

# **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 identity 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.
- 15. Sessions - A tutorial session created by a student.

### **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

#### Overview of Requirements

| Item | Requirements to implement                            |
|------|--|
| 0    | Proposal   |
| 1    | Student registration and login                       |
| 2    | Tutor registration and login                         |
| 3    | Administrator registration                           |
| 4    | Administrator capabilities                           |
| 5    | Students able to request a tutor                     |
| 6    | Tutor able to accept/reject tutor requests           |
| 7    | Student able to handle 'Upcoming events'             |
| 8    | Tutor able to handle 'Upcoming events'               |
| 9    | Student able to rate a tutor                         |
| 10   | Student able to check-in/check-out of tutor sessions |
| 11   | Tutors able to check-in/check-out of tutor sessions  |
| 12   | Student funding and payment                          |

|    |   |
|----|---|
| 13 | Tutor funding and payment                           |
| 14 | Students able to add/ remove subjects enrolled in   |
| 15 | Tutors able to add/ remove subjects able to tutor   |
| 16 | Login of student and tutors                         |
| 17 | Students and tutors can log their tutorial sessions |
| 18 | Students and tutors can mark off completed sessions |

| <b>Requirement</b> | <b>Functional Requirement</b>  | <b>Use Case</b> |
|--------------------|--|-----------------|
| RQ1.1              | The system shall allow a student to register                                   | UC-CS           |
| RQ1.2              | The system shall allow a student to update their account<br>eg update password | UC-US           |
| RQ1.3              | The system shall allow a student to view their account<br>details              | UC-VS           |
| RQ1.4              | The system shall allow a student to mark their account<br>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<br>eg password update   | UC-UT           |
| RQ2.3              | The system shall allow a tutor to view their account<br>details                | UC-VT           |
| RQ2.4              | The system shall allow a tutor to mark their account as<br>deleted             | UC-DT           |
| RQ3.1              | The system shall allow a student to request a tutor                            | UC-RT           |
| RQ3.2              | The system shall allow a student to choose a tutor from<br>a list              | UC-RT           |
| RQ4.1              | The system shall allow a tutor to accept a request                             | UC-RT           |
| RQ4.2              | The system shall allow a tutor to reject a request                             | UC-RT           |
| RQ5.1              | The system shall allow a student to rate a tutor                               | UC-R            |
| RQ6.1              | The system shall allow a student to check-in                                   | UC-CI           |
| RQ6.2              | The system shall allow a student to check-out                                  | UC-CO           |
| RQ7.1              | The system shall allow a tutor to check-in                                     | UC-CI           |
| RQ7.2              | The system shall allow a tutor to check-out                                    | UC-CO           |
| RQ8.1              | The system shall allow a student to add funds                                  | UC-CF           |
| RQ8.2              | The system shall allow a student to view funds                                 | UC-VF           |
| RQ8.3              | The system shall allow a student to update funds                               | UC-UF           |
| RQ9.1              | The system shall allow a tutor to add funds                                    | UC-CF           |



|        |   |         |
|--------|---|---------|
| RQ9.2  | The system shall allow a tutor to view funds  | UC-VF   |
| RQ9.3  | The system shall allow a tutor to update funds  | UC-UF   |
| RQ10.1 | The system shall allow a student to add subjects  | UC-CSb  |
| RQ11.1 | The system shall allow a tutor to add subjects  | UC-CSb  |
| RQ12.1 | The system shall allow a student to remove subjects   | UC-DSb  |
| RQ12.2 | The system shall allow a tutor to remove subjects   | UC-DSb  |
| RQ13.1 | The system shall allow a student to login   | UC-L    |
| RQ13.2 | The system shall allow a tutor to login   | UC-L    |
| RQ14.1 | The system shall allow a student to view their upcoming sessions  | UC-VSes |
| RQ14.2 | The system shall allow a tutor to view their upcoming sessions  | UC-VSes |
| RQ15.1 | The system shall allow a tutor to mark a session as done  | UC-DSes |
| RQ15.2 | The system shall allow a student to mark a session as done  | UC-DSes |
| RQ16.1 | The system shall allow a tutor to mark a session as cancelled   | UC-DSes |
| RQ16.2 | The system shall allow a student to mark a session as cancelled   | UC-DSes |
| RQ17.1 | The system shall allow a student to view a subject  | UC-RSb  |
| RQ17.2 | The system shall allow a tutor to view a subject  | UC-RSb  |
| RQ18.1 | The system shall allow a students account to automatically be deducted from their account to make a payment to the tutor, once they both have checked out | UC-FP   |
| RQ18.2 | The system shall allow a tutor receive funds from a student once they both check-out of a tutorial session  | UC-FP   |

## **4.3 Functional requirements specification**

### **4.3.1 Stakeholders**

- Students
- Tutors
- University (Faculty of Science : School of Computer Science and Applied Mathematics)

### **4.3.2 Actors and Goals**

- Students - a registered user looking for a tutor
- Tutors - a registered user, whom is approachable to tutor particular subjects
- Database - records details of students and tutors. Stores required information with regards to tutorials for student and tutor.

## **4.4 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 cluttered 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 their upcoming tutorial sessions.

#### **3.3.7 Packaging**

Android studio for development

Adobe illustrator and photoshop for App graphics - FindMeTutor logo

## 4.5 Acceptance Testing

### 4.5.1 Test Case for Use Case

|   |  |
|---|--|
| <b>Test-case Identifier:</b><br><b>Use Case Tested:</b><br><b>Pass/Fail Criteria:</b><br><br><b>Input Data:</b> | TC-1<br>UC-CS<br>The test passes if a user enters a username which is a valid email address and is not contained in the database<br>Email address and password |
| <b>Test Procedure:</b>  | <b>Expected Result:</b>  |
| Step 1. Type in a invalid email address or email address contained in database.                                 | System indicates invalid email address or email address already exists in database.  |
| Step 2. Type in valid email address   | System indicates success and user is created.  |

|   |   |
|---|---|
| <b>Test-case Identifier:</b><br><b>Use Case Tested:</b><br><b>Pass/Fail Criteria:</b><br><br><b>Input Data:</b> | TC-2<br>UC-US<br>The test passes if the user changes his/her profile picture with a valid image file or to the subjects in which they are enrolled.<br>File, Subjects |
| <b>Test Procedure:</b>  | <b>Expected Result:</b>   |
| Step 1a. Upload an invalid image file   | The system does not change profile picture and indicates failure  |
| Step 2a. Upload a valid image file  | The system indicates success and changes the profile picture  |
| Step 1b. Add or remove subjects from the list of 'enrolled-in' subjects   | The system changes the list of subjects 'enrolled-in'.  |

|   |  |
|---|--|
| <b>Test-case Identifier:</b><br><b>Use Case Tested:</b><br><b>Pass/Fail Criteria:</b><br><br><b>Input Data:</b> | TC-3<br>UC-VS<br>The test passes if the user enters correct login details and corresponding password.<br>Username and password |
| <b>Test Procedure:</b>  | <b>Expected Result:</b>  |
| Step 1. Enter a username that is not valid or enters an invalid password for a registered username              | The system indicates failure into logging into the account, and denies access.   |
| Step 2. Enter a registered username and corresponding valid password  | The system indicates success allows user to view their account   |

|  |   |
|--|---|
| <b>Test-case Identifier:</b><br><b>Use Case Tested:</b><br><b>Pass/Fail Criteria:</b>  | TC-4<br>UC-DS<br>The test passes if the user deletes their account and is no longer able to login to their account.   |
| <b>Input Data:</b>   | Username and password   |
| <b>Test Procedure:</b>   | <b>Expected Result:</b>   |
| Step 1. Login and select deletion of account under settings<br>Step 2. Login and select deletion of account under settings and confirms deletion of account    | The system indicates failure of deletion of the account as confirmation not selected.<br>The system indicates success of deletion of the account and the user is no longer allowed access to their account. |
| <b>Test-case Identifier:</b><br><b>Use Case Tested:</b><br><b>Pass/Fail Criteria:</b>  | TC-5<br>UC-CT<br>The test passes if a user enters a username which is a valid email address and is not contained in the database  |
| <b>Input Data:</b>   | Email address and password  |
| <b>Test Procedure:</b>   | <b>Expected Result:</b>   |
| Step 1. Type in a invalid email address or email address contained in database.<br>Step 2. Type in valid email address   | System indicates invalid email address or email address already exists in database.<br>System indicates success and user is created.  |
| <b>Test-case Identifier:</b><br><b>Use Case Tested:</b><br><b>Pass/Fail Criteria:</b>  | TC-6<br>UC-UT<br>The test passes if the user changes his/her profile picture with a valid image file or to the subjects in which they are eligible to tutor.  |
| <b>Input Data:</b>   | File, Subjects  |
| <b>Test Procedure:</b>   | <b>Expected Result:</b>   |
| Step 1a. Upload an invalid image file<br><br>Step 2a. Upload a valid image file<br><br>Step 1b. Add or remove subjects from the list of able to tutor subjects | The system does not change profile picture and indicates failure<br>The system indicates success and changes the profile picture<br>The system changes the list of subjects that tutor is tutoring.         |

|  |  |
|--|--|
| <b>Test-case Identifier:</b><br><b>Use Case Tested:</b><br><b>Pass/Fail Criteria:</b><br><br><b>Input Data:</b>  | TC-7<br>UC-VT<br>The test passes if the user enters correct login details and corresponding password.<br>Username and password   |
| <b>Test Procedure:</b><br>Step 1. Enter a username that is not valid or enters an invalid password for a registered username<br>Step 2. Enter a registered username and corresponding valid password | <b>Expected Result:</b><br>The system indicates failure into logging into the account, and denies access.<br><br>The system indicates success allows user to view their account  |
| <b>Test-case Identifier:</b><br><b>Use Case Tested:</b><br><b>Pass/Fail Criteria:</b><br><br><b>Input Data:</b>  | TC-8<br>UC-DT<br>The test passes if the user deletes their account and is no longer able to login to their account.<br>Username and password   |
| <b>Test Procedure:</b><br>Step 1. Login and select deletion of account under settings<br>Step 2. Login and select deletion of account under settings and confirms deletion of account                | <b>Expected Result:</b><br>The system indicates failure of deletion of the account as confirmation not selected.<br>The system indicates success of deletion of the account and the user is no longer allowed access to their account. |
| <b>Test-case Identifier:</b><br><b>Use Case Tested:</b><br><b>Pass/Fail Criteria:</b><br><br><b>Input Data:</b>  | TC-9<br>UC-RT<br>The test passes if the student send a request for a particular subject, and if eligible tutors receive the request.<br>Res  |
| Request a tutor for a tutorial at a specific time and date<br><b>Test Procedure:</b>   | <b>Expected Result:</b>  |
| Step 1. Enter date and time for a tutorial subject<br><br>Step 2. Enter date and time for a tutorial subject   | The system indicates failure of request if there are no tutors eligible to tutor the particular subject.<br>The system indicates success of request , by sending a notification that requests have been sent.                          |

|   |   |
|---|---|
| <b>Test-case Identifier:</b><br><b>Use Case Tested:</b><br><b>Pass/Fail Criteria:</b>   | TC-11<br>UC-RT<br>The test passes if the user deletes their account and is no longer able to login to their account.  |
| <b>Input Data:</b>  | Username and password   |
| <b>Test Procedure:</b>  | <b>Expected Result:</b>   |
| Step 1. Login and select deletion of account under settings<br>Step 2. Login and select deletion of account under settings and confirms deletion of account | The system indicates failure of deletion of the account as confirmation not selected.<br>The system indicates success of deletion of the account and the user is no longer allowed access to their account.   |
| <b>Test-case Identifier:</b><br><b>Use Case Tested:</b><br><b>Pass/Fail Criteria:</b>   | TC-12<br>UC-RT<br>The test passes if the tutor receives the request, and is able to accept or reject the request.   |
| <b>Input Data:</b>  | Accept or reject request  |
| <b>Test Procedure:</b>  | <b>Expected Result:</b>   |
| Step 1. View tutor requests<br><br>Step 2. View tutor request, and accept or reject them  | The system indicates failure of displaying tutor requests or does not notify the student if their particular tutor accepted or rejected the request.<br>The system indicates success notifying the student if the tutor has accepted or rejected the request. |

|   |   |
|---|---|
| <b>Test-case Identifier:</b><br><b>Use Case Tested:</b><br><b>Pass/Fail Criteria:</b> | TC-13<br>UC-R<br>The test passes if the students rating of the tutor is used to obtain the average rating of the tutor. |
| <b>Input Data:</b>  | Tutor rating  |
| <b>Test Procedure:</b>  | <b>Expected Result:</b>   |
| Step 1. 1-5 star rating   | The system indicates failure of displaying the student's rating as part of the tutors average rating.                   |
| Step 2. 1-5 star rating   | The system indicates success of displaying the student's rating as part of the tutors average rating.                   |

#### 4.5.2 Acceptance Tests (general)

- ACT0.01 Ensure working connection between the application and it's database (pass: database stores information and app displays required data from database)
- ACT1.01 Challenge registered student to re-register with taken username (fail)
- ACT1.02 Challenge new student to register with new identifier (pass)
- ACT1.03 Challenge registered student to update their account (pass)
- ACT1.04 Challenge registered student to view their account (pass)
- ACT2.01 Challenge registered tutor to re-register with taken username (fail)
- ACT2.02 Challenge new tutor to register (pass)
- ACT2.03 Challenge registered tutor to update their account (pass)
- ACT2.04 Challenge registered tutor to view their account (pass)
- ACT3.01 Challenge registered administrator to view a registered student's account (pass)



- ACT3.02 Challenge registered administrator to update a registered student's account (pass)
- ACT3.03 Challenge registered administrator to mark a registered student's account as deleted (pass)
- ACT3.04 Challenge registered administrator to view a registered tutor's account (pass)
- ACT3.05 Challenge registered administrator to update a registered tutor's account (pass)
- ACT3.06 Challenge registered administrator to mark a registered tutor's account as deleted (pass)
- ACT4.01 Challenge registered administrator to re-register with taken username(fail)
- ACT4.02 Challenge new administrator to register (pass)
- ACT4.03 Challenge registered administrator to update their account (pass)
- ACT4.04 Challenge registered administrator to view their account (pass)
- ACT5.01 A student requesting a tutor can request a tutor for a date/time which has already passed (fail)
- ACT5.02 A student requesting a tutor can request a tutor for a subject that they have not added to their enrolled subjects (fail)
- ACT5.03 A student requesting a tutor can request tutorials for various topics at a given time. ie. Student can request tutor for subject B while request tutor status for subject A is still pending (pass)
- ACT5.04 A student requesting a tutor can delete a request for a tutorial, if no longer require it. (fail)
- ACT5.05 A student receiving a tutor acceptance notification, can agree to a tutorial session from the list of tutors who have agreed (pass)

- ACT5.06 A student receiving a tutor acceptance notification, can disagree to tutorial . ie . They can decide to no longer want to continue with the tutorial, or have selected another tutor who has accepted their request.(pass)
- ACT 6.01 A tutor can accept/reject a tutor request(pass)
- ACT 7.01 A student can add an event to their upcoming events (pass)
- ACT 7.02 A student can modify an event to their upcoming events (pass)
- ACT 7.03 A student can delete an event to their upcoming events (pass)
- ACT 7.04 A student can view an event to their upcoming events (pass)
- ACT 8.01 A tutor can add an event to their upcoming events (pass)
- ACT 8.02 A tutor can modify an event to their upcoming events (pass)
- ACT 8.03 A tutor can delete an event to their upcoming events (pass)
- ACT 8.04 A tutor can view an event to their upcoming events (pass)
- ACT 9.01 A student can rate a tutor that they have previously had a tutorial session with. (pass)
- ACT 9.02 A student can rate a tutor that they have not previously had a tutorial session with. (fail)
- ACT 10.01 A student can check-in once at tutorial venue(pass)
- ACT 11.01 A tutor can check-in once at tutorial venue(pass)
- ACT 12.01 A student can pay in funds to their account balance (pass)
- ACT 12.02 A student can view balance of their account funds (pass)
- ACT 13.01 A tutor can receive funds toward their account baance - from student tutorial session payments (pass)
- ACT 13.02 A tutor can view the balance of their account funds (pass)
- ACT 14.01 A student can add subjects in which they are enrolled(pass)

- ACT 14.02 A tutor can add subjects in which they are fit to tutor(pass)
- ACT 15.01 A student can remove subjects in which they are no longer enrolled(pass)
- ACT 15.02 A tutor can remove subjects in which they no longer would want to tutor(pass)
- ACT 16.01 A student who is registered can login (pass)
- ACT 16.02 A student who is not registered can login (fail)
- ACT 16.03 A tutor who is registered can login (pass)
- ACT 16.04 A tutor who is not registered can login (fail)
- ACT 17.01 A student can view their upcoming tutorial sessions(pass)
- ACT17.02 A tutor can view their upcoming tutorial sessions(pass)
- ACT 18.01 A student can mark off completed tutorial sessions(pass)
- ACT18.02 A tutor can mark off completed tutorial sessions(pass)
- ACT 19.01 A student's account can make payment to the tutor's account (pass)
- ACT19.02 A tutor can view funds recieved as payment for tutorial session(pass)

## 4.6 System models

### 4.6.1 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.

#### 4.6.2 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    |
| Request Tutor   | UC-RT    |
| Read Session    | UC-VSes  |
| Archive Session | UC-DSes  |
| Rate Tutor      | UC-R     |
| Check-in        | UC-CI    |
| Check-out       | UC-CO    |
| Add Subject     | UC-CSb   |
| Read Subject    | UC-RSb   |
| Archive Subject | UC-DSb   |
| Login           | UC-L     |
| Update Funds    | UC-AF    |
| Read Funds      | UC-VF    |
| Confirm Funds   | UC-CF    |
| Fund Payment    | UC-FP    |

### 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:  | Student must be enrolled in the university |
| Postconditions:   | Student is created                         |
| Flow of activities:   |  |
| <ol style="list-style-type: none"><li>1. Student indicates sign up</li><li>2. System displays student sign up form</li><li>3. Student enters demographic data, student number, email address, contact number and password</li><li>4. System stores demographic data, student number, email address, contact number and password</li><li>5. System sends confirmation email to student</li><li>6. Student indicates confirmation</li><li>7. Student is created</li></ol> |  |

| Use Case UC-US: Update Student  |  |
|---|--|
| Related Requirements:   | RQ1.2  |
| Initiating actor:   | Student  |
| Actor goal:   | Update student demographic data, student number, student email address, student contact number, student password, current funds or profile picture |
| Participating Actors:   | N/A  |
| Preconditions:  | Student exists and is not marked as deleted  |
| Postconditions:   | Student is updated   |
| Flow of activities:   |  |
| <ol style="list-style-type: none"> <li>1. Student requests to update Student</li> <li>2. System reads Student</li> <li>3. System displays form to update Student</li> <li>4. Student enters student demographic data, student number, student email address, student contact number, student password, student changes profile picture</li> <li>5. System stores student demographic data, student number, student email address, student contact number, student password or new profile picture</li> <li>6. Student is updated</li> </ol> |  |
| Use Case UC-CT: Create Tutor  |  |
| Related Requirements:   | RQ2.1  |
| Initiating actor:   | Tutor  |
| Actor goal:   | To register on FindMeTutor   |
| Participating Actors:   | N/A  |
| Preconditions:  | Tutor must be registered in the university   |
| Postconditions:   | Tutor is created   |
| Flow of activities:   |  |
| <ol style="list-style-type: none"> <li>1. Tutor indicates sign up</li> <li>2. System displays tutor sign up form</li> <li>3. Tutor enters demographic data, tutor email address, tutor contact number and tutor password</li> <li>4. System stores demographic data, tutor email address, tutor contact number and tutor password</li> <li>5. System sends confirmation email to Tutor</li> <li>6. Tutor indicates confirmation</li> <li>7. Tutor is created</li> </ol>   |  |

| <b>Use Case UC-UT: Update Tutor</b>  |  |
|--|--|
| Related Requirements:  | RQ2.2  |
| Initiating actor:  | Tutor  |
| Actor goal:  | To update Tutor demographic data, tutor email address, tutor contact number, tutor password or profile picture |
| Participating Actors:  | N/A  |
| Preconditions:   | Tutor exists   |
| Postconditions:  | Tutor is updated   |
| Flow of activities:  |  |
| <ol style="list-style-type: none"> <li>1. Tutor requests to update Tutor</li> <li>2. System reads Tutor</li> <li>3. System displays form to update Tutor</li> <li>4. Tutor enters Tutor demographic data, tutor email address, tutor contact number, tutor password or changes profile picture</li> <li>5. System stores tutor demographic data, tutor email address, tutor contact number or tutor password</li> <li>6. Tutor is updated</li> </ol> |  |
| <b>Use Case UC-DS: Archive Student</b>   |  |
| Related Requirements:  | RQ1.4  |
| Initiating actor:  | Student  |
| Actor goal:  | To delete Student  |
| Participating Actors:  | N/A  |
| Preconditions:   | Student exists   |
| Postconditions:  | Student is Archived  |
| Flow of activities:  |  |
| <ol style="list-style-type: none"> <li>1. Student requests to delete Student</li> <li>2. System reads Student</li> <li>3. System displays confirmation message</li> <li>4. Student enters confirmation</li> <li>5. System marks student as archived</li> <li>6. Student is archived</li> </ol>   |  |

| <b>Use Case UC-DT: Archive Tutor</b>   |                   |
|--|-------------------|
| Related Requirements:  | RQ2.4             |
| Initiating actor:  | Tutor             |
| Actor goal:  | To delete Tutor   |
| Participating Actors:  | N/A               |
| Preconditions:   | Tutor exists      |
| Postconditions:  | Tutor is Archived |
| Flow of activities:  |                   |
| <ol style="list-style-type: none"> <li>1. Tutor requests to delete Tutor</li> <li>2. System displays confirmation message</li> <li>3. System reads Tutor</li> <li>4. Tutor enters confirmation</li> <li>5. System marks Tutor as archived</li> <li>6. Tutor is archived</li> </ol> |                   |
| <b>Use Case UC-VT: Read Tutor</b>  |                   |
| Related Requirements:  | RQ2.3             |
| Initiating actor:  | Tutor, Student    |
| Actor goal:  | To view Tutor     |
| Participating Actors:  | N/A               |
| Preconditions:   | Tutor exists      |
| Postconditions:  | Tutor is viewed   |
| Flow of activities:  |                   |
| <ol style="list-style-type: none"> <li>1. Tutor/Student requests to view Tutor</li> <li>2. System reads tutor</li> <li>3. System displays Tutor</li> <li>4. Tutor is viewed</li> </ol>   |                   |



| <b>Use Case UC-VS: Read Student</b>   |                               |
|---|-------------------------------|
| Related Requirements:   | RQ1.3                         |
| Initiating actor:   | Student, Tutor                |
| Actor goal:   | To view Student               |
| Participating Actors:   |                               |
| Preconditions:  | Student exists                |
| Postconditions:   | Student is viewed             |
| Flow of activities:   |                               |
| 1. Student/Tutor requests to view Student<br>2. System reads Student<br>3. System displays Student<br>4. Student is viewed  |                               |
| <b>Use Case UC-L: Login</b>   |                               |
| Related Requirements:   | RQ13.1, RQ13.2                |
| Initiating actor:   | Student or Tutor              |
| Actor goal:   | To login                      |
| Participating Actors:   | N/A                           |
| Preconditions:  | initiating actor exists       |
| Postconditions:   | initiating actor is logged in |
| Flow of activities:   |                               |
| 1. System prompts for student email and password<br>3. initiating actor enters student email and password<br>4. System reads Student or Tutor to check validity<br>5. If a valid user of the system, Student/Tutor is logged on |                               |

| <b>Use Case UC-RT: Request Tutor</b>   |  |
|--|--|
| Related Requirements:  | RQ3.1, RQ3.2, RQ4.1, RQ4.2   |
| 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<br>2. System reads Subject and Student<br>If Student has no available funds or is not registered to a subject<br>3. System displays message indicating that Student can not request a Tutor<br>Else if Student has available funds<br>4. System prompts for date, time, description and subject of the tutorial<br>5. Student enters date, time and description and subject of the tutorial<br>6. System reads and prompts Tutors who tutor the subject the Student has indicated he wishes to request a tutor for<br>7. Tutors accept or reject System prompt<br>8. System displays Tutors who have accepted<br>9. Student selects a Tutor from the displayed Tutors<br>10. Tutor has been requested |  |
| <b>Use Case UC-CSb: Add Subject</b>  |  |
| Related Requirements:  | RQ10.1, RQ11.1   |
| 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<br>2. System reads subjects<br>3. System displays Student Subject Table<br>4. Student selects subject<br>5. System stores subject in Student Subject Table<br>6. Student is registered for the subject   |  |

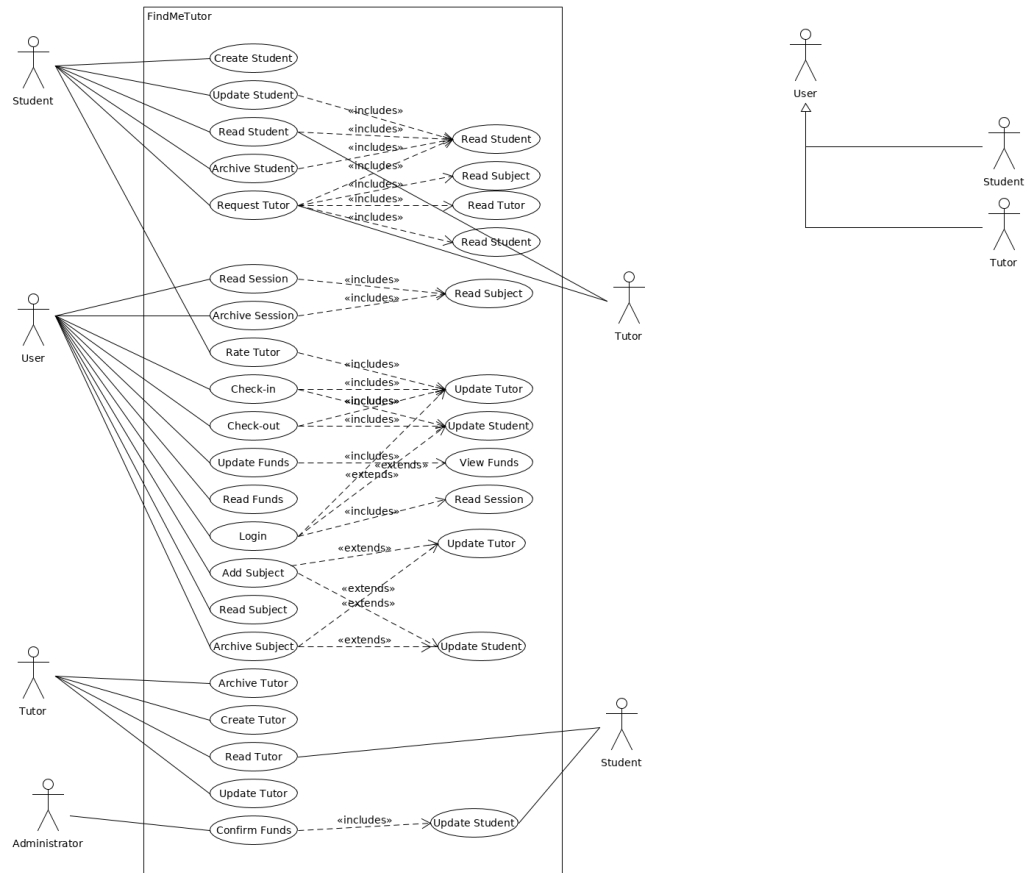
| <b>Use Case UC-DSb: Archive Subject</b>   |  |
|---|--|
| Related Requirements:   | RQ12.1, RQ12.2                                   |
| Initiating actor:   | Student, Tutor                                   |
| Actor goal:   | To un-register for a subject                     |
| Participating Actors:   | N/A  |
| Preconditions:  | Initiating actor exists                          |
| Postconditions:   | Initiating actor is un-registered from a subject |
| Flow of activities:   |  |
| <ol style="list-style-type: none"> <li>1. Initiating actor indicates that he/she wants to remove a subject</li> <li>2. System displays initiating actor Subject Table</li> <li>3. Initiating actor selects subject</li> <li>4. System removes subject from initiating actor Subject Table</li> <li>5. Initiating actor is un-registered from subject</li> </ol> |  |
| <b>Use Case UC-RSb: Read Subject</b>  |  |
| Related Requirements:   | RQ17.1, RQ17.2                                   |
| Initiating actor:   | Student or Tutor                                 |
| Actor goal:   | To view subject                                  |
| Participating Actors:   | N/A  |
| Preconditions:  | Initiating actor exists, Subject exists          |
| Postconditions:   | Subject is viewed                                |
| Flow of activities:   |  |
| <ol style="list-style-type: none"> <li>1. Initiating actor indicates that he/she wants to view a subject</li> <li>2. System reads subject</li> <li>3. System displays subject</li> <li>4. Subject is viewed</li> </ol>  |  |
| <b>Use Case UC-VE: Read Session</b>   |  |
| Related Requirements:   | RQ14.1, RQ14.2                                   |
| Initiating actor:   | Student or Tutor                                 |
| Actor goal:   | To view a session                                |
| Participating Actors:   | Tutor or Student                                 |
| Preconditions:  | initiating actor exists                          |
| Postconditions:   | A session is viewed by the initiating actor      |
| Flow of activities:   |  |
| <ol style="list-style-type: none"> <li>1. Initiating actor indicates that he/she wants to view a session</li> <li>2. System reads session</li> <li>3. System displays a session</li> <li>4. A session is viewed</li> </ol>  |  |

| <b>Use Case UC-DE: Archive Session</b>   |  |
|--|--|
| Related Requirements:  | RQ15.1, RQ15.2, RQ16.1, RQ16.2                                 |
| Initiating actor:  | Student, Tutor   |
| Actor goal:  | To cancel a session  |
| Participating Actors:  | Tutor or Student   |
| Preconditions:   | Initiating actor exists, A session exists and is not completed |
| Postconditions:  | A session is cancelled   |
| Flow of activities:  |  |
| <ol style="list-style-type: none"> <li>1. A student indicated that he/she wishes to cancel a session</li> <li>2. System prompts for confirmation</li> <li>3. Student/tutor confirms</li> <li>4. An email is sent to tutor/student indicating that a session was cancelled</li> <li>5. A session is cancelled</li> </ol>  |  |
| <b>Use Case UC-CI: Check In</b>  |  |
| Related Requirements:  | RQ6.1, RQ7.1   |
| Initiating actor:  | Student, Tutor   |
| Actor goal:  | To check in, indicating the beginning of a tutorial session    |
| Participating Actors:  | Student or Tutor( not the same as the initiating actor)        |
| Preconditions:   | Initiating actor exists  |
| Postconditions:  | The initiating actor is checked in                             |
| Flow of activities:  |  |
| <ol style="list-style-type: none"> <li>1. Initiating actor indicates that he/she has arrived at the venue where the tutorial session will take place.</li> <li>2. The system reads the initiating actors device location</li> <li>3. The system stores the initiating actors device location</li> <li>4. Participating actor indicates that he/she has arrived at the venue where the tutorial session will take place</li> <li>5. The system reads the participating actors device location</li> <li>6. The system stores the participating actors device location</li> <li>7. The system marks the initiating actor and the participating actor as checked in</li> </ol> |  |
| Extensions:  |  |
| 6.1 If the initiating actors device location is not within a set radius of participating actors the system invokes step 1 of flow of activities  |  |

| <b>Use Case UC-CO: Check Out</b>  |  |
|---|--|
| Related Requirements:   | RQ6.2, RQ7.2   |
| Initiating actor:   | Student, Tutor   |
| Actor goal:   | To check out from a tutorial session   |
| Participating Actors:   | Student or Tutor( not the same as the initiating actor)  |
| Preconditions:  | Initiating actor exists, participating actor exists, initiating actor is checked in, participating actor is checked in |
| Postconditions:   | Initiating actor and secondary actor is checked out  |
| Flow of activities:   |  |
| <ol style="list-style-type: none"> <li>1. Initiating actor indicates that the tutorial has ended</li> <li>2. Participating actor indicates that the tutorial has ended</li> <li>3. Invokes remove funds from Student</li> <li>4. Invoked add funds to Tutor</li> <li>5. Invokes Rate Tutor</li> <li>6. Initiating actor and participating actor is checked out</li> </ol> |  |
| <b>Use Case UC-R: Rate Tutor</b>  |  |
| Related Requirements:   | RQ5.1  |
| Initiating actor:   | Student  |
| Actor goal:   | To rate a Tutor  |
| Participating Actors:   | Tutor  |
| Preconditions:  | Initiating actor exists, participating session actor exists, a session between tutor and student is complete           |
| Postconditions:   | A Tutor is rated, a tutors rating is changed   |
| Flow of activities:   |  |
| <ol style="list-style-type: none"> <li>1. Student indicates that he/she wishes to rate a Tutor</li> <li>2. System prompts for rating</li> <li>3. Student selects rating</li> <li>4. System stores rating</li> <li>5. A Student has rated a Student</li> </ol>   |  |

### 4.6.3 Use case diagram

Use case Diagram:



#### 4.6.4 User stories

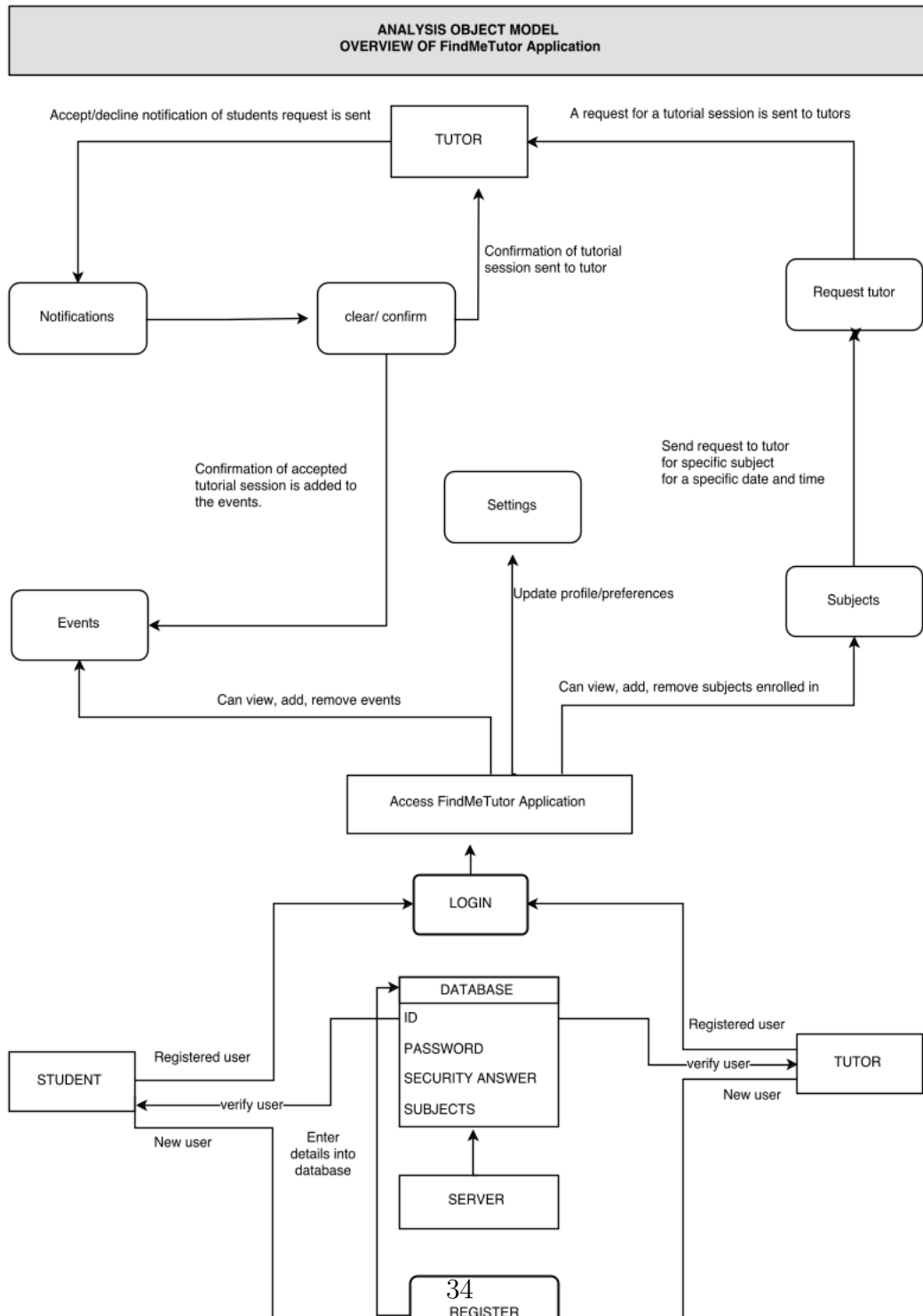
| Identifier | User story  | Size (points) |
|------------|---|---------------|
| ST-1       | As a student, I want to be able to register on the FindMeTutor application so that I can log in to the application                            | 5             |
| ST-2       | As a student, I want to log in to my account on the FindMeTutor application so that I have access to the facilities on the application.       | 3             |
| ST-3       | As a tutor, I want to be able to register on the FindMeTutor application so that I can log in to the application                              | 3             |
| ST-4       | As a tutor, I want to log in to my account on the FindMeTutor application so that I have access to the facilities on the application.         | 3             |
| ST-6       | As an administrator, I want to be able to register on the FindMeTutor application so that I can log in to the application                     | 3             |
| ST-7       | As an administrator, I want to log in to my account on the FindMeTutor application so that I have access to the facilities on the application | 3             |
| ST-8       | As a student I want to be able to request a tutor so that I can request assistance.   | 5             |
| ST-9       | As a student I want to add an event to my 'Upcoming events' so I can note scheduled tutorial sessions.  | 3             |
| ST-10      | As a student I want to amend an event on my 'Upcoming events' so that my scheduled tutorial sessions are true reflections.                    | 2             |
| ST-11      | As a student, I want to delete an event on my 'Upcoming events' so that my scheduled tutorial sessions are true reflections.                  | 2             |
| ST-12      | As a student, I want to view an event on my 'Upcoming events' to stay informed of scheduled tutorials I have requested.                       | 4             |
| ST-13      | As a tutor I want to accept a tutor request so that I can inform the student that I am willing to conduct a tutorial session.                 | 5             |

|       |  |   |
|-------|--|---|
| ST-14 | As a tutor I want to reject a tutor request so that I can inform the student that I wont be able to assist.  | 5 |
| ST-14 | As a tutor, I can add an event to my 'Upcoming events' so I can note scheduled tutorial sessions.  | 3 |
| ST-15 | As a tutor, I can amend an event on my 'Upcoming events' so I can note scheduled tutorial sessions.  | 2 |
| ST-16 | As a tutor, I can delete an event on my 'Upcoming events' so I can note scheduled tutorial sessions which are of true reflection.  | 2 |
| ST-17 | As a tutor, I can view an event on my 'Upcoming events' so I can note scheduled tutorial sessions.   | 4 |
| ST-18 | As a student I want to select a tutor from the pool of tutors who have accepted the tutorial request, so that I can choose a tutor which I feel is most suitable (according to the rating obtained and their qualifications) | 5 |
| ST-19 | As a student I want to make contact with a confirmed tutor so that I can make tutorial arrangements (venue confirmation)   | 5 |
| ST-20 | As a tutor I want to make contact with a confirmed student so that we can make tutorial arrangements (venue confirmation)  | 5 |
| ST-21 | As a student I want to check-in to a tutorial session so that my location is known to the administrator as a measure of safety.  | 5 |
| ST-22 | As a student I want to check-out to a tutorial session so that my leaving of the tutorial location is known to the administrator as a measure of safety.   | 5 |
| ST-23 | As a tutor I want to check-in to a tutorial session so that my location is known to the administrator as a measure of safety   | 5 |
| ST-24 | As a tutor I want to check-out to a tutorial session so that my leaving of the tutorial location is known to the administrator as a measure of safety  | 5 |
| ST-25 | As a student I want edit my profile so that my details are constantly up-to-date.  | 3 |

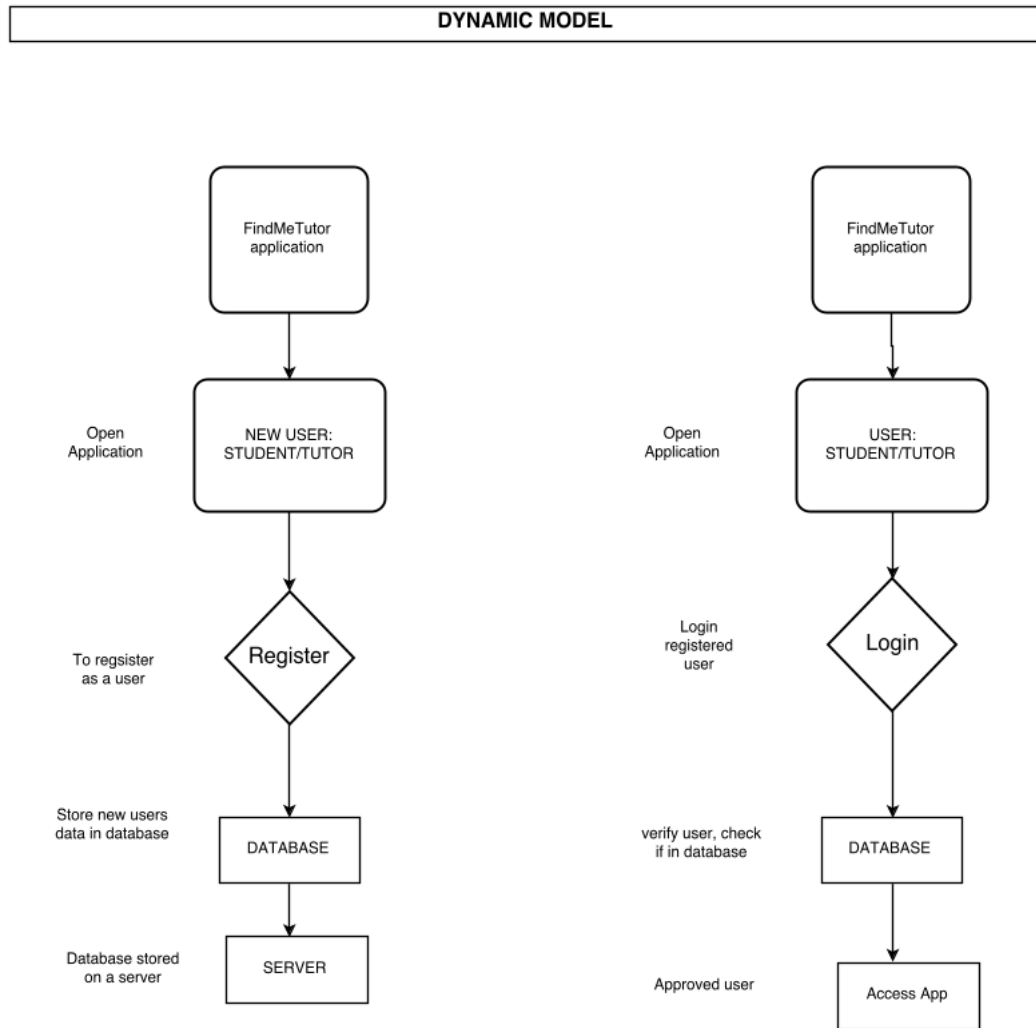


|       |   |   |
|-------|---|---|
| ST-26 | As a tutor I want edit my profile so that my details are constantly up-to-date.   | 3 |
| ST-27 | As a student I want to use the 'About' function to assist in my understanding of how the app works.   | 2 |
| ST-28 | As a tutor I want to use the 'About' function to assist in my understanding of how the app works.   | 2 |
| ST-29 | As a student I want to rate a tutor that has tutored me, to give feedback to fellow students and to the tutor about my understanding after the tutorial session.  | 4 |
| ST-30 | As a student I want a payment to be made, once I have checked out, as well as once the tutor has checked out so that the payment can only be made from my account once we have both checked out as a measure of safety. | 4 |

#### 4.6.5 Analysis object model



#### 4.6.6 Dynamic model



#### **4.6.7 User interface navigational paths and screen mock-ups**

#### Appendix 3

#### **4.6.8 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.

3.5.6 000webhost -Web server to host the database (as Amazon web services could no longer host our application)

3.5.7 Android studio: unit tests and Instrumental tests - to run the application's unit tests

## 5 REFERENCES

- requirements\_analysis\_document.pdf - given in class
- Marsic, Ivan. Software Engineering. New Jersey: Rutgers, 2012. Print.

## 6 APPENDIX