Specification – Smart Folder Programming Project

Project Description

The aim of the project is to write a program, which could extract information related to student ID from document such as pdf, word and excel. I use C++ as the programming language [1], Qt as a tool library [2], and Qt Creator as the development environment, which could create the elegant GUI program as well as gain the support of pdf, word and execl through the Qt Library. The program will be demonstrated by a concise interface, and the interface will include a directory browsing box, search box and result search box. While users choose the directory in directory browsing box and input student ID in search box, the program will recursively query all files and files in subdirectories in the corresponding directory. In addition, the program will search information related to student ID in document files, and represent the result in result search box.

Statement of Deliverables

Throughout the duration of this project, I intend to create a variety of documents, such as the specification document which details the future plans for the project, a design document that will display a variety of diagrams such as use case diagrams and initial designs for code and a dissertation document that will provide a detailed account of the conduct and the outcome of the project.

Finally the program will be submitted in an exe file, which could run on the Windows PC. The detailed requirements of the program are as follows:

* The program could directly run on Windows. While users input student ID, all related document and files will be searched and the location of the student ID could be clearly displayed.
* The left-hand column of the program interface is a directory browse box, similar to the Windows directory interface, and users will be able to adjust and browse the current directory very skillfully.
* On the right side of the program interface is the Search results box, with a Search box at the top, which contains a keyword input bar and a Search button.
* Search results from top to bottom, each row shows a search result, that is, a file, at the same time in each row, file directory will be displayed after the file name, according to the student ID in the context of the file search to this paper, and the position of the student ID in the file.
* Search for file content will support common document files such as TXT, PDF, word, and excel.
* Search algorithms are as follows:
  + Use DFS（ Depth First Search） to traverse every file and directory
  + Search student ID in each directory and file name (not only document file), for document files, search file name and file content.

In the process of developing this project, I will repeatedly debug it to ensure that the search results and the search experience meet the above requirements.

Software assessment will need a third party and myself to complete. In the design stage, I will create a questionnaire to evaluate at the end of the implementation stage. The third party will consist of my friends and mates, they will use the program, and then fill in the questionnaire. This evaluation will comply with the Computer Science Student Project Third Party Evaluation Procedure.

Conduct of the Project and Plan

Preparation

Now I already did some preparation work for this project. And I have been trying to understand and master the basic grammar and writing skills of the C++, a qualified C++ programs requires a lot of engineering programming way, I will use object-oriented and other methods to write the program [3]。

Qt Library will offer program interface and basic operation such as reading or writing txt file in the project. Supports offered by ActiveQt are necessary for the writing and reading operation for pdf, word and excel document file [4]. Currently, ActiveQt is included in the Windows version of the Qt library with no additional setup.

Design

In the design stage, I will create a design document, which contains a number of different charts. And they will display the target and direction of project development. Detailed content will be included in the files below:

* Expected output; Describe the desired objectives of the project
* Sketch; Describe the user interface, program flow, and algorithm in detail
* Use cases; Define a set of operations of users to use the software
* The questionnaire; This will be used for third-party software evaluation
* Pseudo code. Used to quickly describe program processes and algorithms
* Test cases; The project will test these test cases at the end of the project to make sure there are no known bugs

Implementation

I will use Qt creator and Qt Library to develop the program and C++ as the development language. About software, final program will run on Windows 10. About program testing, test cases built at the design stage will cover all possible use case to ensure that the program has no known errors. In addition, during the implementation stage, additional test cases could also be added according to the circumstance. Test will use the black and white box testing method.

Risk Assessment

| Risk | Likelihood | Impact | Countermeasures |
| --- | --- | --- | --- |
| Qt library support for document files is insufficient | High | It may take a lot of time to support the basic operations of document files, leading to other functional delays | The difficulty of the implementation of document file content search can be expected. I will spend more time than expected to deal with problems. |
| Lack of enough C ++ skills to write program | Medium | It may be longer than expected to achieve any of its features | I will learn how to use c ++ to develop simple software applications in advance before developing projects |

Bibliography

[1] C++, Reference, <http://www.cplusplus.com/reference/> Date Last Accessed: 18/10/2017 20:00

[2] Qt, Qt Documentation, <http://doc.qt.io/qt-5/overviews-main.html> Date Last Accessed: 18/10/2017 20:00

[3] Scott Meyers: Effective C++: 55 Specific Ways to Improve Your Programs and Designs, 3rd Edition, Pearson Education, 2005

[4] Active Qt, Active Qt Documentation, <http://doc.qt.io/qt-5/activeqt-index.html> Date Last Accessed: 18/10/2017 20:00