Software Architecture

Report for Combined Project 2017

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# Introduction

This is a record keeping system where all the data is stored in Mysql database and this data can be manipulated through the Graphical User Interface (GUI).This system is basically is for Teacher and Admin where teacher has access only to results frame where teacher can browse the results of the student and teacher has different options there like entering the results for a single student or for the whole class group and teacher can update,delete any entry or record associated with the student results on the other hand admin is responsible for maintaining the records for

* Program
* Module
* Prog\_Module
* Class Group
* Teacher
* Teacher Teaches
* Student

and admin can only view the results of the students.

**Read Me:**I have used a jar file to get my JTable working in order to run the program you need that jar file in the project, This is the link for the jar file where you can download it and import in the Project Library

<https://drive.google.com/open?id=0B8GaqGhlR7r5LWg4ejRackVEM0k>

# Screen-shots

This is a link for the screenshots of the working project where screenshots are bit explained and shows that how the project works:

<https://drive.google.com/open?id=13OwmqAfXUTwoRVtRO83WYXtQpRunpimGRmzP5HbgLuU>

# Initial Phase

## 

## Current System

The Current system has following features

* Current system is in the main manual with some tutors using simple spreadsheets or word.
* Volume of records is approximately 500 per year.
* All FETAC modules and awards are listed in the FETAC handbook.
* All awards offered by the FE college are contained in the FE prospectus.
* All FE colleges are required to provide data to the Dept of Education in the form of a database detailing all class groups, student names and numbers. this database is developed using the Facility Administration application and a copy of this database is available.

List of problems with the current system

* There is no unified system where all data is gathered so it is hard to provide the Dept of Education with a database.
* Using different methods it is easier to make a mistake and hard to spot it.
* There is no data integrity enforced.
* There is no relational integrity enforced.
* It is harder to provide the system with a back up.
* It is difficult to relate data and get reports.

## New System

**Set of Requirements**

These are the following set of requirements for the new system

* A menu-driven application which will allow tutors enter exam results for students as assessments are completed. It should be possible to enter results for a single student or for a class group.
* A system which will provide various types of reports, eg a full learner record for a student, results for a particular module for a class group, results for a particular module across all groups, a list of distinction students for a module, a full results report for a class group, etc
* the system should be user friendly with the minimum amount of input required, eg data entry should be by selection rather than by typing.
* A unified system for keeping records
* A system that allow users to input records per student or per class group.
* A system able to produce reports.
* User-friendly.
* Secure.
* The system must allow user either add or delete records.

## UML Diagrams List

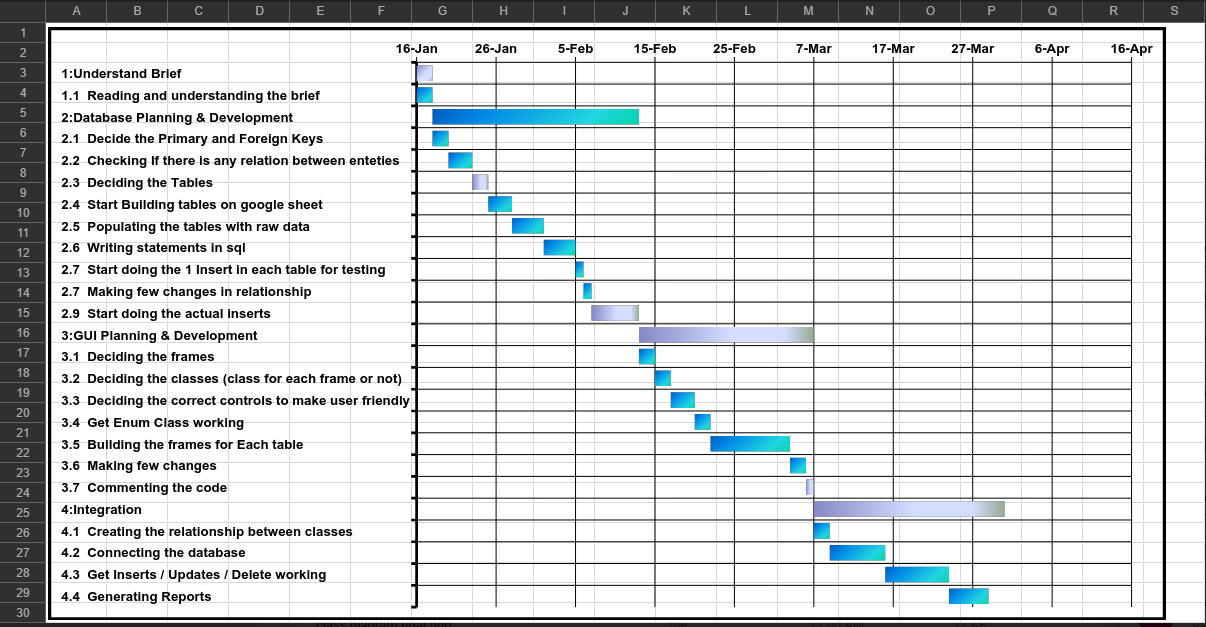
These are the UML diagrams needs for the Current and new system.

* Use Case Diagram Pre
* Use Case Diagram Final
* Class Diagram Initial Stage
* Class Diagram Final
* Activity Diagram (Activity 1)
* Activity Diagram (Activity 2)

# Project Development Phase

## Development Plan

Gantt chart representation of my development plan.



Here is a graphical analysis of my phases, tasks and dates:



# 

# 

# 

# 

# 

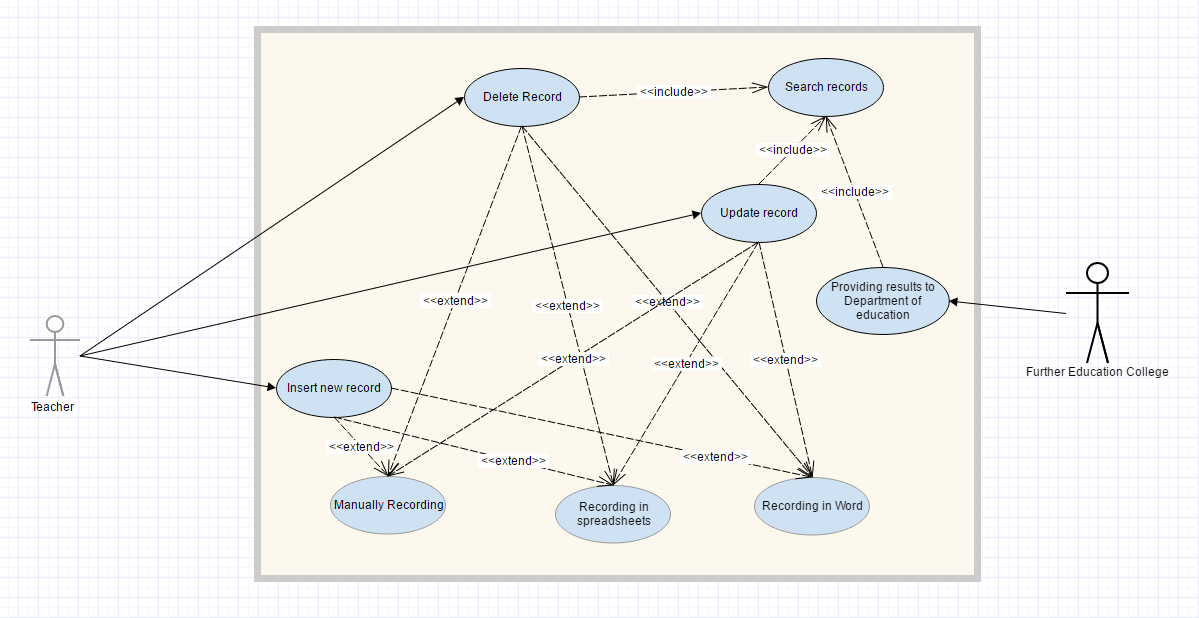
# 

# 

# System Requirement Phase

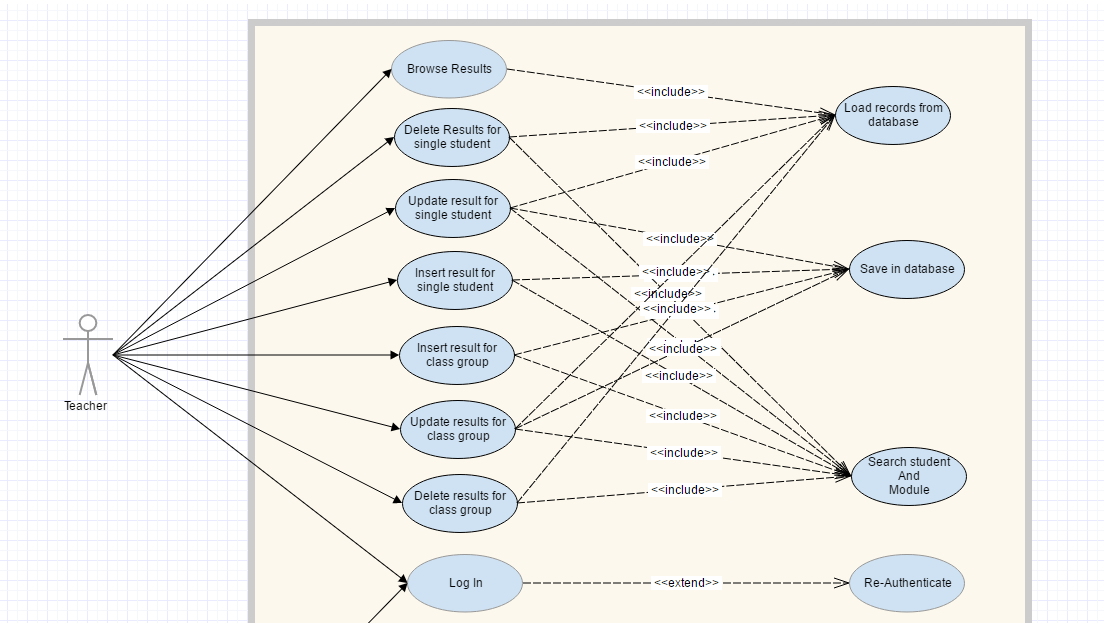
## Use Case Diagram of Current System

The following image is a use case diagram of my impression of the current system:



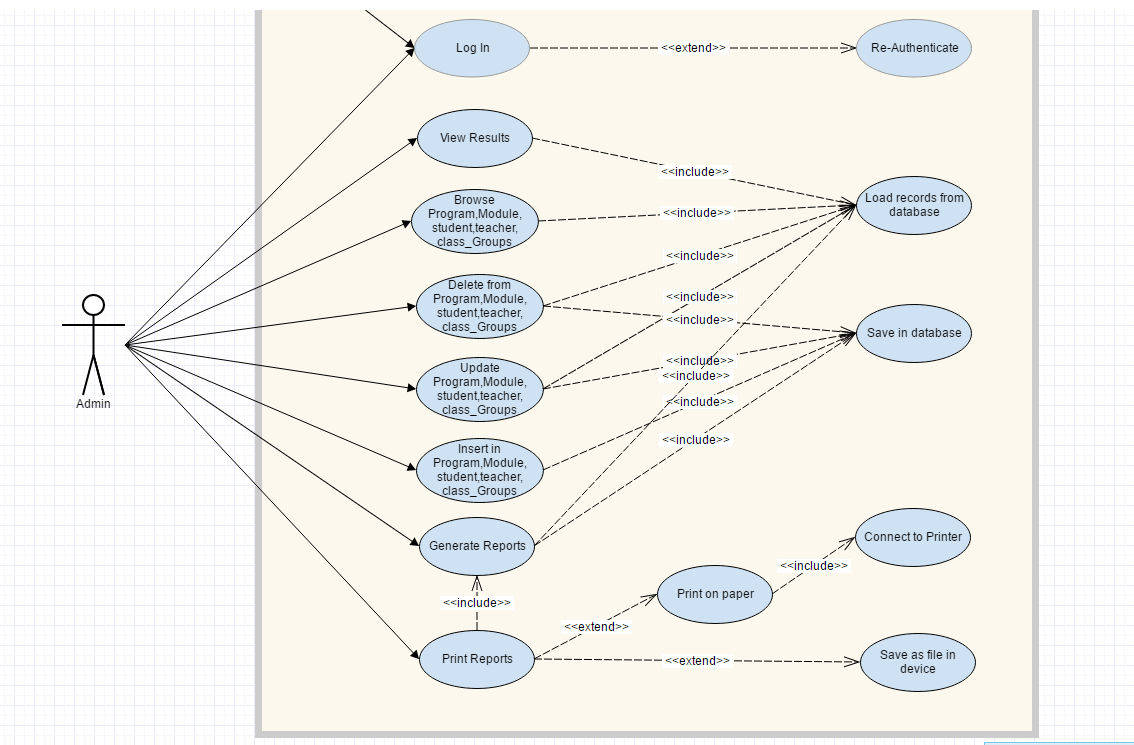
## Use Case Diagram for New System

The following image is first part of a use case diagram of my new proposed system regarding Teacher and Admin:



## Use Case Diagram 2 for New System

The following image is the second part of my use case diagram for my new proposed system:



# Technical Solution Proposal

## Class Diagram New System

This is the link for my pre class diagram

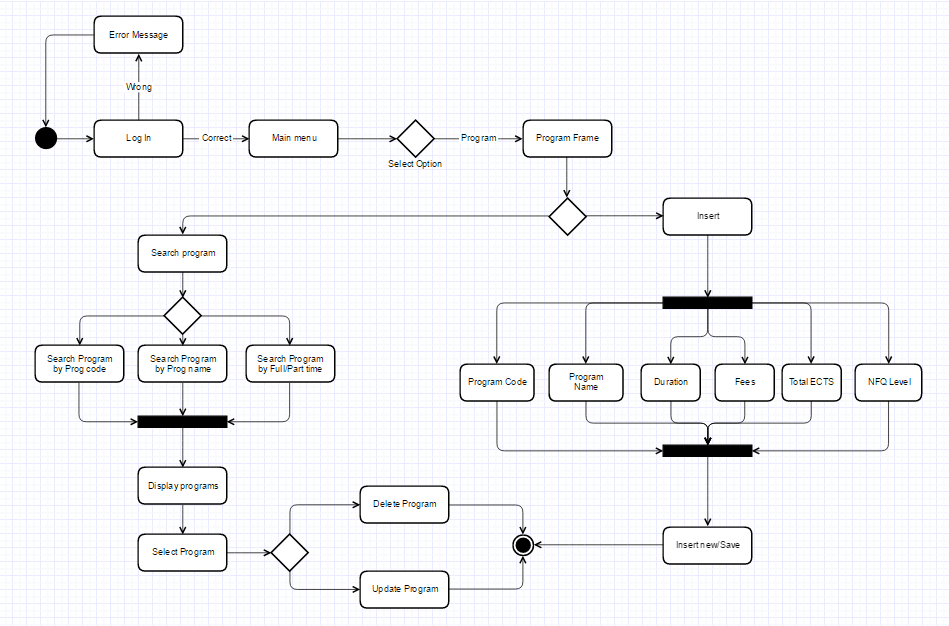
<https://drive.google.com/open?id=0B8GaqGhlR7r5b1JFNTlyT1Y2R2M>

And this is the link for my final class diagram

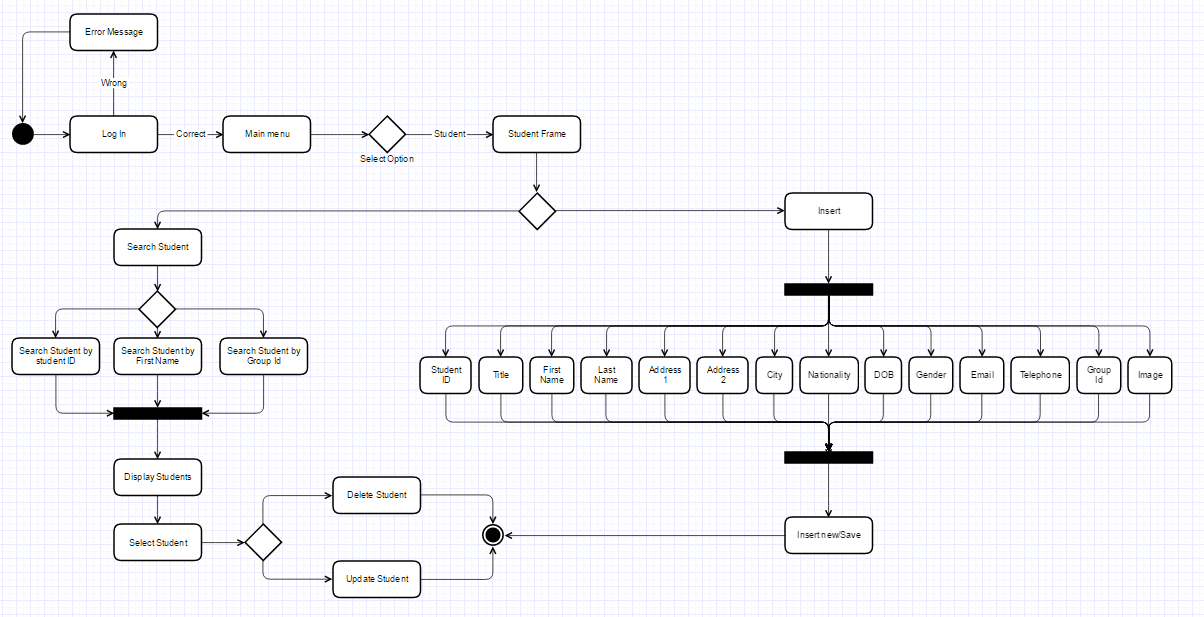
<https://drive.google.com/open?id=0B8GaqGhlR7r5eDRqamVPM0dmRm8>

## Activity Diagram New System

This is my UML Activity Diagram which models the Program frame from new system that I am implementing:



And this is my UML Activity Diagram which models the Student frame from new system that I am implementing:



# Possible Solutions for project

I am using three target systems for the creation of this system.

* Mysql workbench
* JAVA
* Netbeans

The reason that I am using these systems because I have been learning about these tools for a year and my teachers taught me about these.

## Alternative Technical Solutions

These are the three targets I could use to build this project

* Microsoft office access
* C++
* Eclipse

# Design Document

## Problem Partition

These three sections were involved while I was working on my project

* Graphical User Interface (GUI)
* Database
* Coding

***GUI:***

When I was doing my gui part planning was the biggest challenge for me because at the initial stage I did not plan much about my gui so that wasted my time because I had to redo few portions of my gui like I changed few controls and there were few controls I never used before so I had to learn about them because there was need to use those controls in this project so I spent somtime to learn about those controls from scratch.

***Database:***

The problem I faced while I was doing my database was relationships between the entities and it was so important to have the right relationship because that’s the core of the whole project and database in the base of the whole project because if the database or the relationship is wrong it would cause the problem to the functionality of the system and would not work as it should according to the requirements and other problem was querying the stuff from database like joins and unions were pretty difficult at the initial stage.

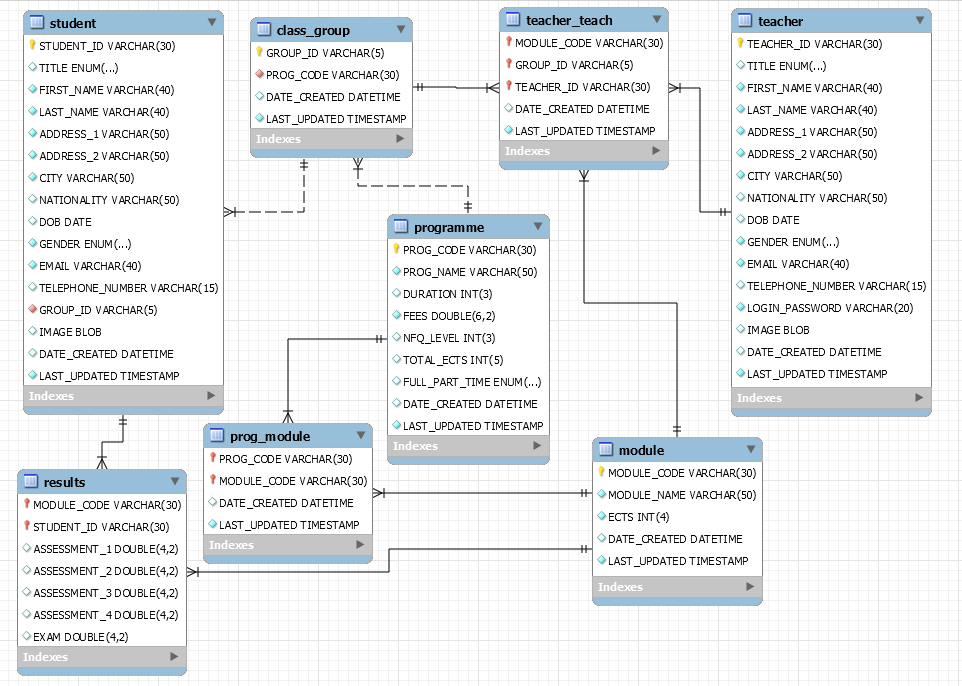
***Code:***

Connecting to database was a bit hard because I had never done that before it was entire new concept for me and there were many stages where I was stuck like parsing the ordinary date to mysql date format and get my queries working through the gui.

## 

## Table Relationships

Here is an image of my Entity Relationship Diagram of mysql project:



## Tables SQL Create statements and screenshot of table with data

## Create Statements:

This is the following link for the create statements

<https://drive.google.com/open?id=0B8GaqGhlR7r5bGJZWlNQR0xuWk0>

OR

<https://drive.google.com/open?id=13CFWwOyKZ3xgsQ3fEjA8BayDzQoL4WAMgw7QQl4DVc4>

## Inserts:

This is the link for the table inserts

<https://drive.google.com/open?id=0B8GaqGhlR7r5d19GTnZ2WUwtVUk>

## Queries:

This is the link for the project queries I have used in my project

<https://drive.google.com/open?id=0B8GaqGhlR7r5dnVpSzhoOXZ3X3c>

OR

<https://drive.google.com/open?id=19AGjjU3MyOsRsMRLxokaL6aWCBfTRM2YbpA1p4eBYuo>

## Database Screenshots:

This is the following link for the database screen shots

<https://drive.google.com/open?id=1p_IayE687hbjZ9zGXMBtWtlulVd1BOfrimiX8T9JQos>

## Tables Showing Relationships

Teacher Table has one to many relationship with Teacher Teacher Teaches Table

Module Table has one to many relationship with Teacher Teaches , Prog\_Module and Results Table

Program Table has one to many relationship with Prog\_Module and Class\_Group Table

Class\_Group has one to many relationship with Student and Teacher Teaches table

Student Table has one to many relationship with results table

## Security Considerations

I have two login systems in my gui one is for teacher and the other one is for admin, To login teacher and admin has to enter the username and password

Teachers username is basically the teachers id and there is unique password for each teacher which is stored in database For Example

Username: T001

Password: Ted123

And for the admin username and password is required in order to access to the different functions of the project , Username and password is for the admin

Username: admin

Password: admin123

## Test Cases

This is the link for the project test cases

<https://drive.google.com/open?id=1rV0C41J70J5xv6VeiEg5HBkLktaN3JmtXRlJwKm6lLk>

## Project Development Plan Review

If I get a chance to do the same project again I will do several things differently like I will make a plane to do this project and give the equal time to each part of the project like Gui Code and database and I would do tiny work every day so I could meet the deadline and no rush at the end and I would really really concentrate in the Documentation Because this was the most difficult part for me in this project which includes the Diagrams like Use case Diagram,Activity Diagram and other diagrams.