

## Abstract

The Department of Education of Puerto Rico (DE), has begun to implement and improve its administrative processes using web technology. Platforms such as SIE (Student Information System), a system that collects, manages and stores all data related to students and the academic offer in schools, allows the teacher to perform tasks in a more efficient and cost-effective manner. Process that in the case of the Vocational School Miguel Such is extremely tedious and archaic, where much of the data collected is redundant and poorly processed due to lack of standardization and protocols in the processes. This often resulted in duplication of work and the incurrance of incorrect information causing the pre-admission process to be affected. The implementation of mobile technology through the development of an app, could speed up the pre-admission process by guaranteeing the collection of data in an orderly manner without redundancy and duplication of work.

## Introduction

As mobile devices such as smartphones, PDAs and tablet PCs are becoming increasingly popular, mobile applications exert a great influence on the way people communicate and access information [1]. The Metropolitan Vocational High School Miguel Such is a complex school located in San Juan, large in space and enrollment, which makes it difficult to administer effectively. The school relies unnecessarily on paper, documents, informal personal contacts, over-monitoring and supervision of simple tasks that would be solved with an adequate use of modern Information Systems.

## Situation

The problems that a pre-admission digital system could solve are identified:

- The enrollment process is disorganized, slow and repetitive before those in charge.
- This process is not organized in order for the information collected to be useful to the school.
- The information that is collected is not validated or its uniformity is guaranteed.
- We depend on the manual organization of documents to be able to make multiple reports.
- There are multiple data collection points after enrollment.
- The information collected is not accessible to the staff that needs it in the correct format.
- There are multiple manual tasks that occupy time and human resources that could be replaced by computers to increase the time dedicated to direct service to students, teachers and managers.

## Project Goals

Project Goal	Comment/Description/Reference
<b>Functional Goals:</b>	
Pre-registration process	Parents will be able to register the student using the app.
School Notification	Automatic notification of important student or teacher tasks.
School Calendar	Show a calendar specific and tailored to each student/teacher.
<b>Business Goals:</b>	
Time to Market	Be able to deliver a high-quality product in a short time
efficiency, cost, quality	Best in Class school communication application
<b>Constraints:</b>	
Development time	Time to complete development and debugging is limited

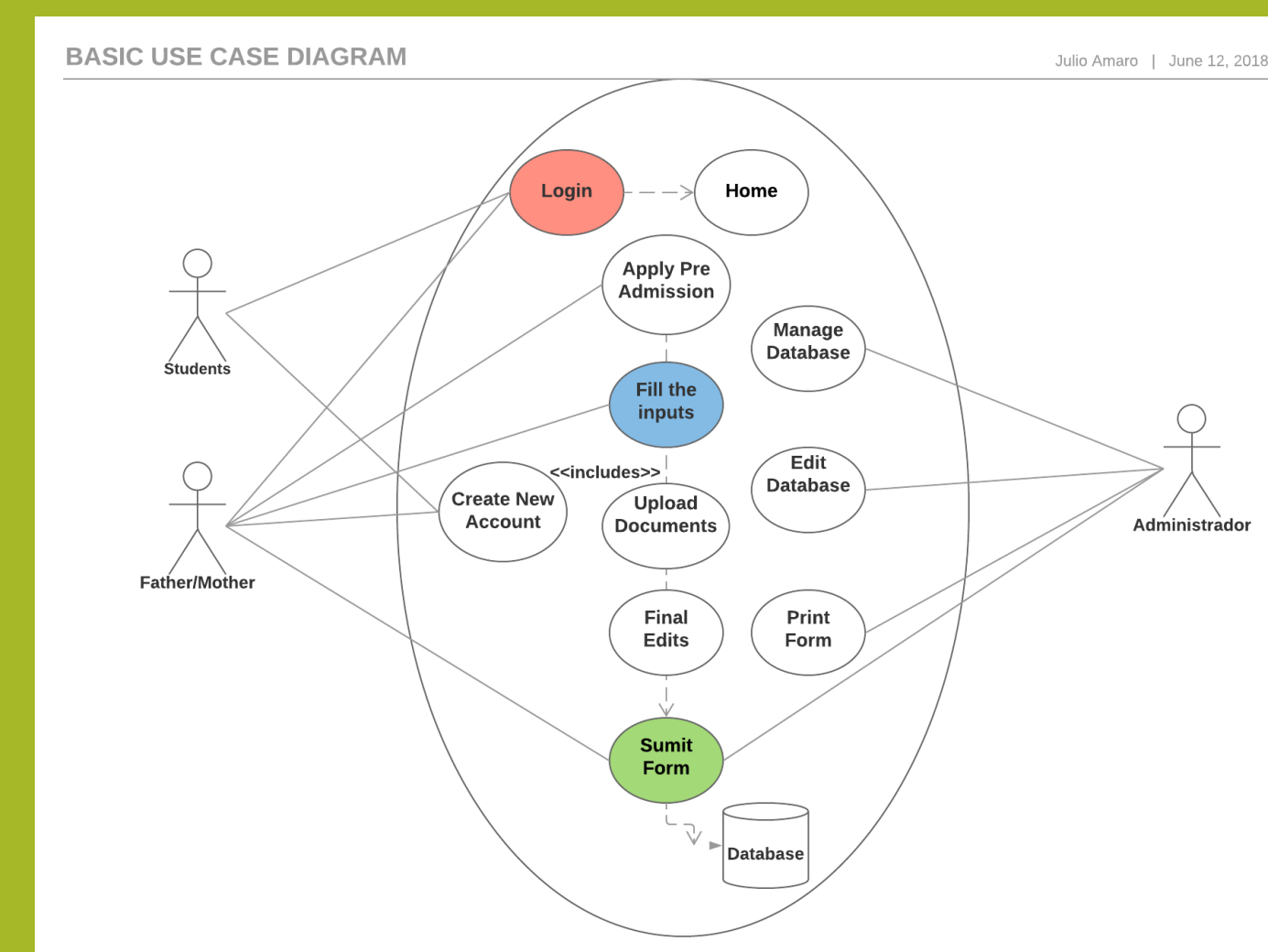
## Methodology

The methodology is based on the Rapid Development process. **Rapid Application Development (RAD)** – is a development technique which aims to produce a working piece of software between 60 and 90 days. The structure of the RAD lifecycle is thus designed to ensure that developers build the systems that the users really need. This lifecycle, through the following four stages, includes all of the activities and tasks required to scope and define business requirements and design, develop, and implement the application system that supports those requirements [2].

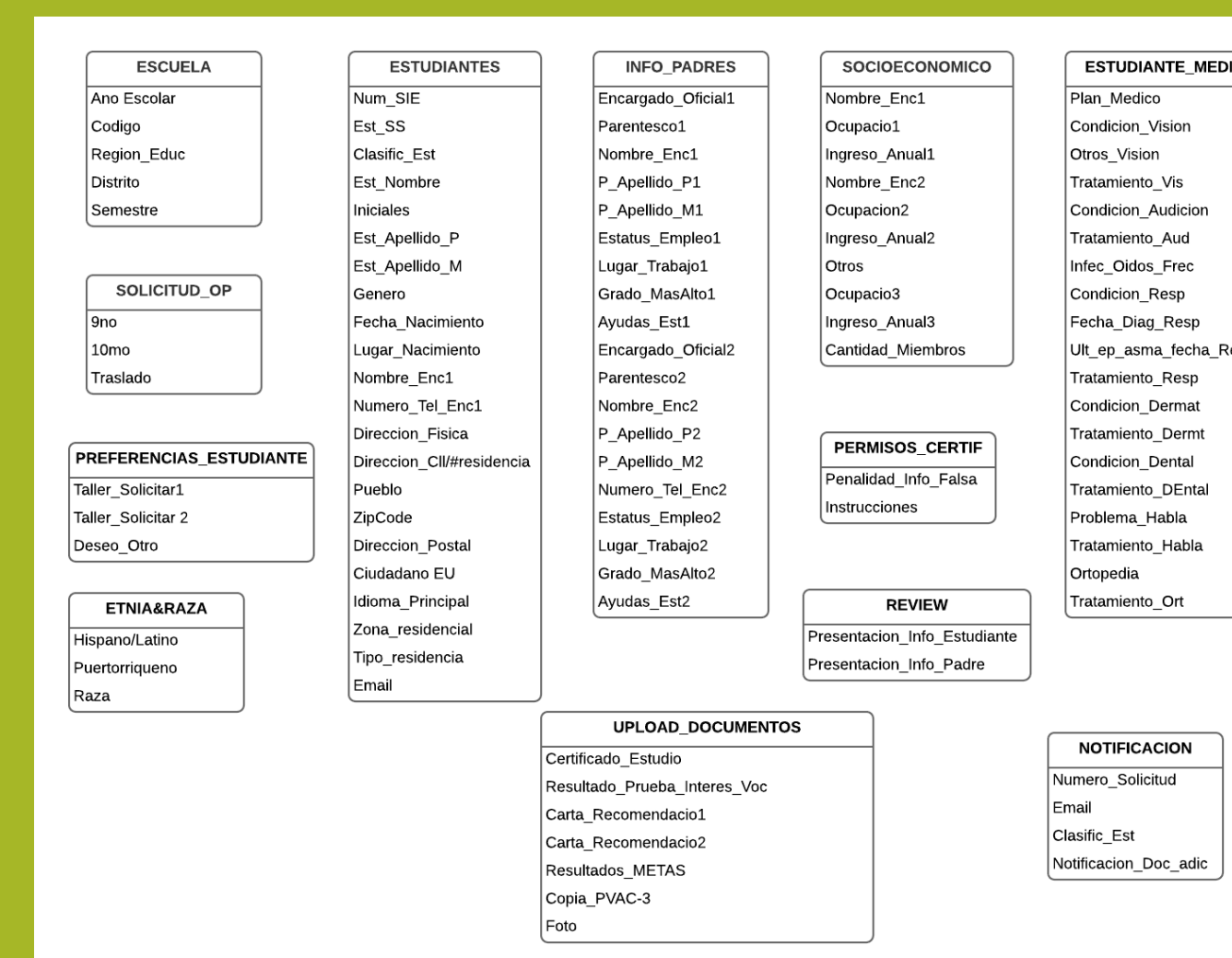
## Prototype

For the prototype of the platform, it will be a native application using the iOS operating system. For this it is necessary to do it from an Apple computer. It is also important to implement a database, our approach to this is to use Firebase. Firebase is a cloud service provider as well as a backend business that allows you to obtain organized data for mobile apps [3]. Some of the firebase features that we can implement are: **Authentication, Real-time Database, Storage.**

### USE CASE DIAGRAM



### INPUT FORM



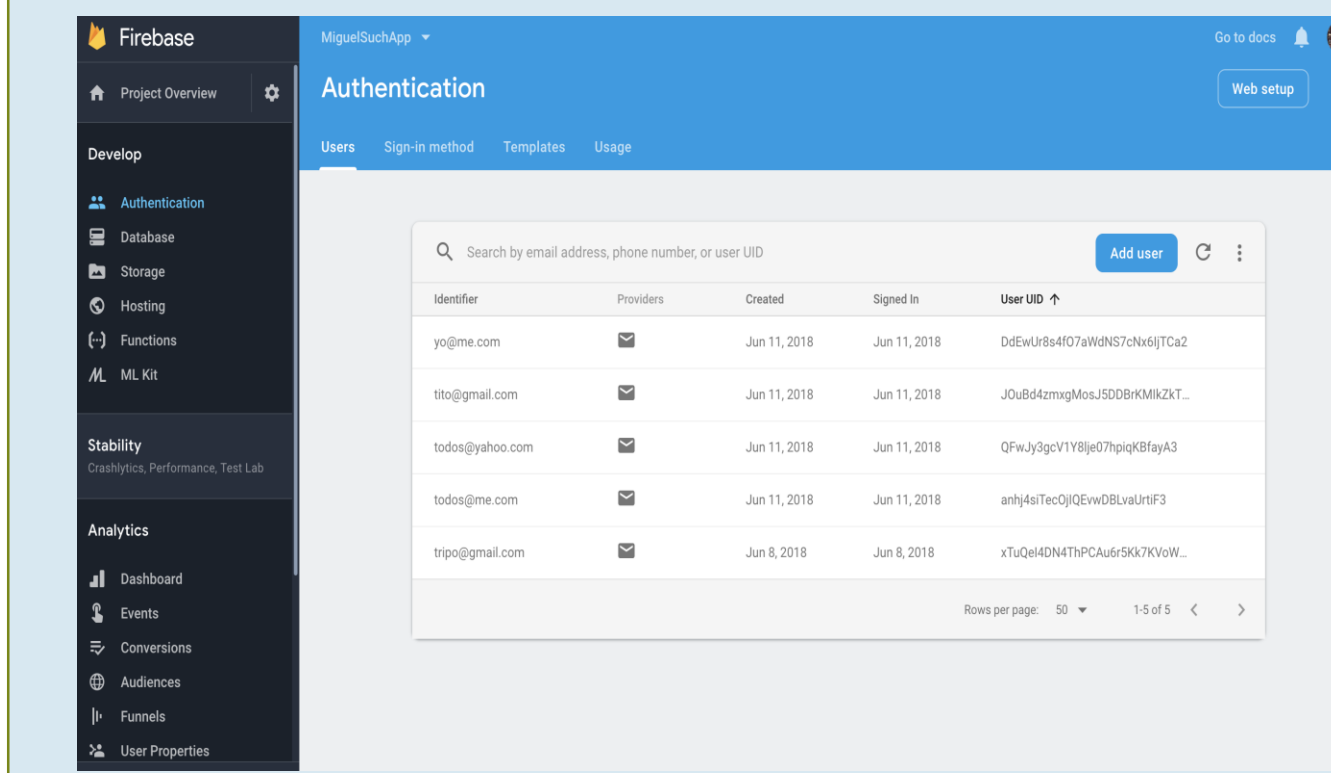
## Application Components

The application consists of a graphical user interface (GUI) using the Human Interface Guidelines from Apple.

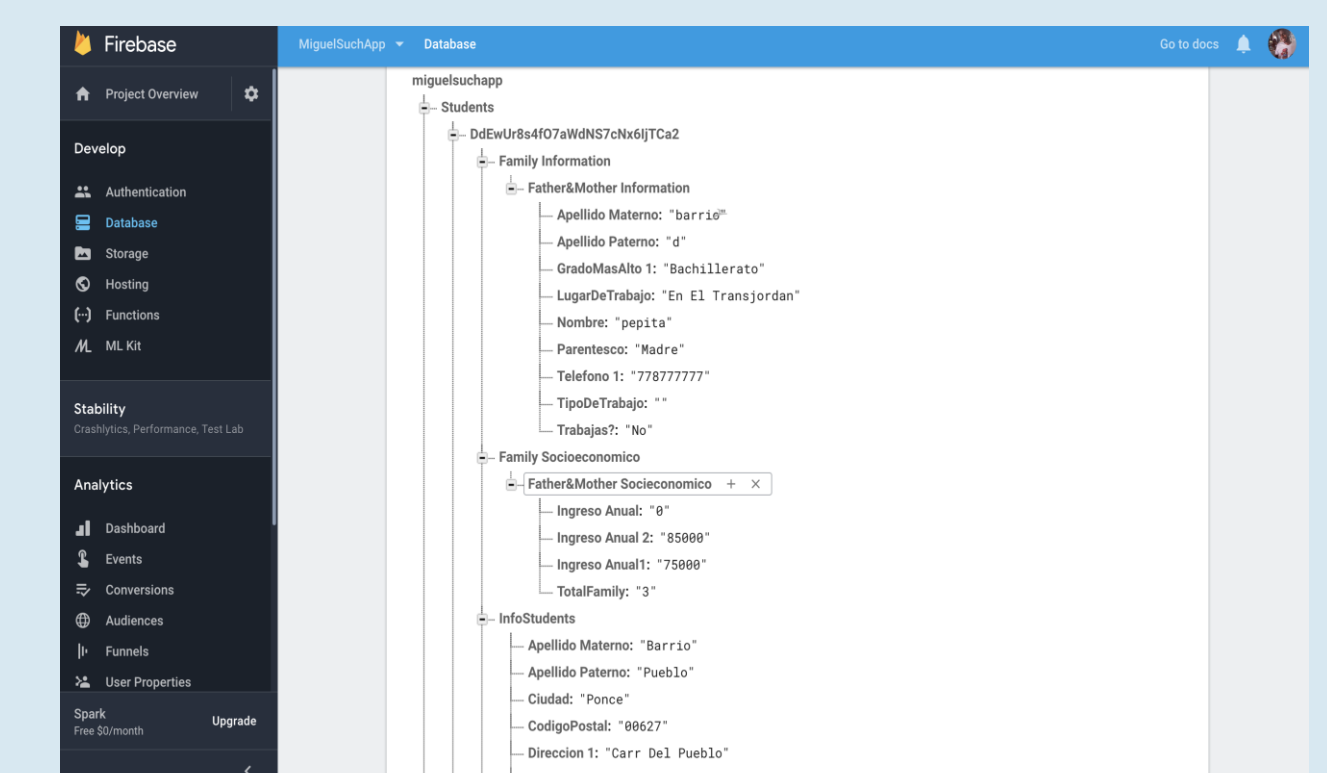
## Testing

Data is entered on text fields, picker views, and buttons. Data is stored using firebase NoSQL DB. User data is stored as unique in the Firebase DB. Email authentication is used to add security to the data stored. Due to time constraint the system does not includes the calendar or notification functionalities.

### AUTHENTICATION TABLE



### DATABASE TABLE – STRUCTURED IN JSON



## Future Work

This prototype is in the 1st phase of development, which consists of being able to do the pre-admission process through a native mobile application in the iOS. For the purposes of this research, it is limited to the functionality of the MiguelSuch app, which is to collect input from the user to save and process the pre-admission. It is contemplated that in the future, this application may also carry out the process of interviewing and re-admitting students. Also, implementing school calendars, events, and notification it's a most.

## Conclusion

The design for this prototype complies with the 1st features of the pre-admission process. It was possible to save the data through the application using external libraries such as in the case of "firebase". The data captured in the system will be used for other purposes, such as data recovery and administration, since the students will feed all the required data. This solves the problems of the avoidable delays involved in the inner-office transfer of data. Additionally, it gives us good beginnings that the pre-admission process can be given on a larger scale including more users. This could reduce the time it takes for a parent to complete the pre-admission process.

## Acknowledgements

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## References

[1] Borcea, C. & Iamnitchi, A. (2008). *P2P systems meet mobile computing: a community-oriented software infrastructure for mobile social applications*. In: Second IEEE International Conference on Self-Adaptive and Self-Organizing Systems Workshops: pp. 242–247. (1)  
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 [3] Martin, J. (1991). *What is Rapid Application Development?* Macmillan Publishing Company. (16)