Software System Engineering

Final Year Project

SHIKSHA The Planner

Functional Requirements Document

-By CALTOR TEAM

[Earl Jedrick Macalino, Glaiza Regonas, Umangi Patel]

CONTENTS

1. Introduction

A Web-based application for Academic Transition Program.

1.1. Purpose

This document is for determining the behavior or the intended behavior of the grading calculator, and academic plan description for the services that the software is offering, define the system and its components.

1.2. Scope

Grading Calculator and Academic Plan System is basically updating the manual system that is currently used by Academic transition program into an internet-based application so that users would have ease of access in accessing their accounts. It is specifically designed for students who are in probation period since it will offer a customized interface catered specifically around them. The Grading Calculator System would be available for any students in academic transition program as well as the teachers/professors assigned to academic transition program.

1.3. Background

Normally, the academic transition program students would rely on an excel sheet to manually input their grades then the existing excel template would generate the grades for them. Currently, the excel template consists of many tabs that would let the users have a hard time to navigate, also it consists of many errors that the Instructor needs to fix and redistribute the excel template. We plan to fix that with a user-friendly interface to make it more convenient while also having data confidential and security in mind and less errors.

1.4. References

1.4.1. Template References

Excel Template for Grading Calculator

Excel Template for Academic Plan

1.4.2. Meeting Summary with Stakeholder

Dates	Summary
25th Sept 2019 at 3:30pm	• Got a brief explanation on how their current grading calculator works on excel. • Details on what and how they want the website to look.
26th Sept 2019	• Attended SSW ACT class and got the template for their class.
15th Oct 2019	• Requirements and academic plan discussion • Feedback on lo-fidelity pages.

20th Dec 2019	• Discussed design requirement • Showed what we had that is high fidelity discussed what changes they need in that
30th January 2020	• Update meeting • Front-end feedback was given and Luanna (stakeholder) told us she wanted more dynamic pages rather than our static one.
1st April 2020	• Zoom call meeting • Final showing of the website and any changes

1.5. Assumptions and Constraints

This Document is based on the assumption that there would be no change in the process of calculating the grades, and also academic plan for the constraints, the system should be adapted to English, all the interfaces and also must be configurable.

1.5.1. Assumptions

We are assuming that application is for students who are in academic transition program. We can also assume that inputs would come from either touch screen keyboard or the computer keyboard and we would rely on this for applications navigation.

1.5.2. Constraints

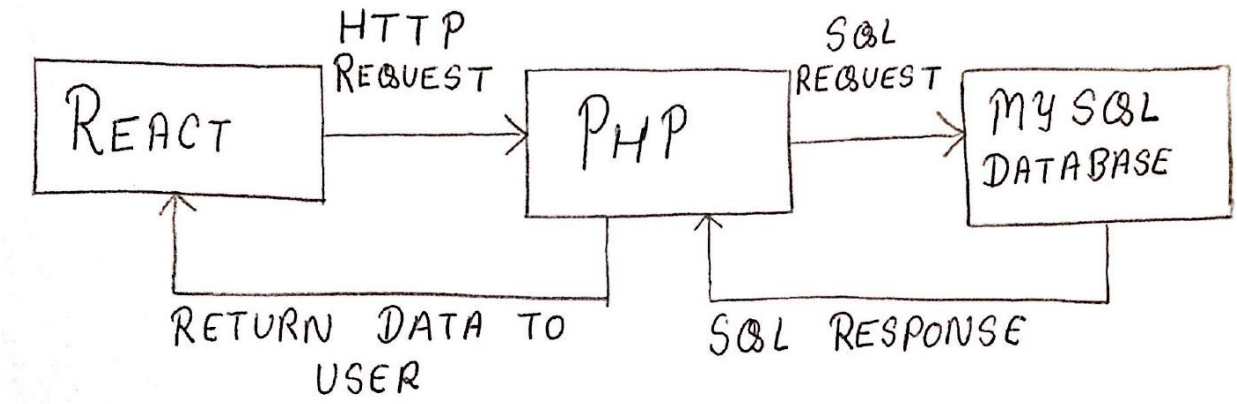
Users will need to enter their previous grades in order to determine their UGPA and store it in the database. Not free to design what we want; we must constantly meet with the stakeholders for them to approve every step we make.

2. Methodology

The approach used to determine the FRD content is to not use as much technical definition that would overwhelm the reader. Images placed to help readers understand more of what is being described especially when being technical.

3. Functional Requirements

3.1. Context

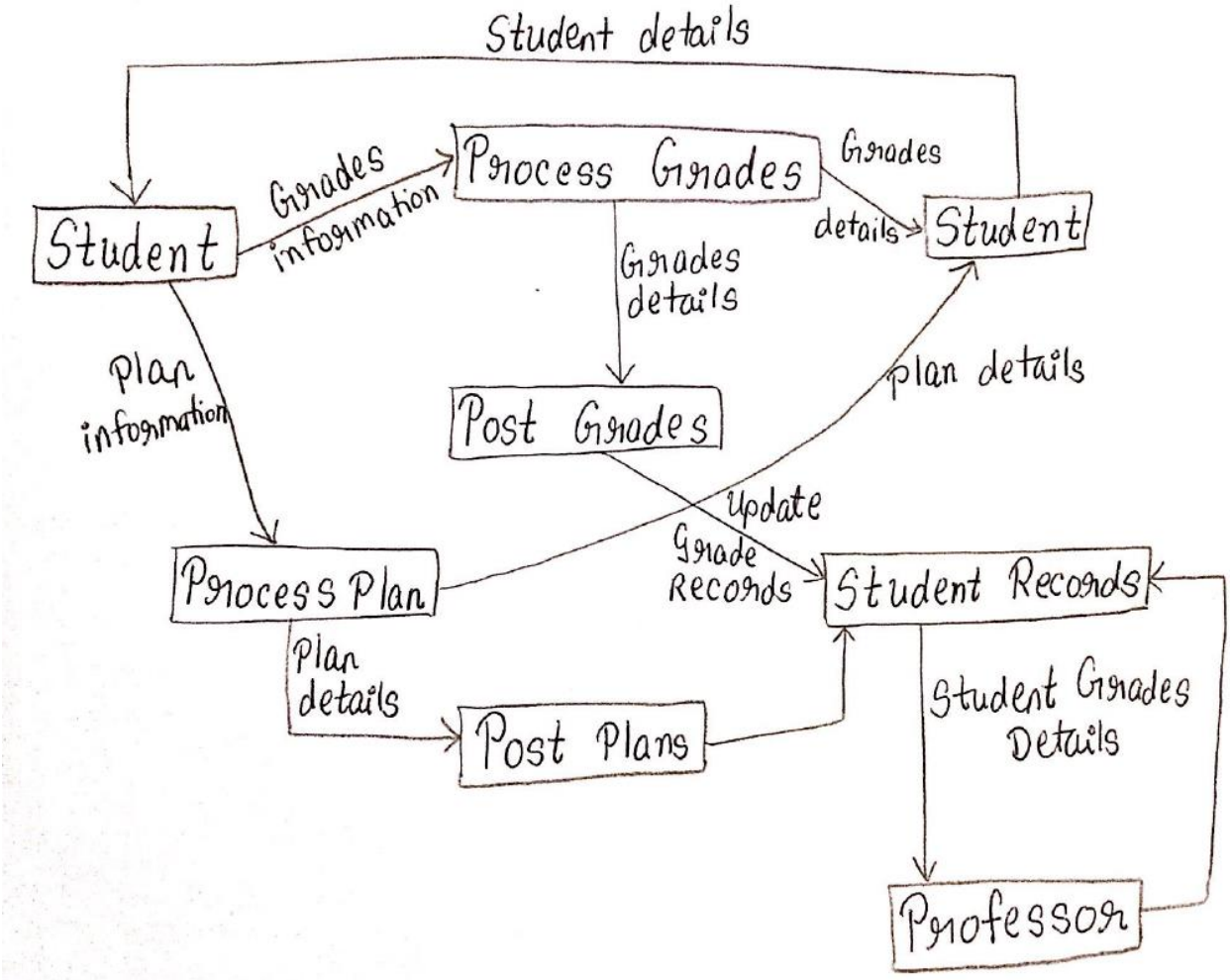


3.2. User Requirements

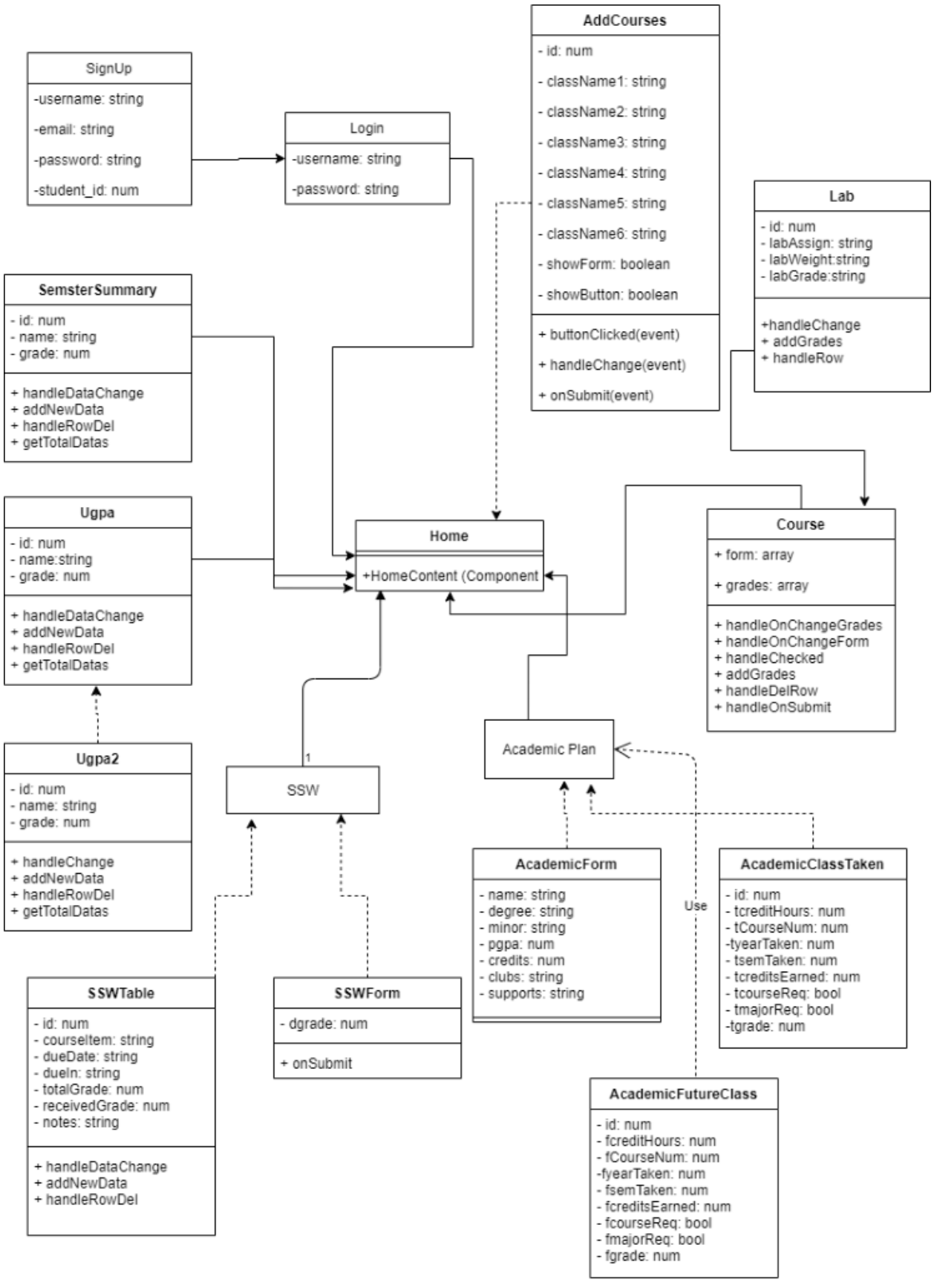
The Grading Calculator must be able to:

- Have user signup and log in
- Stores user's inputs (assignment grades, grades from previous classes)
- From those stored data be able to calculate the user's UGPA according the University of Regina standard
- Have those data and calculations saved when the user logs back in so that they don't have to keep entering their grades
- Have a different section for the Academic Transition Program class
- Include a Learning section where the Instructor will be able to teach students how to use the application properly

3.3. Data Flow Diagrams



3.4. Logical Data Model/Data Dictionary


SignUp
-username: string
-email: string
-password: string
-student_id: num
Login
-username: string
-password: string
AddCourses
- id: num
- className1: string
- className2: string
- className3: string
- className4: string
- className5: string
- className6: string
- showForm: boolean
- showButton: boolean
+ buttonClicked(event)
+ handleChange(event)
+ onSubmit(event)
Lab
- id: num
- labAssign: string
- labWeight:string
- labGrade:string
+handleChange
+ addGrades
+ handleRow
SemsterSummary
- id: num
- name: string
- grade: num
+ handleDataChange
+ addNewData
+ handleRowDel
+ getTotalDatas
Ugpa
- id: num
- name:string
- grade: num
+ handleDataChange
+ addNewData
+ handleRowDel
+ getTotalDatas
Home
+HomeContent (Component
Course
+ form: array
+ grades: array
+ handleOnChangeGrades
+ handleOnChangeForm
+ handleChecked
+ addGrades
+ handleDelRow
+ handleOnSubmit
Ugpa2
- id: num
- name: string
- grade: num
+ handleChange
+ addNewData
+ handleRowDel
+ getTotalDatas
1
SSW
Academic Plan
AcademicForm
- name: string
- degree: string
- minor: string
- pgpa: num
- credits: num
- clubs: string
- supports: string
Use
AcademicClassTaken
- id: num
- tcreditHours: num
- tCourseNum: num
-tyearTaken: num
- tsemTaken: num
- tcreditsEarned: num
- tcourseReq: bool
- tmajorReq: bool
-tgrade: num
SSWTable
- id: num
- courseItem: string
- dueDate: string
- dueIn: string
- totalGrade: num
- receivedGrade: num
- notes: string
+ handleDataChange
+ addNewData
+ handleRowDel
SSWForm
- dgrade: num
+ onSubmit
AcademicFutureClass
- id: num
- fcreditHours: num
- fCourseNum: num
-fyearTaken: num
- fsemTaken: num
- fcreditsEarned: num
- fcourseReq: bool
- fmajorReq: bool
- fgrade: num

3.5. Functional Requirements

The Grading Calculator must be able to:

- Have user signup and log in
- Stores user's inputs (assignment grades, grades from previous classes)
- From those stored data be able to calculate the user's UGPA according the University of Regina standard
- Have those data and calculations saved when the user logs back in so that they don't have to keep entering their grades
- Have a different section for the Academic Transition Program class
- An academic plan that will help student plan out their future classes

4. Other Requirements

4.1. Interface Requirements

Rows will need to be dynamically allocated in a table whenever a user needs to add more information. For example, adding another assignment in a course; adding completed, current or future courses in the academic plan.

4.2. Hardware/ Software Requirements

Any web browsers can be used to access the application and any hardware should also be used to access it. SHIKSHA The Planner is made to fit in any screen size, though the application layout may look better on a bigger screen (Laptop, Desktop, iPad).

4.3. Operational Requirements

4.3.1. Security and Privacy

A. State the consequences of the following breaches of security in the subject application:
   1. Loss or corruption of data may result in the user to start over by signing up again and losing all their saved progress.
   2. Disclosure of secrets or sensitive information may result in student's sensitive information (grades, courses taken) to be made public and possibly be used for malicious acts towards the intended user.
   3. Disclosure of privileged/privacy information about individuals such as their name, University of Regina email address, password and student ID would result in data spill. Which would possibly mean that SHIKSHA The Planner will not be used anymore by the Academic Transition Program and, the developers will have to deal with legal matters.
   4. Corruption of the software or introduction of malware, such as viruses could potentially result in breaches mentioned above.

B. State the type(s) of security required. Include the need for the following as appropriate:

1. There is no physical security required.
2. Currently all users have access to the same roles, but that might change. An admin role might be added for Instructors to use to edit, delete or add users/students and be able to look at the student's progress.

4.3.2. Reliability

A. State the damage can result from failure of this system—indicate the criticality of the software, such as:
   1. Students using this application would lose their data and would not be able to have proof that they did use the application. This would mean that might not get the grade for using this application and could possibly result in a failed grade in the program.
   2. The Instructor teaching the course would then have to figure out how to deal with the system failure and how to grade the students according. This is a loss of employee productivity.

B. What is the minimum acceptable level of reliability?

   The goal for the application is to have an accurate calculation for the marks being inputted by the users and for those marks and information stay private and secure to just be seen by the user.

4.3.3. Recoverability

There is no recoverability function implemented currently for the application.

4.3.4. System Availability

SHISKHA The Planner is currently running on localhost so it will not be available right now to the public. But once it gets transferred to one of the University of Regina servers, it will be available anytime and hopefully anywhere.

4.3.5. General Performance

A. Response time for queries and updates is the right way.
B. Multiple users can use at the same time.

4.3.6. Capacity

The capacity for the data will depend on how much server space will the University of Regina give to store the application.

4.3.7. Data Retention

The goal for the application is to be able to retain data from users who are inactive for approximately 4-5 years to follow with the University of Regina Self-Service where final grades information is available to be viewed for students for that same period time.

4.3.8. Validation Rules

Validation rules are in place in the front-end development. Users must sign up using their University of Regina email and nothing else. For UGPA Page, users should be able to enter their completed and current courses with their respective grades. For SSW ACT Page, users should be able to enter course details such as assignment name, its due date, grade received and notes if needed. Also, there is Book Section which counts on chapter readings. For other courses page, uses should be able to enter its detail included their lab information if they have for that course. For Academic Plan, User should be able to enter their completed courses with their received credits and fill up the form with their information. This all work should be saved in users account.

5. Appendix A – Glossary

MySQL: It is an open source relational database management system. SQL stands for Structured Query Language.

HTTP: It is used for accessing any file or page by many websites. HTTP stands for Hyper Text Transfer protocol.

PHP: It is HTML – embedded server-side scripting language. PHP stands for Personal Home Page

HTML: It is standard markup language used for creating web pages and applications. HTML stands for Hyper Text Markup Language

REACTJS: It is JavaScript library for developing user interfaces.

SHIKSHA: It is a Sanskrit word that means the way of getting knowledge.