Team Blue

Career Tracker

Software Requirements Specification

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Introduction

Purpose

This document will cover the software requirement specifications for the "Career Tracker" application our group is designing for the IUS School of Natural Sciences. It will give a detailed description of the system being proposed and its functions. It will also outline some of the system's requirements, constraints, and dependencies.

Scope

Every year the NATS department gathers data from graduated students in order to track their progress after college. Currently, this student data is being manually transferred from a graduation report into a massive spreadsheet that is maintained by the department. We aim to improve this data management process through the development of this application by automating the tasks of importing and handling relevant information from the report.

Our system will provide the user with an interface that allows them to login to the application. Once authenticated, users will be able to import the required student information from a spreadsheet file into the application's database. After this information is collected, users will then have the option to view, modify, and export any student data that is displayed on screen. For proper application functionality, the user will also need access to an up to date web browser and an active network connection.

Document Overview

The remainder of this document will lay out the overall description of the proposed "Career Tracker" product as well as the specific requirements for the system we are developing. The second section provides an overview of the system functionality, a list of the stakeholders interacting with the application, as well as some of the assumptions and constraints involved in the project. The third section will detail all of the system's software requirements.

Definitions

Term	Definition
Application	A computer program or an executable (EXE) file
User	A person that interacts with the application
Stakeholder	Any person having an interest in the creation of the application
Interface	A system that allows the user to interact with an application
Server	A computer that accepts requests or delivers data to other computers on a network
TCI/IP	A set of internet protocols that specify how data should be transmitted and handled over a network connection
CSV	A file format commonly used by applications like Excel
JavaScript	A high-level scripting language that enables interactive web pages and applications
Angular	A platform for constructing mobile and desktop web applications
Express	A Node.JS web application framework
MySQL	A relational database management system
FERPA	A federal law that that governs the disclosure of a student's educational records

Overall Description

Product Perspective

Purpose and Scope

The product, **Career Tracker**, is a web-based application intended to allow the Indiana University School of Natural Sciences to compile and maintain various data elements related to past students.

The scope of the product at this time currently only includes use by the Office of the Dean of the School of Natural Sciences; it is expected to be constrained by the requirements specified herein.

Stakeholders

The stakeholders identified related to this product include:

- The users of the system, primarily the staff of the Office of the Dean of the Indiana University School of Natural Sciences
- Our product development team (Team Blue)
- The Indiana University IT staff involves in implementing the required web and database systems
- Students who may see the result of university services enhancements made possible by this application
- Students who may receive communications as a result of use of this application

Market Assessment/Target Demographics

The product is intended primarily for use by university staff. It is intended to allow enhanced analytical abilities related to post-graduate student data. This data is used to identify the employers associated with students as well as their post-graduate educational plans.

This application and the associated data are of particular interest due to declining university attendance and an ongoing desire to improve university degree programs and services in order to potentially offset this. This is detailed further in the Project Feasibility Report.

System Requirements

Hardware Interfaces

It is expected that users will access the application using an Internet-connected desktop or laptop computing device. A viewing device consisting of 15 inches or more of viewable surface is recommended for optimal use.

Software Interfaces

The user should utilize a web browser with support for HTML 5 with JavaScript functionality enabled for a satisfactory user experience. The following web browsers are recommended for optimal use:

Google Chrome – latest version

Firefox – latest version

Internet Explorer – version 11 or later

Safari – latest version

User Interfaces

The primary user interface consists of a web application accessed using a common web browser application. The interface will consist of a functional design similar to other commonly utilized university websites.

Communication Interfaces

A high speed (LAN or wireless) connection is recommended for optimal use.

Product Functions

The product's primary functions include:

- The ability for university staff to import, export, view, edit, and logically delete records contained in the application's database
- The ability for university staff to view and download reporting related to data contained within the application
- The ability to control access to the data within the application through user authentication
- Potentially the ability to generate communications, such as through e-mail or text messaging services, to alumni using data contained within the application.

Use Cases

1.) Import alumni data received from Office of the Registrar

Description: Upload file containing data received from Office of the Registrar that contains alumni data for processing by application

Actor: University staff member

Precondition: File containing data is available in a supported format containing all required data elements

Postcondition: The alumni records are updated to include new records and updates to existing records.

Actions:

- User receives spreadsheet from Office of the Registrar
- User saves spreadsheet in a supported format (e.g. CSV)
- User navigates to Career Tracker application
- System displays the Career Tracker application login page
- User authenticates to Career Tracker application
- System verifies credentials and displays main page for authenticated user
- User selects Import Data option in application
- System displays a form allowing for a file upload
- User selects the file to upload and selects the upload option
- System processes file and makes required updates to alumni records.
- System provides feedback on results of processing to the user

2.) View data related to existing alumni record

Description: Review existing record data located in database using specified criteria

Actor: University staff member

Precondition: Criteria for desired record is known

Postcondition: The alumni record data related to the desired record is displayed on screen for the user to review

Actions:

- User navigates to Career Tracker application
- System displays the Career Tracker application login page
- User authenticates to Career Tracker application
- System verifies credentials and displays main page for authenticated user
- User selects the Search Alumni Data option in the application
- System displays page that allows user to specify search criteria
- User enters the search criteria as desired and selects the Search option
- System locates and displays records matching specified criteria
- User locates the desired record and selects the view option
- System displays all data relevant to the record

3.) Edit data related to existing alumni record

Description: Modify existing data related to record located in database using specified criteria

Actor: University staff member

Precondition: Criteria for desired record is known

Postcondition: The alumni record data is updated in system as expected

Actions:

- User navigates to Career Tracker application
- System displays the Career Tracker application login page
- User authenticates to Career Tracker application
- System verifies credentials and displays main page for authenticated user
- User selects the Search Alumni Data option in the application
- System displays page that allows user to specify search criteria
- User enters the search criteria as desired and selects the Search option
- System locates and displays records matching specified criteria
- User locates the desired record and selects the edit option

- System displays all data fields available for editing
- User makes updates to data fields as needed and select the submit option
- System validates the entered data and displays any validation errors for review, if applicable
- User makes corrections to enter data, if applicable and selects the submit option
- System commits requested change and displays message indicating a successful update

4.) Logically delete existing alumni record

Description: Logically delete alumni record located in database using specified criteria

Actor: University staff member

Precondition: Criteria for desired record is known

Postcondition: The alumni record data is removed from the active view in the application but it retained in a logically deleted status

Actions:

- User navigates to Career Tracker application
- System displays the Career Tracker application login page
- User authenticates to Career Tracker application
- System verifies credentials and displays main page for authenticated user
- User selects the Search Alumni Data option in the application
- System displays page that allows user to specify search criteria
- User enters the search criteria as desired and selects the Search option
- System locates and displays records matching specified criteria
- User locates the desired record and selects the delete option
- System displays dialog requesting confirmation of request
- User confirms requested change by selecting applicable option
- System updates record to reflect a logically deleted status; record is removing from active view

5.) Display available report in database

Description: Display available data report available in database

Actor: University staff member

Precondition: Criteria for desired record is known

Postcondition: The report containing the requested data is displayed to user

Actions:

- User navigates to Career Tracker application
- System displays the Career Tracker application login page
- User authenticates to Career Tracker application
- System verifies credentials and displays main page for authenticated user
- User selects the Reports option in the application
- System displays page that allows user to select desired report and criteria
- User selects the desired report and desired criteria and selects the view report option
- System displays the requested report

6.) Export alumni data to file

Description: Download a file containing alumni data extracted from application

Actor: University staff member

Precondition: Criteria for desired record is known

Postcondition: The alumni record data requested is sent to user via file download

Actions:

- User navigates to Career Tracker application
- System displays the Career Tracker application login page
- User authenticates to Career Tracker application
- System verifies credentials and displays main page for authenticated user
- User selects the Export Data option in the application
- System displays page that allows user to specify search criteria
- User enters the search criteria as desired and selects the Export option
- System locates records matching criteria, creates output file, and generates file download for user containing desired data
- User downloads file from server

User Characteristics

The ability to effectively utilize the functionality provided in the application may be impacted by a user's general computing abilities. It is expected that users are experienced with operation of a computer and a web browser. In addition, it is expected that users possess an awareness of the purpose of the application and the associated data.

Assumptions, Constraints, and Dependencies

Assumptions

The following assumptions have been made:

- University staff will be fully cooperative in providing and fully describing user requirements as well as providing feedback on product design proposals
- The university possesses hardware and software to support operation of the application ongoing
- The implementation of this product does not, nor is expected to, imply any ongoing liabilities or warranties by the development team related to its use
- University staff will access the application using recent technology, such as web browsers supporting the latest standards

Constraints

Constraints identified as related to the product include:

- Application to be accessible via a web interface without operating system specific dependencies
- Application to be able to run on a Linux web server and support an open source relational database management system backend
- Application to allow for file imports and exports in specific, agreed upon file formats

Dependencies

The following dependencies have been identified:

- Web server that operates Node.JS server-side application
- Web server that operates MySQL relational database management system
- Web server with storage available to support application ongoing
- End user technology required for accessing application

Cooperation of university staff in identifying and fully understanding user requirements

Specific Requirements

External Interface Requirements

This section describes interface requirements for the Career Tracker application. These requirements identify how users of the application would interact with the system. Here we will also specify hardware and communication interfaces.

As of now, the user interface will comprise three main tabs: Alumni Data, Import Data, and Report. The Alumni Data tab shall display all alumni in alphabetical order with the ability to search for any specific one. The Import Data tab provides a way to import the spreadsheet data into the application and in the database with a click of a button. And the Report tab shall provide different reports based on the user's criteria.

This application should run on any hardware supporting Windows 10 and/or a Mac. Given that it would be a web application, no local installation of this latter is required. The application does not write information on the local machine, but pulls the data from the server and processes it to generate useful reports. The application makes use of the TCI/IP networking protocol to connect to the remote server other a wired or wireless connection.

Functional Requirements

A login system shall be implemented to restrict access to the Career Tracker application. Only authorized users, as defined by the School of Natural Sciences, would be granted access.

The application, Career Tracker, provides the School of Natural Science with a way to keep track of former students in a centralized database. It also offers the ability to add new data concerning alumni into the database. This data, with the generated reports, would help the office of the dean to have a better view of where and how their former students are working and whether they went to graduate school.

Performance Requirements

The application should run smoothly without delays. There should be a slight delay when making initial connection to the database to retrieve data. Any other calls to the database within the same session should be relatively faster.

Design Constraints

The application would only be accessible by authorized personnel within the school of Natural Sciences. No other department would have access.

The Career Tracker web application must run on the major platforms: Windows and Mac.

The Career Tracker app would also have to follow all of the applicable laws and We will focus on making the application compliant with FERPA. This would ensure that the confidentiality of student and/or alumni records and data is protected.

Logical Database Requirements

The system shall store both alumni and all user account record and data within the school of Natural Sciences in a centralized database. The following information about the users of this web application will be collected and used: login Id, full name, email address. All this information will be stored in the same database file. The email address would offer the user the option to receive any further information or update about the software and help them recover or reset their password. Within the database, all this information about user accounts shall be sorted in alphabetical order.

Software System Attributes

Reliability

The Career Tracker would not crash as a result of bad or invalid input file. If the user was to upload the wrong kind of file, they would receive a message specifying the type of error that has occurred and prompt them to try again. Before the system could load the data on the import file to the database, it first checks the validity of the given file. If it passes this test, then the data is transferred over. This is to ensure that the system remains reliable.

Availability

If an unfortunate event was to occur and the system crashes, a restart of the application would correct suffice to allow the user to resume their tasks. Data not saved at the time of the crash shall be lost. After the restart, the application shall be available, and the user would have to log back in to use the application.

Security

Given that the Career Tracker is a web application, security is implemented in the application itself for better protection. The system is equipped with a login subsystem. This prevents all unauthorized users from signing in. If they try to connect, they shall receive an error message since their credentials are not recognized. All user passwords aren't sent in plain text over the network, and all the data passing through the system is encrypted.

Maintainability

The system is easily maintained should a bug be discovered or brought to the school's attention. Periodic code reviews shall provide a better application with very minimal bugs. Administrators can, in an easy fashion, add new users into the system. New features, likewise, can be added to the system by making a few changes to the existing code.

Portability

Because the application shall be written in a platform independent programming language, it would be able to run on Windows and Mac OX for portability. The application will be written using Angular (for the frontend) and Node Express (for the backend). As for the database, MySQL would do just fine.

Individual Contributions

Introduction by Anthony Freitas

Overall Description by Scott Shrout

Specific Requirements by William Ntumba

Key Personnel Information

William Ntumba – Development Team, Team Leader

Scott Shrout – Development Team

Anthony Freitas – Development Team

Dana Hope – Project Sponsor