Database Design Report

BACKGROUND REVIEW FOR TIMESHEET TRACKER

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Introduction

The purpose of this project is to help TECHCareers instructors to easily see the summary of hours students spend on their assignments and practice. The instructors can add assignments with a project template and assign them to individual students easily. The hours entered by students can be monitored and tracked therefore understanding the student's struggle.

Average hours spent on a project is summarized in the summary page, the instructors can determine overall whether the assignments are easy or difficult. Each assignment will have a name and an ID associated with it to investigate individual details about hours in the assignment. Based on the historical data of each assignment, instructors can estimate future projects easily.

Additionally, this project also helps students to be committed to the submission of timesheets in an ordered manner without training using an intuitive user interface. The students will be able to enter their hours and view their progress.

Background

Based on the Database Design Basics principles, Input/Output has identified numerous fields required when an assignment, student, and instructor was created.

Within the assignment document we identified fields:

- Title
- Deadline
- Github Repository
- Introduction
- Requirements
- Rubric
- Reminders

Within the Instructor, we identified fields:

- Name
- TECHCareer Email

Within the Student, we identified fields:

- Name
- Email
- GitHub account
- TECHCareer Repository

Field Observations

INSTRUCTORS

On October 1, 2020, an email was sent to TECHCareers instructors regarding the potential improvement to the current Master Timesheet and any additional features the instructors wish to add. On October 2, 2020, TECHCareers instructors responded highlighting a few key fields and features they wish to see:

- Roles assigned to users either students or instructors
- Assign cohort numbers to students
- The student should be able to edit their hours on assignments
- Instructors should be able to have an overview of average time spent on assignments, individual student timesheet
- Delete and add new assignments
- Passwords can be stored using Google Account sign-in as everybody is provided with a Ualberta account.

Lastly, a short discussion with TECHCareer was held on October 2, 2020. It was suggested that this project was to be developed in three stages Phase 1, 2, and 3.

STUDENTS

Google Form was created and published on October 1, 2020, to investigate response from 4.1 Cohort students about potential improvements about the Timesheet Tracker. Five responses were received and evaluated on October 3, 2020. The responses are summarized below:

- Three responses were interested in the deadline alert feature
- Two responses were interested in hours analysis

Additional responses and comments were noted:

- A list of future and upcoming project
- Readable and user friendly
- *"Validation of time, for example, if an assignment takes 5 hours then it won't allow a user to go beyond that, and other validations depending on the requirements and context".*
- *"Something that just does what it says on the box - simple and elegant app".*

Results

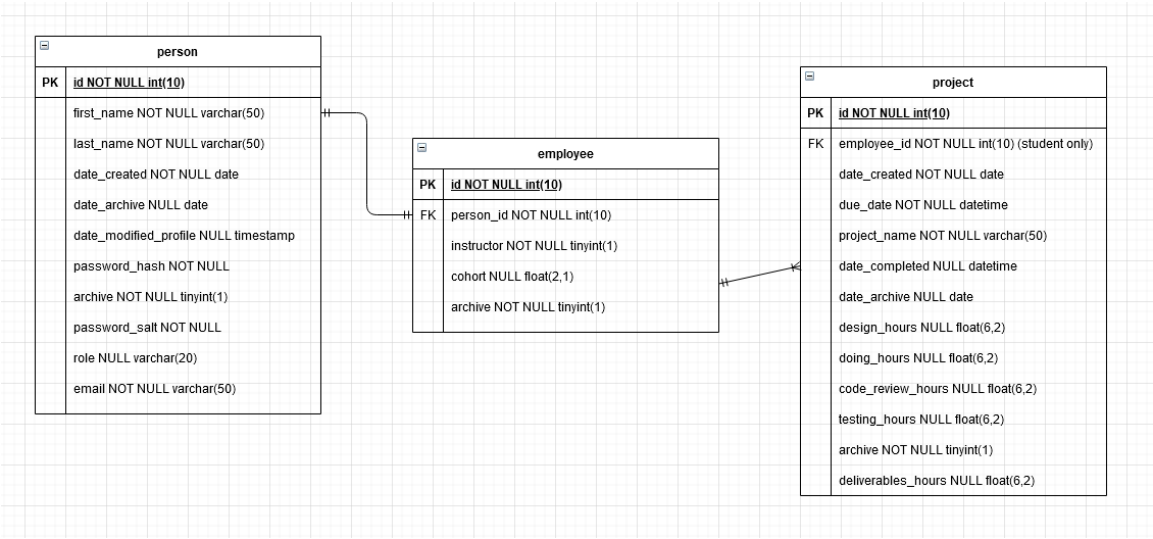
Based on the background research, Input/Output has identified several key fields that will be included in the database collection and design. These fields are identified using the Create, Read, Update, and Delete (CRUD) concept. We identified three tables, Person, Employee, and Project table. Furthermore, we have identified foreign keys such as person foreign key and employee foreign key.

The fields identified for each table are shown below:

Person Table	Employee Table	Project Table	
Unique ID Number	Unique ID Number	Unique ID Number	Deliverables Hours
Email		Employee Foreign Key	Archive
First Name	Person Foreign Key	Project Name	Due Date and Time
Last Name		Date Completed	Date Created
Password	Instructor	Date Archive	Design Hours
Date Created		Doing Hours	Code Review Hours
Date Archive	Cohort	Testing Hours	
Date Modified			
Archive	Archive		
Role			

ENTITY RELATIONSHIP DIAGRAM

Based on the field identified, we have created an Entity Relationship Diagram as shown below:



Conclusion

Based on our database design research, Input/Output have identified key fields to help develop Timesheet Tracker. Based on the response received from field observations, Input/Output noted that both TECHCareer instructors and students are enthusiastic about the Timesheet Tracker. Instructors are interested in the average hours analysis for assignments issued and on students' total hours. Add/delete assignments and assignment of cohort numbers to students. Students are deadline alert, future upcoming assignments, and hours analysis.

Recommendations

Input/Output recommends developing this application in three phases, Phase 1, 2, and 3. In Phase 1, Input/Output will be focused on developing a Minimum Viable Product (MVP) for both instructor and student use. MVP will mirror the current [4.1] Master Timesheet, which includes, summary sheet, student timesheet, and template.

Phase 2 will include group and capstone based timesheet tracker, alert feature, and group/capstone feature. Finally, Phase 3 will include further analysis such as normal distribution and regression analyses.