REQUIREMENTS ANALYSIS DOCUMENT

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Software Design COMS3009

FindMeTutor Android Application

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1 Executive Summary

The problem that we face is that students are in need of extra lessons and tutorials outside of standard lessons provided by the university. We propose a system that can connect students in search of tutors.
The results of the requirements analysis are documented below. This document completely describes the system in terms of the requirements. This document serves as a contextual basis between the client and the developer.

2 INTRODUCTION

2.0.1 Purpose of the system

The purpose of the FindMeTutor application is to provide a convenient means for tutors and students who are looking for tutors to be able to connect within a particular tertiary institute.

2.0.2 Scope of the system

Our team, working on the FindMeTutor application, envisions a successful product to be an Android Application which will be at a students disposal in order to improve their grades and achieve their academic dreams. With limited resources, a stringent budget and capped time, we aim to execute this task in an economical fashion.
This goal will be achieved by making use of agile methodology. We will be able to set short term targets to achieve deliverables within sprints, with a long term goal being to present the FindMeTutor Android Application.

2.0.3 Objective and success criteria of the project

The FindMeTutor Android application will be seen as successful if it facilitates a platform on which tutors and students can meet. We have great hope that the result of this would mean better results obtained by the students, and a manner in which tutors can generate some income and gain some job experience.

2.0.4 Definitions, acronyms, and abbreviations

1. App - abbreviation for application.
2. Application - is a piece of software
3. Android - is a mobile operating system developed by Google.
4. OS - abbreviation for operating system.
5. Operating system - is a collection of software that communicates with hardware and allows other programs to run on it.
6. Java - is a high-level programming language
7. UI - abbreviation for User interface
8. User interface/GUI - is the means in which a person controls a software application or hardware device.

9. ID - abbreviation for identity
11.User ID - the idenity that uniquely identifies someone on a computer system.
12. Sign in - when asked to enter username and password information. A sign in/login is a combination of information that authenticates a user's identity.
13. SDK - abbreviation for Software Development Kit
14 Software Development Kit - collection of software used for developing applications for a specific device or operating system.

2.0.5 References

1. http://techterms.com/definition (2016-08-08)

3 CURRENT SYSTEM

3.0.1 Overview

Currently, there are many students in search of tutors to help them with particular courses with which they require some support, as well as fellow students or tutors who are available to tutor particular courses of study. However, the problem that is faced on hand is that either pool (students and tutors) are struggling to find each other.

4 PROPOSED SYSTEM

4.1 Overview

FindMeTutor app will be a platform through which students and tutors can meet in order to resolve the current situation.

FindMeTutor app will facilitate the following two registration categories:

1.Student looking for tutors they are able to register on the app with merely some personal details (demographic data, email and password).
2. Tutor - those who would like to tutor can register on the app by simply filling in some details with respect to the fields of study they are particularly comfortable to tutor.

4.2 Functional requirements - "Shall lists"

Describes the high-level functionality of the system

Requirement	Functional Requirement	Use Case
RQ1.1	The system shall allow a student to register	UC-CS
RQ1.2	The system shall allow a student to update their account eg update password	UC-US
RQ1.3	The system shall allow a student to view their account details	UC-VS
RQ1.4	The system shall allow a student to mark their account as deleted	UC-DS
RQ2.1	The system shall allow a tutor to register	UC-CT
RQ2.2	The system shall allow a tutor to update their account eg password update	UC-UT
RQ2.3	The system shall allow a tutor to view their account details	UC-VT
RQ2.4	The system shall allow a tutor to mark their account as deleted	UC-DT
RQ3.1	The system shall allow an administrator to update a student account	UC-US
RQ3.2	The system shall allow an administrator to view a student account details	UC-VS
RQ3.3	The system shall allow an administrator to mark a student as deleted	UC-DS
RQ3.4	The system shall allow an administrator to update a tutor account eg update password	UC-UT
RQ3.5	The system shall allow an administrator to view a tutor account details	UC-VT
RQ3.6	The system shall allow an administrator to mark a tutor account as deleted	UC-DT
RQ4.1	The system shall allow an administrator to register	UC-CA
RQ4.2	The system shall allow an administrator to update their account	UC-UA
RQ4.3	The system shall allow an administrator to view their account details	UC-VA

RQ4.4	The system shall allow an administrator to mark their account as deleted	UC-DA
RQ5.1	The system shall allow a student to request a tutor	UC-RT
RQ5.2	The system shall allow a student to choose a tutor from a list	UC-CT
RQ6.1	The system shall allow a tutor to accept a request	UC-AR
RQ6.2	The system shall allow a tutor to reject a request	UC-DR
RQ7.1	The system shall allow a student to add events to their personal 'Upcoming events'	UC-CE
RQ7.2	The system shall allow a student to view their upcoming events	UC-VE
RQ7.3	The system shall allow a student to update their upcoming events	UC-UE
RQ7.4	The system shall allow a student to delete their upcoming events	UC-DE
RQ8.1	The system shall allow a tutor to add events to their personal 'Upcoming events'	UC-CE
RQ8.2	The system shall allow a tutor to view their upcoming events	UC-VE
RQ8.3	The system shall allow a tutor to update their upcoming events	UC-UE
RQ8.4	The system shall allow a tutor to delete their upcoming events	UC-DE
RQ9.1	The system shall allow a student to rate a tutor	UC-R
RQ10.1	The system shall allow a student to check-in	UC-CI
RQ10.2	The system shall allow a student to check-out	UC-CO
RQ11.1	The system shall allow a tutor to check-in	UC-CI
RQ11.2	The system shall allow a tutor to check-out	UC-CO
RQ12.1	The system shall allow a student to add funds	UC-AF
RQ12.2	The system shall allow a student to view funds	UC-VF
RQ12.3	The system shall allow a student to update funds	UC-UF
RQ13.1	The system shall allow a tutor to add funds	UC-AF
RQ13.2	The system shall allow a tutor to view funds	UC-VF
RQ13.3	The system shall allow a tutor to update funds	UC-UF
RQ14.1	The system shall allow a student to add subjects	UC-CSb
RQ14.2	The system shall allow a tutor to add subjects	UC-CSb

RQ15.1	The system shall allow a student to remove subjects	UC-DSb
RQ15.2	The system shall allow a tutor to remove subjects	UC-DSb
RQ16.1	The system shall allow a student to login	UC-L
RQ16.2	The system shall allow a tutor to login	UC-L
RQ16.3	The system shall allow an administrator to login	UC-L
RQ17.1	The system shall allow a student to view their upcoming sessions	UC-DSes
RQ17.2	The system shall allow a tutor to view their upcoming sessions	UC-VSes
RQ18.1	The system shall allow a tutor to mark a session as done/removed	UC-DSes
RQ18.1	The system shall allow a student to mark a session as done/removed	UC-DSes

4.3 Non-functional requirements

Describes the user-level requirements that are not directly related to the functionality.

3.3.1 Usability

The application will be user friendly as it will be an Android application which is supported by multiple devices (android smartphones and android tablets). This will allow for the application to be easily accessible to students and tutors as majority of students have access to android devices.

3.3.2 Reliability

The probability that the system will be able to process work correctly and completely without being aborted.

In the case of system failure, the damage that could be caused could be such where a user will not be able to use the app during system failure.

3.3.3 Performance

The response time between the UI and the server will be optimised. The expected volume of user activity will peak at the end of each academic term within the tertiary institute when examinations/tests will be approaching, while on a regular basis the application will be utilised when students who feel the need to get assistance when they encounter a topic they require assistance in.

3.3.4 Supportability
The App will be facilitated over a spectrum of Android platform versions. The SDK supports 14-24.
3.3.5 Implementation
Our team has implemented the agile methodology in order to obtain our final goal of building the FindMeTutor application. For each sprint we will set targets of what we would like to achieve, with the objective of using these milestones to be building blocks towards our final goal.
3.3.6 Interface
The UI will be made in Android studio. The set up will be simple and neat. The app will be used by students who will be using the app in order to search for a tutor which is suitable to tutor, hence, with this intention, to prevent furthering the overwhelmed feeling, the app will not be clutered and simple to use. The 'user-friendly' experience provided by the UI, will allow the user to interact with the app in a natural and intuitive way.
Each user's home page will be customized to display there upcoming tutorial sessions.
3.3.7 Packaging
Android studio for development
Adobe illustrator and photoshop for App graphics - FindMeTutor logo

4.4 System models

4.4.1 Scenario

For instance, there is a student - Joe Soap - who is currently doing his 3rd year of study in computer science. Joe would like to generate some income from tutoring first and second year mathematics modules. We also know that the student, Mary Smith, is a first year astronomy student who is looking for a mathematics tutor. The FindMeTutor app will be ideal to resolve the problems faced in this particular scenario. Joe will register on the application as a tutor, on registering, he will select what he is capable and willing to tutor - first and second year mathematics. On the other hand, we will have Mary register as a student. Mary will then be able to search for the course she needs assistance in, for example Calculus I. Mary will click the 'Request tutor' button and specify Calculus I as a subject as well as a date and time, this will send a request to all those who have

registered to tutor Calculus I. Joe Soap will be part of the list of tutors approached. Joe accepts the request. Mary is notified of this and of any other Calculus I tutors who accept the request, Marry is able to select Joe Soap to confirm a tutorial session. Marry and Joe independently need to 'check-in' and 'checkout' before and after the tutorial respectively.

4.4.2 Use cases models

Use Cases:

Use cases name	Use case
Create Student	UC-CS
Update Student	UC-US
Read Student	UC-VS
Archive Student	UC-DS
Create Tutor	UC-CT
Update Tutor	UC-UT
Read Tutor	UC-VT
Archive Tutor	UC-DT
Create Administrator	UC-CA
Update Administrator	UC-UA
Read Administrator	UC-VA
Archive Administrator	UC-DA
Request Tutor	UC-RT
Choose Tutor	UC-CT
Create Event	UC-CE
Update Event	UC-UE
Read Event	UC-VE
Archive Event	UC-DE
Rate Tutor	UC-R
Accept Request	UC-AR
Archive Request	UC-DR
Check-in	UC-CI
Check-out	UC-CO
Add Subject	UC-CSb
Archive Subject	UC-DSb
Login	UC-L
Add Funds	UC-AF
Delete Funds	UC-DF
View Funds	UC-VF
Update Funds	UC-UF
View Sessions	UC-VSes
Remove Sessions	UC-DSes

Use Case Descriptions:

Use Case UC-CS: Create Student	
Related Requirements:	RQ1.1
Initiating actor:	Student
Actor goal:	To register on FindMeTutor
Participating Actors: N/A	
Preconditions:	N/A
Postconditions:	Student is created
Flow of activities:	
1. Student indicates sign up as a student 2. System displays student sign up form 3. Student enters demographic data,student number, email address, contact number and password 4. System stores demographic data,student number, email address, contact number and password 5. System sends confirmation email to student 6. Student indicates confirmation 7. Student is created	

Use Case UC-US: Update Student	
Related Requirements:	RQ1.2, RQ3.1
Initiating actor:	Student or Administrator
Actor goal:	Update student demographic data,student number,student email address, student contact number or student password
Participating Actors:	N/A
Preconditions:	Student exists and is not marked as deleted
Postconditions:	Student is updated
Flow of activities:	
1. Student/Administrator requests to update Student 2. System reads Student 3. System displays form to update Student 4. Student/Administrator enters student demographic data,student number,student email address, student contact number or student password 5. System stores student demographic data,student number,student email address, student contact number or student password 6. Student is updated	

Use Case UC-CT: Create Tutor	
Related Requirements:	RQ2.1
Initiating actor:	Tutor
Actor goal:	To register on FindMeTutor
Participating Actors:	N/A
Preconditions:	N/A
Postconditions:	Tutor is created
Flow of activities:	
1. Tutor indicates sign up tutor 2. System displays tutor sign up form 3. Tutor enters demographic data, tutor email address, tutor contact number and tutor password 4. System stores demographic data, tutor email address, tutor contact number and tutor password 5. System sends confirmation email to Tutor 6. Tutor indicates confirmation 7. Tutor is created	

Use Case UC-UT: Update Tutor	
Related Requirements:	RQ2.2, RQ3.4
Initiating actor:	Tutor or Administrator
Actor goal:	To update Tutor demographic data, tutor email address, tutor contact number and tutor password
Participating Actors:	N/A
Preconditions:	Tutor exists
Postconditions:	Tutor is updated
Flow of activities:	
1. Tutor/Administrator requests to update Tutor 2. System reads Tutor 3. System displays form to update Tutor 4. Tutor/Administrator enters Tutor demographic data, tutor email address, tutor contact number or tutor password 5. System stores tutor demographic data, tutor email address, tutor contact number or tutor password 6. Tutor is updated	

Use Case UC-DS: Archive Student	
Related Requirements:	RQ1.4, RQ3.3
Initiating actor:	Student or Administrator
Actor goal:	To delete Student
Participating Actors:	N/A
Preconditions:	Student exists
Postconditions:	Student is Archived
Flow of activities:	
1. Student/Administrator requests to delete Student 2. System reads Student 3. System displays confirmation message 4. Student/Administrator enters confirmation 5. System marks student as archived 6. Student is archived	

Use Case UC-DT: Archive Tutor	
Related Requirements:	RQ2.4, RQ3.6
Initiating actor:	Tutor or Administrator
Actor goal:	To delete Tutor
Participating Actors:	N/A
Preconditions:	Tutor exists
Postconditions:	Tutor is Archived
Flow of activities:	
1. Tutor/Administrator requests to delete Tutor 2. System displays confirmation message 3. System reads Tutor 4. Tutor/Administrator enters confirmation 5. System marks Tutor as archived 6. Tutor is archived	

Use Case UC-VT: Read Tutor	
Related Requirements:	RQ2.3, RQ3.5
Initiating actor:	Tutor or Administrator
Actor goal:	To view Tutor
Participating Actors:	N/A
Preconditions:	Tutor exists
Postconditions:	Tutor is viewed
Flow of activities:	
1. Tutor/Administrator requests to view Tutor 2. System reads tutor 3. System displays Tutor 4. Tutor is viewed	

Use Case UC-VS: Read Student	
Related Requirements:	RQ1.3, RQ3.2
Initiating actor:	Student or Administrator
Actor goal:	To view Student
Participating Actors:	External Database System
Preconditions:	Student exists
Postconditions:	Student is viewed
Flow of activities:	
1. Student/Administrator requests to view Student 2. System reads Student 3. System displays Student 4. Student is viewed	

Use Case UC-L: Login	
Related Requirements:	RQ15.1, RQ15.2, RQ15.3
Initiating actor:	Student, Administrator or Tutor
Actor goal:	To login
Participating Actors:	N/A
Preconditions:	initiating actor exists
Postconditions:	initiating actor is logged in
Flow of activities:	
1. Initiating actor indicates that he/she is a Student, Administrator or tutor 2. System prompts for student number and password 3. initiating actor enters student number and password 4. System reads Student/Administrator/Tutor to check validity 5. If a valid user of the system, Student/Administrator/Tutor is logged on	

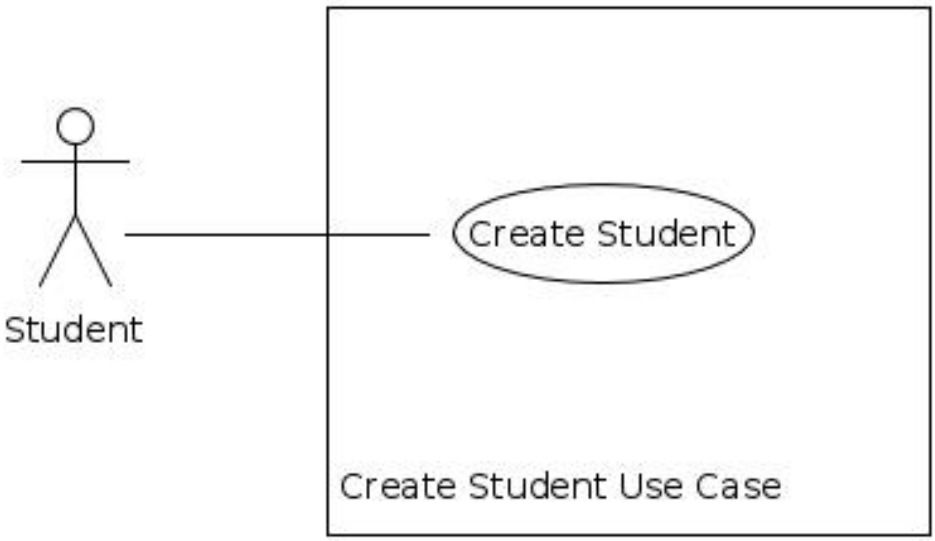
Use Case UC-RT: Request Tutor	
Related Requirements:	RQ5.1
Initiating actor:	Student
Actor goal:	To request a Tutor
Participating Actors:	Tutor
Preconditions:	Student exists, Student must be registered for one or more subjects, Tutor exists, Student has available funds
Postconditions:	Student requests Tutor
Flow of activities:	
1. Student indicates that he/she wishes to request a tutor 2. System reads Student If Student has no available funds or is not registered to a subject 3. System displays message indicating that Student can not request a Tutor Else if Student has available funds 4. System prompts for date, time, description and subject of the tutorial 5. Student enters date, time and description and subject of the tutorial 6. System reads and prompts Tutors who tutor the subject the Student has indicated he wishes to request a tutor for 7. Tutors accept or reject System prompt 8. System displays Tutors who have accepted 9. Student selects a Tutor from the displayed Tutors 10. Tutor has been requested	

Use Case UC-CSb: Add Subject	
Related Requirements:	RQ14.1, RQ14.2
Initiating actor:	Student, Tutor
Actor goal:	To register for a subject
Participating Actors:	N/A
Preconditions:	Initiating actor exists
Postconditions:	Initiating actor is registered for a subject
Flow of activities:	
1. Initiating actor indicates that he/she wants to register for a subject 2. System reads subjects 3. System displays Student Subject Table 4. Student selects subject 5. System stores subject in Student Subject Table 6. Student is registered for the subject	

Use Case UC-DSb: Archive Subject	
Related Requirements:	RQ15.1, RQ15.2
Initiating actor:	Student, Tutor
Actor goal:	To un-register for a subject
Participating Actors: N/A	
Preconditions:	initiating actor exists
Postconditions:	Initiating actor is un-registered from a subject
Flow of activities:	
1. Initiating actor indicates that he/she wants to remove a subject 2. System displays Student Subject Table 3. Student selects subject 4. System removes subject from Student Subject Table 5. Student is un-registered from subject	

4.4.3 Use case diagrams

Use case Diagram Request Tutor:



Use case Create Student:

Use case:

4.4.4 Analysis object model

4.4.5 Dynamic model

4.4.6 User interface navigational paths and screen mock-ups

4.4.7 Operational requirements

Operational requirements describe the non-business characteristics of an application.

3.5.1 Amazon Web Server - Web server to host the database

3.5.2 Android studio to design UI

3.5.3 GitHub to facilitate the build of the project among team members

3.5.4 MySql which is the database management system used to house and control the database.

3.5.5 phpMyAdmin which is used to interact with the database in a graphical user interface.