Proposal for MSE Capstone Project

Project Title: A Generic Web-Based Tool for Data Collection

Student Name:

Project Sponsor:

Faculty Advisor:

Date of Submission:

A Generic Web-Based Tool for Data Collection

Objective

The aim of this project is to develop a generic web-based tool that will allow users to generate their own web application for data collection.

Background

This project originated from a request for a tool for data collection by a non-profit organization. Various organizations around the world send volunteers to under-developed countries to assess the health of villagers. One particularly difficult obstacle many volunteers face is how data is collected and recorded. The traditional hand-written paper mechanism for data collection has now been replaced by computers which simplifies a lot of processes such as duplication of information, checking for validity of certain information and ensuring security and privacy of data being recorded. However, the data collection tool is more specific and must be tailored to the needs of the organization and also must focus on the type of data being collected. This implies that each organization will have a different data collection tool; sometimes, the same organization may have more than one tool to support different types of data collection.

This project aims at developing a generic tool that will actually instantiate (or create) a new data collection tool for a particular application in hand. This generic tool generator is also web-based so that it can be easily portable. The user of this tool will design what types of questions are expected to be asked during data collection (mandatory versus optional questions, numeric answers versus text-based answers, predefined answers through selection etc.).

Current Project

The current project focuses on developing a tool that would allow someone with basic computer knowledge to essentially create their own web-based data-entry application. Typically, the users of this tool will create a web application with their own questions and choice of database. The tool must meet the following requirements:

- The user must be able to create questions. Currently, the format of these questions are limited to the following:
    - Text field
    - Combo box
    - Radio Button
- In the case of a text field, the user must be able to add constraints to validate the input (e.g., a number to one decimal place, an integer between 5 and 50, etc).
- The tool must create a database (including tables) that will store all subsequent data entries.

- The user must be able to set the dependency relationships between questions (e.g., depending on the answer to question 1, either question 2 or question 3 should be shown).
- The tool must provide mechanisms by which the user can package the application and deploy (e.g., it may produce a war file which can be saved and executed directly without further installation procedure).
- The generated data collection tool must be easier to visualize and use. It should also be easily portable to different platforms.

Challenges

The following are some of the challenges in this project:
- The capability of having questions dependent on one another poses a challenge.
- Making a generic tool that can be used for a variety of applications poses a challenge. Users must be able to create their own questions of various types and then be able to deploy a working application consisting of various "pages" of questions that are automatically filled when the page is re-visited.
- The tool must also handle the creation of the database and its tables. This is a challenge depending on the number of different types of databases used.

Project Schedule

The following schedule is proposed by the student and is agreed by the project sponsor. Both parties agreed on developing concrete requirements for the entire project at the beginning of the project and then use a simplified model of agile method for implementation. Design diagrams will be created as and when the prototypes are developed.

Phase	From	To	Credits
Develop requirements document and problem analysis	Jan 01, 2018	Feb 28, 2018	3
Develop first prototype	Mar 01, 2018	May 31, 2018	3
Develop second prototype	Jun 01, 2018	Aug 31, 2018	3
Refine and test	Sep 01, 2018	Oct 31, 2018	2
Demonstration and project report	Nov 01, 2018	Dec 31, 2018	1

Total: 12

Resources

The student will use his/her personal computer to complete the project. The project sponsor will provide data for testing.