ECNG 3020 Project Proposal 2021/2022

Project Title	Digital COVID-19 Vaccination Passport
Project Proposer	Dr Tricia Ragoobar-Prescod
Project Supervisor	Dr Tricia Ragoobar-Prescod
Project Co-supervisor	None
Visibility	Closed
Project Category	Type II: System Development and Implementation
Primary Thematic Group	Communications
Secondary Thematic Group	Not Applicable
Project Keywords	COVID-19, passport, coronavirus, contact tracing

Background

In an attempt to curb the transmission of the coronavirus, herd immunity through vaccinations is being sought in most countries around the world. With this in mind, a personal record of vaccination status, such as a digital vaccination passport, is a crucial article. The use of a digital vaccination passport is multifaceted. For example, at this time, international travel requirements that mandate the acquisition of a COVID-19 vaccine are being enforced and, while not yet implemented, there is a significant motivation to mandate the same for entry into public facilities such as supermarkets, gyms, schools, etc. Vaccination status can, in the near future, influence mask-wearing and queuing/congregating regulations in these and similar facilities. In the future, a digital vaccination passport can facilitate more efficient contact tracing, as the passport can serve as a location tracking mechanism for an individual who is infected with COVID-19. This project aims to develop the supporting web-based system for facilitating the digital vaccination passport in the first instance in Trinidad and Tobago, and for use by citizens and authorized officials.

Objectives

The student undertaking this project must:

(1) Design and develop a digital vaccination passport that

- is scalable, at both the software and infrastructure levels, to accommodate the numerous simultaneous access that is expected
- presents a user-friendly GUI
- supports four user roles: citizen, authorized inquirer, vaccine administrator and Ministry of Health (MOH) administrator
- requires secured pre-registration on the system, including the use of a valid email address for registration confirmation
- facilitates the following functions for citizens:
    - secure registration and login
    - ability to record (i.e. print or otherwise) a QR code (or similar)

    - ability to view vaccination history
    - ability to capture and view movement
    - ability to request updates of user profile, such as a change of contact number, address, etc.
    - facility to upload files such as those required for proof of address, etc.
- facilitates the following functions for authorized inquirer:
    - secure registration and login
    - ability to scan citizen's QR code (or other record ID), verify ID and view related vaccination status ONLY. That is, the inquirer should have no access to other personal information
    - ability to report/flag cases of false identity
- facilitates the following functions for vaccine administrators:
    - secure registration and login
    - ability to enter vaccine information (such as type, shot number, date, etc.) for citizens
    - facility to upload files such as citizen's ID, etc.
- facilitates the following functions for MOH administrators:
    - secure registration and login
    - entry and registration of authorized inquirers and vaccine administrators
    - approval and rejection of citizens' requests (such as updates to their profile)
    - facility to upload files
- comprises a back-end system for data collection
    - allows for data collection through manual entry
    - allows for data collection through peripheral devices, such as document scanners, cameras, fingerprint readers and/or retinal scanners

(2) Undertake thorough testing of the developed system, including deployment to a justified sample users and a performance analysis using justified, pertinent parameters, and provide an accompanying Software Test Description (STD) that adheres to industry standards

(3) Provide documentation of all work conducted including a detailed Software Design Document (SDD), using a template that adheres to industry standards

Implementation and Methodology

To successfully achieve the objectives of this project, the student should:

- undertake all software development using standard Software Development Life Cycle (SDLC) methodology
- adopt best practice in database development, through the use of authoritative sources only

Summary of Requirements

- The student shall not be subject to any additional expenses in undertaking this project and can do so from his/her home. The project is primarily software-based with a couple hardware requirements (see below - General Hardware Requirements) that are generally standard possessions.
- Access to a reliable, continuous and secure Internet connection is required

Prerequisite Skills and Knowledge

- Completion of ECNG2007 (Computer Systems and Software Design)
- Completion of (preferable) or enrolment in ECNG 3023 (Introduction to Software Engineering)
- Competence in database design and development, and web development, will be an asset

General Hardware Requirements

This project requires a computer with video conferencing accessories (web cam, mic and speaker) necessary for regular remote meetings. Document scanners may be required when files are to be uploaded.

The student is allowed to choose the implementation tools, but with proper justification of his/her choices.

General Software Requirements

The student is allowed to choose the implementation tools with proper justification of his/her choices.