prepare the database for a new query or insertion. The same action occurs if the back button is clicked to the home screen without an actual submission. If statements were used to determine if a service was requested and whether or not that particular record needs to be written to the database.

The code to accomplish this is a hybrid between visual basic and SQL. SQL statements were used in the code to insert into, select from, and delete from the database. Often times a variable in the code would have to be converted into a string in order to fit the format of the data fields in the database. The ActiveX 2.8 library of commands was used to establish the database connection.

Organization

OutReach Program

All of the coding we used for the program is visual basic, as we created the program using Visual Studio 2012/2013. The database system, however, is created using MySQL thus having a different format. Comments have been added above nearly every function to show exactly what it is doing and how it works.

Distribution of Work

The General User Interface (GUI) was designed by Ethan Miller and Edward Wilde along with most of the Visual Basic code. The database was designed by Matthew Yacko using MySQL. (Miller, EPICS)

Quality Assurance

Testing OutReach Program

Most of the testing was done with Visual Studio, making sure that the GUI worked properly. Testing the GUI was easy, as we would simply start the program and go through a large variety of potential information into the fields, testing if the fields would hold the correct information as well as testing if the buttons would respond correctly to specific information in those fields. There were other features to be tested as well such as the Information Form and the clientinfo text file.

Testing the database was a bit more difficult because it was not built for most of our time working on the project and it required both sides of code to be functional. Eventually, however, we were able to put the two parts together and we simply entered information into the database through the OutReach Program and queried the information back through to be sure it was holding the correct data. (Miller, EPICS)

Project Management

Team Organization

Ethan Miller was the team leader as he had the most EPICS experience. His job was to delegate work between each member and stay in contact with our professor and our client. He also worked on the OutReach Program's GUI and features.

Matthew Yacko was the creator of the OutReach database as he had the most database experience. He built it from scratch and implemented to code to work with the OutReach program.

Edward Wilde helped with the OutReach program's GUI and features along with Ethan and contributed with research for certain features such as the QR Code system and the print function.

Future Work

Future Requirements

- OutReach Program Updates
 - Bug Fixes
 - Print button for text file
 - Implementation of Message Boxes for user convenience
 - Better comments
- Convert to a web form
- Optimize for mobile devices
- Develop a live queue that tracks current forms to improve the process
- Implement E-Signature to confirm receipt of goods and services
- Encryption among the form and database
- Implement barcode to record clock in/out time

Bibliography

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2. Scheib, Jacob - EPICS - <http://epics.butler.edu/about-us/>
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Appendices

A.1.1 Client Search Page

OutReach Program

Navigation Menu:

- [Client Search](#)
- [Personal Information](#)
- [Financial Information](#)
- [Services Requested](#)

Client Search

HVAF of Indiana, Inc.

Last Name:

Last Four of SSN:

Search for Client

New Client

Progress:

A.1.2 Personal Information Page

OutReach Program

Navigation Menu:

- [Client Search](#)
- [Personal Information](#)
- [Financial Information](#)
- [Services Requested](#)

Personal Information:

First Name: Last Name: MI: SSN: - -

Address: City: State: Zip Code:

E-Mail Address: Phone Number: () -

Education: Marital Status: Ethnicity:

Housing Status: Branch of Service: Sex: ☐ Male ☐ Female

MM/DD/YYYY: / / HVAF program in which enrolled: ☐ REST ☐ Supportive Housing

DD 214 on file:

Dependents

<input type="text"/> 0-4 years	<input type="text"/> 25-65 years
<input type="text"/> 5-18 years	<input type="text"/> 65-80 years
<input type="text"/> 18-25 years	<input type="text"/> 80+ years

Total:

Back **Next**

Progress:

A.1.3 Financial Information Page

The screenshot shows the 'Financial Information' page of the 'OutReach Program'. The window title is 'OutReach Program'. On the left is a 'Navigation Menu' with links: [Client Search](#), [Personal Information](#), [Financial Information](#) (highlighted), and [Services Requested](#). Below the menu is a 'Progress' bar showing approximately 75% completion. The main content area is titled 'Financial Information' and includes the instruction 'Please input "0" if there is no other amount:'. It contains several input fields with dollar signs: 'Income: \$', 'Utilities: \$', 'Food: \$', 'Rent/Mortgage Payment: \$', 'Automotive Payment: \$', 'Insurance Payment: \$', and 'Misc. Expenses: \$'. To the right of these fields is a box titled 'Income Sources' containing checkboxes for: SSI, Food Stamps, Medicare/Medicaid, SSDI, Veterans Benefits, Employment, Public Assistance, Unemployment, Other, and TANF. At the bottom right are 'Back' and 'Next' buttons.

A.1.4 Services Requested Page

The screenshot shows the 'Services Requested' page of the 'OutReach Program'. The window title is 'OutReach Program'. On the left is a 'Navigation Menu' with links: [Client Search](#), [Personal Information](#), [Financial Information](#), and [Services Requested](#) (highlighted). Below the menu is a 'Progress' bar showing approximately 75% completion. The main content area is titled 'Services Requested' and contains a grid of checkboxes for various services: Clothing, Food, Hygiene Items, Household Items, Furniture, Small Appliances, Housing Assistance, Employment Assistance, and Other. At the bottom left is a 'Submit' button, and at the bottom right is a 'Back' button.

A.1.5 Database Structure

financial_information	
last_name	
SSN_last_four	
gross_monthly_income	
utilities	
food	
rent_mortgage	
automotive_payment	
insurance_payment	
misc_expenses	
SSI	
SSDI	
public_assistance	
other	
food_stamps	
veterans_benefits	
unemployment	
medicare_medicaid	
employment	
TANF	

personal_information ^	
first_name	
last_name	
MI	
SSN	
SSN_first_three	
SSN_second_two	
SSN_last_four	
address	
city	
state	
zip	
email	
phone_first_three	
phone_second_three	
phone_last_four	
phone	
education	
marital_status	
ethnicity	
housing_status	
branch_of_service	
sex	
birth_month	
birth_day	
birth_year	
date_of_birth	
REST	
supportive_housing	
DD_214	
signature	
[0-4_dep]	
[5-18_dep]	
[18-25_dep]	
[25-65_dep]	
[65-80_dep]	
[80+_dep]	
total_dependents	

services_requested	
last_name	
SSN_last_four	
date	
clothing	
food	
hygiene_items	
household_items	
furniture	
other	
housing_assistance	
employment_assistance	

other	
last_name	
SSN_last_four	
date	
other	

household_items	
last_name	
SSN_last_four	
date	
toaster	
dishes	
can_opener	
silverware	
pots_and_pans	
bed_sheets	

furniture	
last_name	
SSN_last_four	
date	
furniture	

hygiene_items	
last_name	
SSN_last_four	
date	
male	
female	
boys	
girls	

housing_assistance	
last_name	
SSN_last_four	
date	
transitional_housing	
permanent_housing	
active_duty	
discharge_status	
eviction_homeless	

food	
last_name	
SSN_last_four	
date	
food	

employment_assistance	
last_name	
SSN_last_four	
date	
work_type	
job_leads	
computer_training	
resume	
occupational_skills_assessment	
interview_training	
post_employment_counseling	
has_resume	
has_criminal_history	

clothing_items ^	
last_name	
SSN_last_four	
date	
winter_hat_type	
winter_hat_size	
gloves_type	
gloves_size	
scarf_type	
scarf_size	
coat_type	
coat_size	
male_pants_type	
male_pants_size	
female_pants_type	
female_pants_size	
long_johns	
long_johns_size	
shirt_type	
shirt_size	
shoes_type	
shoes_size	
summer_hat_type	
summer_hat_size	
shorts_type	
shorts_size	
socks_type	
socks_size	
belt_type	
belt_size	
dresses	
dress_size	