**Senior Project Proposal**

**Department of Computer Science**

**Calvin University**

Title: Affordable Care Act System

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Mentor: Prof. Patrick Bailey

Honors Project: No

# Vision and General Overview of Proposal

## Background and Problem

The Affordable Care Act (ACA) requires employers with 50 or more employees to provide employee health insurance.  Part of this includes completion of forms 1094C and 1095C, and for employers with more than 200 employees an XML based report must also be submitted.

## Brief Description of Solution Being Provided

This project will aim towards

* 1. Developing a database repository that can maintain ACA information for a single organization
  2. A front end with CRUD support
  3. Publication that required PDF forms for 1094C and 1095C
  4. Publication of XML files to support electronic submission of 1094C and 1095C information
  5. An automated quality control mechanism to confirm adherence to the required XML Schema

## Your Interest and Qualifications

Our team wanted to develop a processing system that manages the PDF and XML publications to support the Affordable Care Act. All the members in our team are taking CS-342, so we’re confident that we’ll be able to learn the necessary skills needed in creating a database system.

## Review of Relevant Design Norms

Our XML based form will be user friendly and straight forward. The database will be cleaned and organized well so that anyone with basic software knowledge can understand. We are aiming for transparency .

# Mentor Selection, Expert User and Collaboration

Our mentor is Professor Patrick Bailey as this project was one of his suggestions. We asked him to be our mentor as his major focus is with database technology. We are not collaborating with other organization; however, we’re assuming as if we were providing a service to a company.

# Research Question

As the people in Congress pass the Affordable Care Act, we are analyzing how much time and money it costs the employers to send all the details as per IRS guideline. They need to have robust systems to send the IRS the documents and it takes software developers hundreds of hours to make a good system and database to comply with the IRS. Our main goal is to find the cost and the secondary effects of this ACA on the IT industry and the employers.

# Development Approach

We will use a phased iterative implementation approach for this project. We will build the database and then validate it towards our front end and then refine it. For the second step, we will investigate how to create a pdf form with the database data and then turn it into an xml. For the next step, we need to equate our xml to the schema given by the IRS, which will include modifying things that don't work out well, and then we'll bring our program through the official testing scenarios needed for submission and eventually provide a cost estimation of the impact of this technology.

# Quality Assurance

## Critical Delivery Dates

**December 15 –** Complete Basic working database that can store the details from the forms to convert the pdf into an xml format

**April 15** – Complete Testable Version

**May 1** – Complete Project

**May 15** – Complete Final Report

## Reviews

We plan on conducting Software Management Review. Where Professor Bailey is going to evaluate our work status during our meeting every Tuesday.

## Testing

For Testing we are going to undergo Rigorous testing of the system to support the official testing scenarios required by the IRS for XML submission using the testing document at <https://www.irs.gov/pub/irs-pdf/p5164.pdf> where we must undergo twenty-one testing scenarios to insure everything works as required.

# Resources

|  |  |  |
| --- | --- | --- |
| **Resource** | **Source/Provider** | **Cash Cost** |
| Resources not required | Source/Provider not required | Cash not required |
|  |  |  |
|  |  |  |
| **Total Cash Cost** | ------------------------------ |  |

# Risk Analysis

We need to make sure the data that we collect through the form it is secured in our database. We will make sure when the XML file is made to send it to the IRS it will be secure.

|  |  |  |
| --- | --- | --- |
| **Risk** | **Exposure Analysis** | **Mitigation Strategy** |
| Do you have a dependency on others completing work for your project to be a success? | We’re all new to this subject so we’ll have to do some research on our own and work on the project collaboratively. | Consult with Professor Bailey about the issue |
| Is there any doubt about the availability of financial resources? | No | “ |
| Do you have a dependency on an expert user to provide advice and who may not always be available at critical times? | No | Professor Bailey was flexible about meeting time and will be there to help us if we have any questions. |
| If success depends on testing by an outside source, are there any barriers to completing testing? | No | “ |
| Will this project involve new skills for you? | Yes |  |
| Will there be anything preventing you from investing at least six hours a week on this at a minimum? | No | Set up meeting schedule on teams. |
| Is there any potential of physical resources you have listed of not being available? | No | “ |
| Other | “ | “ |

**Appendix A**

**Test Plan**

# Unit Testing

## General Approach

## Equipment/Resources

## Testers/Volunteers

# Function Testing

## General Approach

## Equipment/Resources

## Testers/Volunteers

# System Testing

## General Approach

Our testing involves the program undergoing different scenarios where each scenario contains all the information needed to prepare the XML.

The scenarios are going to test the functionality of our business rules.

In order to pass the test our test submissions must match the scenarios exactly.

## Equipment/Resources

[Testing Document](https://www.irs.gov/pub/irs-pdf/p5164.pdf),

[Schema and Business Rules for 2020,](https://www.irs.gov/e-file-providers/tax-year-2020-affordable-care-act-information-returns-air-known-issues-crosswalks-schemas-and-business-rules)

[Guideline on submitting XML reports](https://www.irs.gov/pub/irs-pdf/p5165.pdf)

## Testers/Volunteers

PROFESSOR BAILEY

The application must meet the IRS testing scenarios defined at <https://www.irs.gov/pub/irs-pdf/p5164.pdf>

# Acceptance Testing

## General Approach

## Equipment/Resources

## Testers/Volunteers