Dept of Computer Science and Information Systems

BSc Final Year Project Form (2015/2016)

1. Proposal

The student should complete parts 1(a), 1(b) and 1(c) below, and then agree the maximum pocket values with the supervisor and put these in part 2(a) below. An electronic version of this form should be uploaded to the Final Year Project page on Moodle no later than **Monday 2nd November 2015**.

(a) Student details

Name: **Email:**	**Project Type 4 (BUCI027S6)**

(b) Project details

Title: Product identification and information application for the blind and visually impaired.

Objectives:

The aim of this project is to create a software application which will allow blind and partially sighted people to identify everyday products and to provide additional information about those products using text-to-speech synthesis.

The objectives for the project are as follows:

- Research the requirements of users of the software with assistance from RNIB and use case design
- Design the application to capture and decode 1D, 2D barcode data for a mobile platform using Java, MySQL, CSS, Android Studio SDK
- Extend the application to be support multiple input technologies with API integration.
- Develop and implement the software
- Test the prototype software for errors and functionality
- To create a report describing the process and functionality of the final software application.

Title: Product identification and information application for the blind and visually impaired.

Description:

The application will allow blind and visually impaired persons the ability to identify items in front of them and to speak to the client, via smartphone, the product's name and description. Depending on the type of item, additional information can be reported to the client. Size, quantity, nutritional or allergy information about prepared foods can be provided or warnings on medicine and chemical products could be spoken to the client. The application will be able to identify different barcode standards to identify if the product is food, household goods, cosmetics, books, marketing coupons and respond accordingly.

Mobile devices are poor at capturing barcode information via their cameras, so external capture devices will be used for barcode scanning (laser or imagers) and RFID scanning (NFC). The application will integrate with these devices via APIs. The external scanners will be wirelessly connected to the mobile platform via Bluetooth and be small thumb-sized.

The application will be written in Java. The Android SDK will compile, generate the executable and produce the distribution package. The solution will use a database supporting MySQL, using data from open sources like openfoodfacts.org, openbeautyfacts.org, ISBNplus.org, GS1 UK.

The native application will make low level API calls to OS specific hardware and software features to assist in the scanner support and text-to-speech synthesis and allow the user to use touch-screen gestures to interact with the application.

Deliverables:

- Develop application for the Android phone and tablet platform
- Database design, integration and data importation
- Use APIs to integrate external hardware and software
- Present a working solution to RNIB technical support and some clients

Title: Product identification and information application for the blind and visually impaired.

Method:

As this project is being produced solely be myself, a lightweight development methodology, as in Agile, are appropriate.

- Create clearly defined small portions of work (based on requirements)
- Code small working portions of the project, with improved version releases towards the final version.
- Keep a backlog of the work (stories) to be completed to assist tracking progress
- Keep a record of how long it takes to complete tasks and whether they are completed within expected times. This will help with planning for the remaining tasks and assist in completing the project within timescale.
- Review previous tasks to see what has been learnt to improve performance
- Communicate regularly to Supervisor to demonstrate work achieved to date, and to obtain help and feedback

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Work plan:

The Project has an absolute completion date of 3th of May 2016.

The target completion date will be the 3th of April 2016, to allow for contingencies.

The Project has four main Phases:

Requirements Gathering
Design
Development →Testing ←Feedback
Software Documentation and most importantly, writing the Project Report

The chart below provides a summary timeline including dates.

Milestone	Description	Date
Requirements Gathering	Create use cases, find out user requirements from RNIB Tech Squad	End of November 2015
System Design Completed	Overall design plan including release plan for working software components	End Of December 2015
Complete Development Coding, Testing and Debugging	All coding completed for a software prototype. Demo to RNIB, Project Supervisor, make modifications where advised.	1st February 2016
Complete Documentation	Complete software documentation and project report	3th April 2016

College equipment required:

Access to Titan server at BBK, SQL databases residing on that server, VNP assess to work remotely while developing the software and to demonstrate the solution to the Project Supervisor.

All other hardware, data capture devices, smartphones, PC etc supplied by Michael Collins.