# Project Description

Class Record is a program that is made to make class management for senior high and college teachers easier and more efficient. Instead of using tools that are not made for class management (such as Microsoft Excel), this program is specially made for the recording of important class data and thus automates many computations and tasks that would otherwise be necessarily made manually if non-specialized software were to be used. Besides making grade computations and recording a whole lot easier, Class Record also has facilities for helping teachers’ productivity such as reminders, class schedule management, and attendance recording. The program was designed to be perfectly intuitive, so that people instinctively know how to operate the program even without training. Statistical analysis is deeply integrated into the system, allowing the teacher to view class statistics in one screen so that action can be taken on problematic students as early as possible.

The complete elimination of Microsoft Excel from the management of classes provides the following benefits:

* The teacher will no longer have to buy the Microsoft Office suite to compute grades automatically.
* Entering scores will no longer be awkward and more visually consistent since the data is displayed in a manner that is most fitting for showing grades and scores of individual students.
* While Excel is perfectly capable of computing grades, its function is so generalized that it becomes confusing and error-prone for many users. Distributing Excel workbooks with locked cells not only prevents users from editing data that should be edited from another worksheet, but also causes confusion (“Why can’t I edit this? I need to edit this!”) and causes more problems if the distributed workbook actually contains errors in its computation formulae and even more experienced users has has are not allowed to edit it.
* Having too many buttons on screen is confusing and takes up screen space. Running Excel on a laptop with a small screen makes entering data very difficult.
* On a computer with limited RAM, running Excel may make the computer run slow because of the resources that Excel uses, whereas running a program that is only meant for its purpose will allow the computer to run smoothly, helping the teacher to become more productive.
* Having only one program to open to view all class records is a lot easier than browsing folders and looking for the right Excel file then waiting for Excel to load.
* Not all teachers have a personal computer, and not every computer has Microsoft Excel installed. This program will allow teachers to record and compute grades anywhere if they have a flash drive.
* Since Office files (Word, Excel, PowerPoint) are a famous vehicle for virus files to spread, avoidance helps protect computers from getting infected with virus.
* Easier improvement, maintenance, and adding of features.
* Better security, since not everyone can access the data.

As for technical advantages, the program makes use of various technologies that should enhance the experience of class management.

* This program makes use of Java to allow the program to run on any desktop operating system. These include Windows (7-10), Mac OS X, and Linux. The CPU architecture should not matter. If a Java Runtime (at least version 9) is present, the program will run.
* This program makes use of the Apache Derby database engine, to ensure the highest database corruption resilience and future scaling of data, allowing storage of terabytes of data. This also eliminates the need to set up a separate database server configuration, allowing easy program setup and troubleshooting.
* This program makes use of Java FX for its user interface, which provides more flexibility than traditional GUI frameworks, allowing advanced control sizing and positioning, theming, effects, and animations. This also results in consistent appearance even when ran on different operating systems, avoiding confusion arising from changes in visual appearance.
* The program is designed with the Model-View-Controller method, meaning the program can act more intuitively to changes in data, therefore making the program very easy to use even for complete beginners since they get what they expect to see.
* Computation of grades make use of arbitrary precision, meaning grades are computed to the best possible accuracy, never allowing round off errors to creep into the computation process. Excel does not make use of arbitrary precision computations, so small rounding errors may build up and affect the final grade of the student.

# Objectives

This program aims to automate the computation of grades of senior high and college students and assist in data entry to help teachers become productive. Several functions are implemented into the program to completely replace Microsoft Excel in the workflow of grade computations and added more features that Microsoft Excel is not able to provide (or at least not able to easily provide). These features include student information management, class information (attendance, enrollees, criteria, tasks, and scores) management, reminders and memos for helping the teacher remember important dates and deadlines, and keeping related data such as class card numbers, and student course (for classes that have students from different courses). These features aim to be self-explanatory, intuitive, and administrable from a single consistent, reliable, and aesthetic user interface, so that anybody can take advantage of the program regardless of the computer skills of the user.

# Scope and Limitation

As mentioned above, this program is mainly concerned with the management of senior high and college classes in the Philippines. This program covers the management of known students together with their data, classes and class info, those enrolled in those classes together with the relevant data that are crucial in computing the final grade of the student, and reminder features for reminding teachers about upcoming events and other personal notes. As wide as this feature set may be, the program is still in Alpha version, and there are things that the program has yet to offer. These include:

* Generation and printing of reports (the teacher will have to manually copy the various outputs of the program into official school forms)
* Data loss involving mistakes performed by the user, such as saying “Yes” to confirmation of data deletion and infection of viruses. There are no “Undo” features offered except for “Cancel”, so once an action is committed, the only way back is to manually undo the operation. (With that in mind, he program is safe from technical errors such as sudden power outages and program crashes in case it occurs. However, the program is not safe from physical errors such as data corruption due to malfunctioning CPU, RAM modules, or storage devices). In any case, pushing the program’s data protection mechanism to its limits and not performing any precautions towards avoidance of data loss is not suggested. It is still the user’s responsibility to keep the data safe from any harmful events that may cause harm to the data. The program’s corruption mechanism is only there as a backup.
* Due to security reasons, the data stored inside the database is not encrypted. While it is not stored in plain text, it is still accessible with the right tools and with the proper know-how. This was done to allow a user to still access the data in the event of forgetting their own password. As any knowledgeable cryptography expert will tell you, perfect security involves encrypting everything using a key derived from the password, and without the password, nothing can be retrieved. The username and password mechanism is only provided to discourage people with good intentions from accessing the data without permission, and to offer user privileges and permissions in the near future.
* This software is still in Alpha version. Many more features are intended to be added on the final release of the program, such as automatic score computation, easy creation of examination questionnaires, more statistical analysis, more Dashboard notification providers, and wider language support.