

Software Requirements Specification

IZTECH Graduation Application

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1. Introduction

1.1 Purpose

The purpose of this document is to provide information about the graduate application program. It illustrates the purpose of the system by mentioning the benefits and functionality it provides. It will also explain system features with interfaces provided.

1.2 Intended Audience and Reading Suggestions

This software requirements specification is intended for university officials who are responsible for graduate applications and the IT team of the university who are responsible for maintaining this application.

1.3 Product Scope

This is a graduation application program that provides a functional and easy-to-use interface for applicants, grad school and department.

Applicants can apply to an intended graduate program in a secure and fast way from all around the world through the application. They can send required documents through our system by uploading them within seconds, instead of delivering them physically.

Grad School handily manages applicants applications and checks their documents. Depending on whether documents and requirements of the application are correct, he/she can fastly reject or accept it.

Department is able to review applicants through one screen and set an interview easily. Finally, the department conveys the assessment results to Grad School directly thanks to our system.

1.4 References

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1.5 Definitions, acronyms, and abbreviations

API: Application Programming Interface

CRUD: Create, read, update and delete (Definition is given in Chapter 6 Appendix A).

CPU: Stands for "Central Processing Unit." The CPU is the primary component of a computer that processes instructions.

RAM: Stands for "Random Access Memory" and is pronounced "ram." RAM is a common hardware component found in electronic devices, including desktop computers, laptops, tablets, and smartphones.

MB: Abbreviation for megabyte, a unit of information equal to one million or, strictly, 1,048,576 bytes.

NoSQL: Non Structured Query Language (Definition is given in Chapter 6 Appendix A).

Grad School: Short for graduate school.

CSS: Stands for "Cascading Style Sheet." Cascading style sheets are used to format the layout of web pages.

HTML: Stands for "Hypertext Markup Language." HTML is the language used to create web pages.

IT: Stands for "Information Technology," and is pronounced "I.T." It refers to anything related to computing technology, such as networking, hardware, software, the Internet, or the people that work with these technologies.

1.6 Overview

This document includes five chapters and appendices. The first one provides, what are the system functionalities that users can make use of, the intended users and reading suggestions.

Second chapter “Overall Description” provides an overview of the system functionality and system interaction with other systems. This chapter also introduces different types of users and their interaction with the system. Further, the chapter also mentions the system constraints, assumptions and dependencies.

Third chapter “External Interface Requirements” provides a description of the different system interfaces. This chapter also includes visuals of the system interfaces.

Fourth chapter “System Features” provides detailed use-case tables for each use-case.

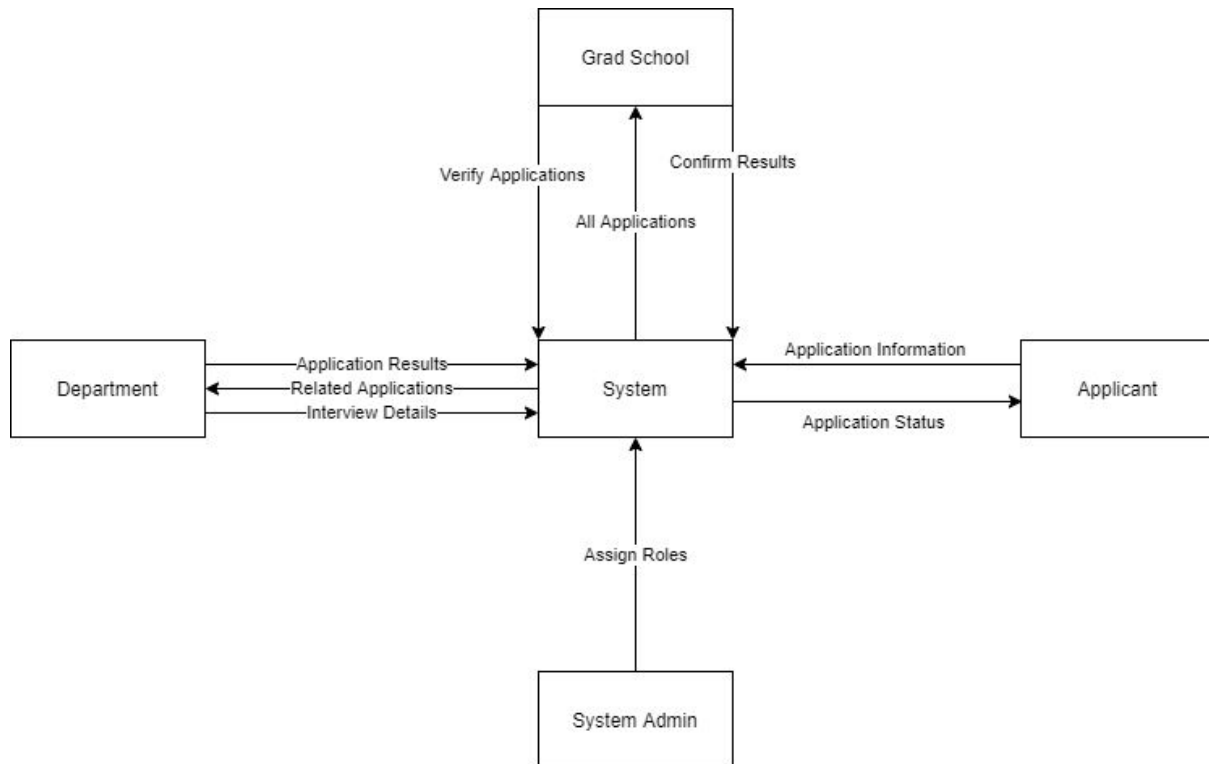
Fifth chapter “Other Nonfunctional Requirements” provides the requirements specification in detailed terms. Different specification techniques are used in order to specify the requirements more precisely for different users.

Sixth chapter in the end of the document includes a glossary and an Entity Relationship Diagram (ERD) which gives a summary of the database.

2. Overall Description

This section will give an overview of the whole system. The system will be explained in its context to show the basic functionality of it.

2.1 Product Perspective

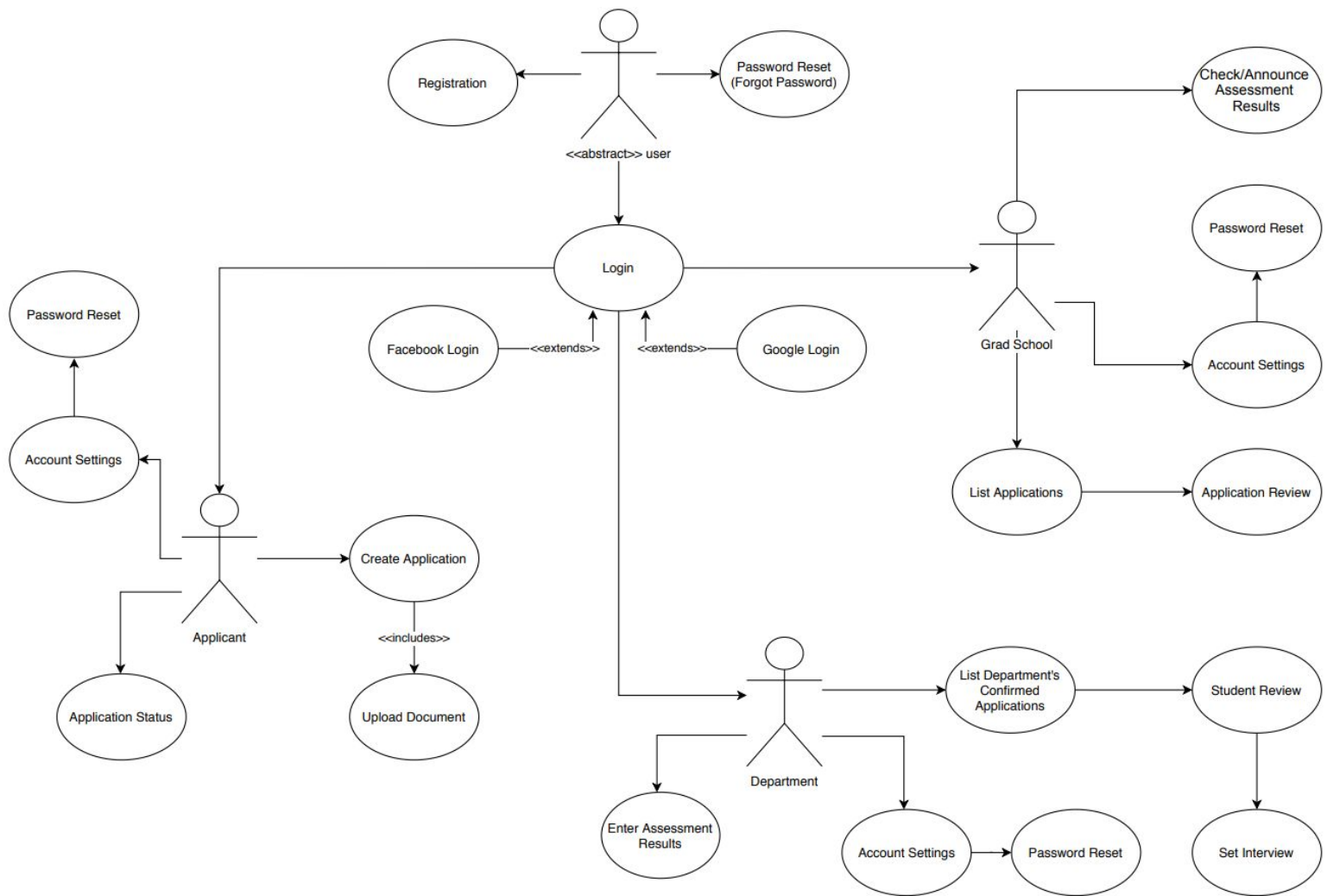


There are four domains each of which interact with the system directly.

1. Grad School verifies applications by interpreting the data ('All applications') provided by the system, confirms the results provided by the department.
2. Department gets all the application data related to itself from the system, provides interview information to the applicant via the system, and sends the application results.
3. Applicant creates an application by providing the required application data to the system, and the system keeps the user updated about his application status (also contains the interview details).
4. System admin assigns roles to users of department and grad school.

The system is not a component of a larger system, it's independent and self-contained.

2.2 Product Functions



Note: Abstract user is a user that hasn't been assigned to any role. After the login process, the system will assign a role to that user automatically.

Register

Applicant registers to the system.

Login

Users can login to the system with their email and password or with their Google/Facebook accounts.

Create Application

Applicant fills in the required fields and submits his/her application.

Upload Document

Applicant uploads and submits the related documents.

List Applications

Grad School lists all submitted applications.

List Department's confirmed applications

Department lists all confirmed applications by Grad School.

Set Interview Info

Department sets interview date and location.

Application Status

Applicant can check current progress of his/her application, Interview information and the results when they are announced.

Review Student

Department chooses an application from a list of confirmed applications by Grad School and evaluates it by looking at details of application.

Application Review

Grad School checks the documents whether they are proper or not for verification and confirmation.

Account Settings

Users can display and/or change some of their personal information that was provided in the registration screen. (Can reset their password and change their phone number, etc.)

Enter Assessment Results

Department will assess interviews and decide which applicants will be accepted.

Password Reset

Users can reset their passwords via email verification.

2.3 User Classes and Characteristics

User Class	Characteristic
Applicant	Users who want to apply for a graduate program must be either senior student or graduate. Also applicants are expected to have basic level computer usage knowledge (uploading necessary documents, etc.).
Department Official	Users who evaluate applicants. Department officials are expected to have basic level computer usage knowledge (downloading necessary documents, etc.) and ability to verify given documents.
Grad School Official	Users who verify the application requirements and documents, confirm the results, publish the results. Grad School officials are also expected to have basic level computer usage knowledge.

2.4 Operating Environment

Operating Systems: Windows, Linux, macOS, Android, iOS and any other operating system that supports one of the following versions of the browsers:
Chrome >= 45, Firefox >= 38, Edge >= 12, Explorer >= 10, Safari >= 9, Opera >= 30

Communication Architecture: Client/Server Architecture

Database: Firebase Realtime Database

Platform: HTML, CSS, Javascript, PHP

2.5 Design and Implementation Constraints

This application will be developed using the technologies given below:

Languages: HTML, CSS, Javascript, PHP

CSS Frameworks: Bootstrap 4.4

Services: Firebase (Realtime Database, Authentication, Cloud Storage)

Some of the HTML and CSS attributes may not be supported and as a result the system may not work as desired if tried using the program with an incompatible browser version.

The system is designed by adhering the ISO/IEC 9126 quality standards.

Due to lack of necessary API access to government institutions like e-Devlet, SGK, YÖK, EGM-Internal Affairs grad school officials will have to verify applicants' related documents manually.

2.6 User Documentation

There will be three user documentations:

1. Applicant User Documentation
2. Department User Documentation
3. Grad School User Documentation

Below topics will be provided for each of the users specified above:

- Tutorials
- Features
- FAQ and explanations

2.7 Assumptions and Dependencies

Under particular circumstances (registration via Gmail, Facebook account) the application may be dependent on Google Login API and Facebook Login API.

User's operating system will support at least one of the web browsers with the versions given in the section 2.4, assuming newer versions will not break backward capability.

The system is highly dependent on the Firebase services for realtime database and authentication. We assume these services will be up and running. The system and SRS will be updated according to if these services are no longer available.

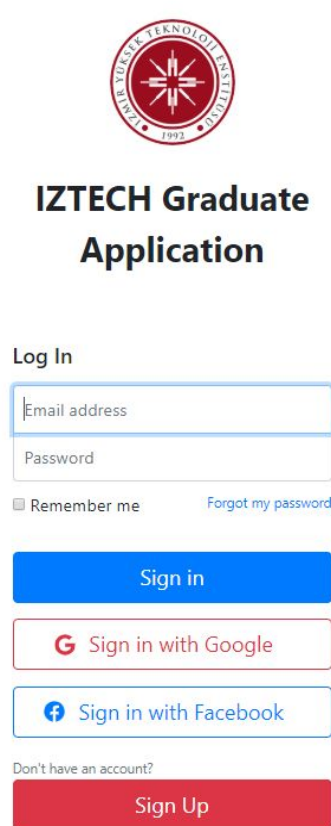
System is dependent on mail servers since confirmation of the applicant, registration and password reset services are done by mail servers.

3. External Interface Requirements


3.1 User Interfaces

3.1.1 Common Users

3.1.1.1 Login Interface



The login interface for the IZTECH Graduate Application. It features the IZTECH logo at the top, followed by the title "IZTECH Graduate Application". Below the title is a "Log In" section with a form containing an "Email address" field and a "Password" field. There is a "Remember me" checkbox and a "Forgot my password" link. Below the form are three buttons: a blue "Sign in" button, a red "Sign in with Google" button, and a blue "Sign in with Facebook" button. At the bottom, there is a link "Don't have an account?" and a red "Sign Up" button.



**IZTECH Graduate
Application**


Log In


Email address

Password

☐ Remember me [Forgot my password](#)

Sign in


 Sign in with Google

 Sign in with Facebook

[Don't have an account?](#)

Sign Up

3.1.1.2 Account Settings Interface

 Izmir Institute Of Technology

Dashboard

Create Application


Applicant's Guide

My Application

Settings

Sign out

Information



Lorem Ipsum

Your information

Emailemail@example.com

Phone+90*****1111

Change your phone

Reset Password

Save Changes

Delete your account

3.1.1.3 Reset password Interface

Type your email to send password reset link.

Email

Reset Password

3.1.2 Applicant

3.1.2.1 Register Interface



Izmir Institute Of Technology Graduate Application

Register

First name

Last name

Email

Password

Re-type Password

[Sign Up](#)

Already have an account?

[Sign In](#)

1.

Phone Confirmation

We will send you a text message with a verification code that you'll need to enter on the next screen.

Phone [Send](#)

2.

157 seconds remaining

Verification Code

[Submit](#)

3.

3.1.2.2 Create Application Interface

Application form

Student personal information

Name and Lastname

First name

Last name

Social Security Number

12345678900

Address

1234 Main St

Address 2 (Optional)

Apartment or suite

Country

Choose...

Zip

Next

Applicant Type Description

3

Foreign Student ?

Those who do not have a Turkish citizenship.

Turkish Student ?

Those who have a Turkish citizenship.

Is Working? ?

Those who currently have a job.

1.

Application form

Student application information

Department To Apply

Choose...

Applicant Type

Choose...

Is currently working ?

Choose...

Photo

Choose file

Browse

Undergraduate Transcript

.pdf

Choose file

Browse

ALES Result

.pdf

Choose file

Browse

English Exam Result

.pdf

Choose file

Browse

Reference Letters

.pdf

Choose file

Browse

Statement Of Purpose

.pdf

Choose file

Browse


Degree to Apply

Choose...

Submit

2.

3.1.2.3 Application Status

Zmir Institute Of Technology

Sign out

Dashboard

Create Application

Applicant's Guide

My Application

Settings


Application Details

Email	Current Status	Application Date
user@email.com	Waiting for interview results	3/04/2020

Interview Details

Place	Date	Time
Computer Engineering Department	03/04/2020	13:15

3.1.2.4 Application Guide Interface

Zmir Institute Of Technology

Sign out

Dashboard

Create Application

Applicant's Guide

My Application

Settings

Step 1

Anim pariatur cliche reprehenderit, enim eiusmod high life accusamus terry richardson ad squid. 3 wolf moon officia aute, non cupidatat skateboard dolor brunch. Food truck quinoa nesciunt laborum eiusmod. Brunch 3 wolf moon tempor, sunt aliqua put a bird on it squid single-origin coffee nulla assumenda shoreditch et. Nihil anim keffiyeh helvetica, craft beer labore wes anderson cred nesciunt sapiente ea proident. Ad vegan excepteur butcher vice lomo. Leggings occaecat craft beer farm-to-table, raw denim aesthetic synth nesciunt you probably haven't heard of them accusamus labore sustainable VHS.

Step 2

Step 3

3.1.3 Department

3.1.3.1 List Departments Confirmed Applications

Checked Applications		
	user@email.com Name & Lastname	View Details
	user@email.com Name & Lastname	View Details
	user@email.com Name & Lastname	View Details
	user@email.com Name & Lastname	View Details
	user@email.com Name & Lastname	View Details
	user@email.com Name & Lastname	View Details
	user@email.com Name & Lastname	View Details
	user@email.com Name & Lastname	View Details
	user@email.com Name & Lastname	View Details
	user@email.com Name & Lastname	View Details
	user@email.com Name & Lastname	View Details
<div> Previous 1 2 3 Next </div>		

3.1.3.2 Student Review

Applicant Review

Related Documents

Pre-application Form

Preapplication Document

Open

Undergraduate Transcript

Undergraduate Transcript

Open

ALES Result

ALES Result

Open

English Exam Result

English Exam Result

Open

Reference Letters

Reference Letters

Open

Master's Degree Transcript

Reference Letters

Open

Personal Information

5

Name & Lastname: ABCDE FGHIJKL

Email: user@email.com

Social Security No: 1234567891011

Foreign Student: Yes

Is Working? No

Is an interview set? Yes

Set an interview

Cancel the interview

3.1.3.3 Set interview date and location Interface

Set Interview

Set interview time and location for [Applicant Name](#).

Choose a place for the interview:

a time for your appointment:

mm/dd/yyyy



Choose a time for your appointment:

12:00 AM











April 2020

Mon	Tue	Wed	Thu	Fri	Sat	Sun
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3

SET INTERVIEW

3.1.3.4 Enter Assessment Results

Select Interviewed Applicants






 user@email.com Name & Lastname	<input type="checkbox"/> Accept
 user@email.com Name & Lastname	<input type="checkbox"/> Accept
 user@email.com Name & Lastname	<input type="checkbox"/> Accept
 user@email.com Name & Lastname	<input type="checkbox"/> Accept
 user@email.com Name & Lastname	<input type="checkbox"/> Accept
 user@email.com Name & Lastname	<input type="checkbox"/> Accept
 user@email.com Name & Lastname	<input type="checkbox"/> Accept
 user@email.com Name & Lastname	<input type="checkbox"/> Accept
 user@email.com Name & Lastname	<input type="checkbox"/> Accept
 user@email.com Name & Lastname	<input type="checkbox"/> Accept




< 1 2 3 4 5 >

SUBMIT ALL RESULTS

3.1.4 Grad School

3.1.4.1 List Submitted Applications Interface

	user@email.com Name & Last Name	View Details
	user@email.com Name & Last Name	View Details
	user@email.com Name & Last Name	View Details
	user@email.com Name & Last Name	View Details
	user@email.com Name & Last Name	View Details
All unchecked applications		

Checked Applications		
	user@email.com Name & Last Name	Accepted ☑
	user@email.com Name & Lastname	Denied ☒
	user@email.com Name & Lastname	Denied ☒
All checked applications		

3.1.4.2 Application Review Interface

Application documents

Pre-application Form

☐ Preapplication Document

Open

Undergraduate Transcript

☐ Undergraduate Transcript

Open

ALES Result

☐ ALES Result

Open

English Exam Result

☐ English Exam Result

Open

Reference Letters

☐ Reference Letters

Open

Statement of Purpose

☐ Statement of Purpose

Open

Passport

☐ Passport

Open

Permission Letter

☐ Permission Letter

Open

Master's Degree Transcript

☐ Reference Letters

Open

Submit Result

Student Information

6

Name & Lastname: ABCDE FGHIJKL

Email: user@email.com

Social Security No: 1234567891011







Foreign Student: Yes

Is Working? No

Additional document(s): **Passport**

3.1.4.3 Confirm and Announce Results Interface

Computer Engineering Department's Accepted Students

 user@email.com Name & Last Name	View Details
 user@email.com Name & Last Name	View Details
 user@email.com Name & Last Name	View Details
 user@email.com Name & Last Name	View Details
 user@email.com Name & Last Name	View Details
 user@email.com Name & Last Name	View Details

 Confirm

3.2 Hardware Interfaces

This application works on any web browser which can run on mobile devices, computers and any other device that supports a web browser. No other hardware is required.

3.3 Software Interfaces

Since this is a web application, it will only need a web browser that supports HTML5, CSS3 and Javascript 1.8.5 technologies in order to perform.

Database: Firebase, Libraries: Bootstrap 4.4, Google and Facebook login API.

3.4 Communications Interfaces

This web application needs an internet connection through interfaces like wifi, ethernet and any other interface that provides internet connection.

4. System Features

Use Case ID:	0		
Use Case Name:	Register		
Created By:	Group 4	Last Updated By:	Group 4
Date Created:	16.03.2020	Date Last Updated:	11.04.2020

Actor:	Applicant
Description:	Applicant registers to the system.
Preconditions:	No preconditions
Postconditions:	Account is successfully created and the user is logged in.
Priority:	High
Frequency of Use:	Once per user
Normal Course of Events:	<p>1-) User fills in the required input fields provided by the system with their information.</p> <p>2-) He/She clicks on the 'Register' button.</p> <p>3-) System will ask the user to provide his/her phone number to be able to send a verification code.</p> <p>4-) Then the user will be directed to a page in which there will be an input field for the verification code.</p> <p>5-) System will give 2 minutes for the user to enter his/her verification code.</p> <p>6-) If the provided verification code is correct then the user will be directed to his/her dashboard page.</p>
Alternative Courses:	No Alternative Courses

Exceptions:	<p>0.EX.1. Given mail address is invalid.</p> <p>(Response: System displays a message to indicate the error)</p> <p>0.EX.2. Given mail address is already taken.</p> <p>(Response: System asks user to enter a new mail address)</p> <p>0.EX.3 Given password is too short/long, includes special characters etc.</p> <p>(Response: System warns the user to re-enter a new password combination)</p> <p>0.EX.4. Given phone number is invalid.</p> <p>(Response: System displays a message to indicate the error)</p> <p>0.EX.5. The user has not entered the verification code correctly into the corresponding verification code input field provided by the system.</p> <p>(Response: System will display an error message and redirect the user back to the registration page)</p>
Includes:	No includes
Special Requirements:	User licence agreement
Assumptions:	<p>The mail server in which the user's email address is registered, should be available.</p> <p>Verification code sms successfully reaches user's phone</p>
Notes and Issues:	Department and Grad School accounts created manually from firebase authentication, no need to register but it's also possible to change the role of registered account manually from firebase if there is any need.

Use Case ID:	1
Use Case Name:	Login

Created By:	Group 4	Last Updated By:	Group 4
Date Created:	16.03.2020	Date Last Updated:	11.04.2020

Actor:	Applicant, Grad School, Department
Description:	User logs in to the system.
Preconditions:	No preconditions
Postconditions:	User is logged in.
Priority:	High
Frequency of Use:	20 times per user in a year
Normal Course of Events:	<p>1-) User enters his/her email and password to login.</p> <p>2-) User clicks on the sign in button.</p> <p>3-) User is directed to an index page that has a dashboard which contains authorized functions assigned to his/her role.</p>
Alternative Courses:	<p>1.a-) User follows the password reset procedure by clicking forget my password link.</p> <p>2.a-) After the password reset process, the user logs into the system with his/her new password.</p> <p>1.b-) If the user has not signed up to the system, click the register button to start the registration process.</p> <p>2.b-) After registration, the user logs into the system.</p> <p>1.c-) User clicks on either 'Sign in with Google' or 'Sign in with Facebook' button. If the user hasn't registered before, a phone verification will be needed additionally.</p> <p>2.c-) After the user logs in, he/she is directed to an index page that has a dashboard which contains authorized functions assigned to his/her role.</p>

Exceptions:	1.EX.1 User tried to log in with an email address that does not exist in the system or entered a password wrong. Response: System informs the user that he/she entered an incorrect email address or an invalid password for that email address.
Includes:	No includes
Special Requirements:	No special requirements
Assumptions:	No assumptions
Notes and Issues:	No notes or issues

Use Case ID:	2		
Use Case Name:	Create an application		
Created By:	Group 4	Last Updated By:	Group 4
Date Created:	17.03.2020	Date Last Updated:	11.04.2020

Actor:	Applicant
Description:	Applicant fills in an application form to apply for a program.
Preconditions:	User's identity has been authenticated with an Applicant account.
Postconditions:	Applicant filled all the required parts of the application form and submitted the form successfully.
Priority:	High
Frequency of Use:	Once a year

Normal Course of Events:	<p>1-) Applicant fills the given form by the system with correct and up-to-date information.</p> <p>2-) Clicks on the 'Next' button.</p> <p>3-) System directs the user to the next application page in which the user is asked to provide his/her related documents along with additional information.</p> <p>4-) User selects his/her citizenship and working status.</p> <p>5-) Uploads all required documents. (Use Case ID 3)</p> <p>6-) Clicks on the submit application button.(Use Case ID 3)</p> <p>7-) System saves the documents and additional information provided, and displays a message indicating the success of the transaction of the user. (Use Case ID 3)</p>
Alternative Courses:	No alternative courses
Exceptions:	<p>2.EX.1. User fills in a field with an invalid value or doesn't fill at all. (Response: Ask the user to re-enter the field).</p> <p>2.EX.2 User hasn't uploaded all the required documents and tries to submit. (Response: System will decline the submission, and will inform the user to upload all the necessary documents).</p>
Includes:	Use Case ID 3 (Upload required documents)
Special Requirements:	No special requirements.
Assumptions:	1-) Applicants have a minimum level of degree (If applying for a Master's degree then the applicant must at least have a Bachelor's degree) in order for him/her to be able to apply.
Notes and Issues:	No notes or issues

Use Case ID:	3		
Use Case Name:	Upload required document		
Created By:	Group 4	Last Updated By:	Group 4
Date Created:	16.03.2020	Date Last Updated:	13.04.2020

Actor:	Applicant
Description:	Applicant uploads the required document.
Preconditions:	User's identity has been authenticated with an Applicant account. Applicant must have provided his/her personal information and clicked the 'Next' button in the first application page.
Postconditions:	Applicant has uploaded the required document successfully.
Priority:	High
Frequency of Use:	Once per document / per application
Normal Course of Events:	1-) Clicks on the "choose file" button on the upload document field. 2-) File explorer window for user's device shows up. 3-) User chooses his/her documents from his/her device.. 4-) User realizes the upload is done when the file name appears instead of 'Choose a File' text. 5-) Clicks on the submit application button. 6-) System saves the documents and additional information provided, and displays a message indicating the success of the transaction of the user.
Alternative Courses:	No alternative courses

Exceptions:	<p>3.EX.1 User uploads a document in the wrong format and tries to submit. (Response: System will decline the submission, inform the user to change the file).</p> <p>3.EX.2 User uploads a document which exceeds the given upload capacity. (Response: System will warn the user with "Upload limit is exceeded." message)</p>
Includes:	No includes
Special Requirements:	No special requirements
Assumptions:	Applicants must have a minimum level of degree (If applying for a Master's degree then the applicant must at least have a Bachelor's degree) in order for him/her to be able to apply.
Notes and Issues:	No notes or issues

Use Case ID:	4		
Use Case Name:	Application Status		
Created By:	Group 4	Last Updated By:	Group 4
Date Created:	16.03.2020	Date Last Updated:	11.04.2020

Actor:	Applicant
Description:	Applicant can check current progress of his/her application, Interview information and the results when they are announced.
Preconditions:	User's identity has been authenticated with an Applicant account.
Postconditions:	Corresponding application status is displayed to the user.
Priority:	Low

Frequency of Use:	Once a day after an application is created
Normal Course of Events:	<p>1-) User clicks on the 'Application Status' button, displayed on the left of the screen.</p> <p>2-) System shows his/her application status. If the interview is set by the department it is shown right below the application status information. If the interview is not set yet, then an indicative message is displayed instead.</p>
Alternative Courses:	No alternative courses
Exceptions:	<p>4.EX.1 If the user has not created any application and clicks on the 'Application Status'</p> <p>(Response: A popover message will be displayed warning the user and he/she will not be directed to the application status page).</p>
Includes:	No includes
Special Requirements:	No special requirements
Assumptions:	No assumptions
Notes and Issues:	No notes or issues

Use Case ID:	5		
Use Case Name:	List applications		
Created By:	Group 4	Last Updated By:	Group 4
Date Created:	16.03.2020	Date Last Updated:	11.04.2020

Actor:	Grad School
Description:	Grad school lists all submitted applications.
Preconditions:	User's identity has been authenticated with a Grad School account.
Postconditions:	System shows all submitted applications to the user.
Priority:	Medium
Frequency of Use:	Several times per day in the application period
Normal Course of Events:	1-) User clicks the list submitted applications button. 2-) The program shows all the submitted applications to the user if any. 3-) User can click on "View Details" of a desired application row to continue application review (use case ID: 10)
Alternative Courses:	No alternative courses
Exceptions:	No Exception
Includes:	No Includes
Special Requirements:	No special requirements
Assumptions:	No assumptions
Notes and Issues:	No notes or issues

Use Case ID:	6
Use Case Name:	List Department's Confirmed Applications

Created By:	Group 4	Last Updated By:	Group 4
Date Created:	16.03.2020	Date Last Updated:	11.04.2020

Actor:	Department
Description:	Department list all confirmed applications.
Preconditions:	User's identity has been authenticated with a Department account.
Postconditions:	Program lists all confirmed applications to the department.
Priority:	Medium
Frequency of Use:	Several times per day in the application period
Normal Course of Events:	1-) User clicks the list confirmed applications button 2-) The program shows all the confirmed applications of that department to the user if any. 3-) User can click view details to continue to student review (use case ID: 8)
Alternative Courses:	No alternative courses
Exceptions:	No exceptions
Includes:	No includes
Special Requirements:	No special requirements
Assumptions:	No assumptions
Notes and Issues:	No notes and issues

Use Case ID:	7		
Use Case Name:	Set interview date and location.		
Created By:	Group 4	Last Updated By:	27.03.2020
Date Created:	16.03.2020	Date Last Updated:	13.04.2020

Actor:	Department
Description:	Department sets interview date and location.
Preconditions:	User's identity has been authenticated with a Department account.
Postconditions:	Interview date and location have been set successfully.
Priority:	Medium
Frequency of Use:	Once every application
Normal Course of Events:	1-) Chooses a date from the calendar. 2-) Choses a time for interview 3-) Enters a location. 4) Clicks the "set interview" button to finish the process.
Alternative Courses:	No alternative courses
Exceptions:	7.EX.1 The selected time and location have already been set for another student. 7.EX.2 The selected date and location is not valid.
Includes:	No includes
Special Requirements:	No special requirements

Assumptions:	No assumptions
Notes and Issues:	No notes and issues

Use Case ID:	8		
Use Case Name:	Student Review		
Created By:	Group 4	Last Updated By:	Group 4
Date Created:	16.03.2020	Date Last Updated:	13.04.2020

Actor:	Department
Description:	Department looks into the details of the applicant's information.
Preconditions:	User's identity has been authenticated with a department account.
Postconditions:	Applicant's related information has displayed successfully, reviewed by the Department and ready to set an interview date.
Priority:	Medium
Frequency of Use:	Once every application
Normal Course of Events:	<p>1-) User can see personal information of the applicant.</p> <p>2-) User can click the open buttons of the given documents.</p> <p>3-) System opens the document in a new tab.</p> <p>4-) To set an interview, user can click the "set an interview" button if the interview hasn't been set before (otherwise set an interview button is disabled).</p> <p>5-) To cancel an interview, user can click the "cancel the interview" button.</p>
Alternative Courses:	No alternative courses

Exceptions:	No exceptions
Includes:	No includes
Special Requirements:	No special requirements
Assumptions:	No assumptions
Notes and Issues:	No notes and issues

Use Case ID:	9		
Use Case Name:	Enter Assessment Results		
Created By:	Group 4	Last Updated By:	Group 4
Date Created:	16.03.2020	Date Last Updated:	13.04.2020

Actor:	Department
Description:	Department enters assessment results.
Preconditions:	User's identity has been authenticated with a Department account.
Postconditions:	User has entered results successfully.
Priority:	Medium
Frequency of Use:	Once every assessment
Normal Course of Events:	1-) User selects the 'Enter assessment results' section on his/her dashboard.

	<p>2-) System directs the user to the corresponding page in which he/she can select students to be accepted.</p> <p>3-) Provides the results to the system by selecting the applications that will be accepted, then clicks on the 'Submit results' button.</p>
Alternative Courses:	No alternative courses
Exceptions:	No exceptions
Includes:	No includes
Special Requirements:	No special requirements
Assumptions:	No assumptions
Notes and Issues:	No notes and issues

Use Case ID:	10		
Use Case Name:	Application Review		
Created By:	Group 4	Last Updated By:	Group 4
Date Created:	16.03.2020	Date Last Updated:	13.04.2020

Actor:	Grad School
Description:	Grad School checks the documents whether they are proper or not for verification and confirmation.

Preconditions:	User's identity has been authenticated with a Grad School account.
Postconditions:	Application documents are displayed, and the results are submitted successfully.
Priority:	Medium
Frequency of Use:	Once a year for every application
Normal Course of Events:	<p>1-) Grad School checks the documents by clicking the open buttons near to them and other requirements of the application(s).</p> <p>2-) System opens the document in a new tab.</p> <p>3-) User reviews each document by clicking on the 'open' button, clicks the checkbox on the left if the document is proper.</p> <p>4-) Finally, the user clicks on the 'Submit Result' button.</p>
Alternative Courses:	<p>If the applicant is foreign, the passport copy must be checked by Grad School additionally.</p> <p>If the applicant works, a permission letter must be checked by Grad School additionally.</p>
Exceptions:	No exceptions
Includes:	No includes
Special Requirements:	No special requirements
Assumptions:	Grad School should know which requirements are needed for application according to Graduate Applications Regulations.
Notes and Issues:	No notes and issues

Use Case ID:	11		
Use Case Name:	Confirm & Announce Assessment Results		
Created By:	Group 4	Last Updated By:	Group 4
Date Created:	01.04.2020	Date Last Updated:	13.04.2020

Actor:	Grad School
Description:	Grad School checks the assessment results whether they are proper or not, announces them.
Preconditions:	User's identity has been authenticated with a Grad School account.
Postconditions:	Results are announced.
Priority:	High
Frequency of Use:	Once/Twice in a year for each department
Normal Course of Events:	<p>1-) User presses assessment results from his/her dashboard.</p> <p>2-) A new interface shows up with a list of departments that have submitted their assessments. User can choose a department from that.</p> <p>3-) After the user chooses a department there will be another interface that takes place where there is a list of chosen students and a button named "Submit All Results" to confirm and then announce the results. Also there will be a pop up that double checks user that they're sure to do that.</p> <p>4-) After the user has confirmed the process. Each chosen applicant will be informed with an automatic email. Applicants can also check their results from application status.</p>
Alternative Courses:	No alternative courses

Exceptions:	No exceptions
Includes:	No includes
Special Requirements:	No special requirements
Assumptions:	No assumptions
Notes and Issues:	No notes and issues

Use Case ID:	12		
Use Case Name:	Password Reset		
Created By:	Group 4	Last Updated By:	Group 4
Date Created:	30.03.2020	Date Last Updated:	13.04.2020

Actor:	Applicant, Grad School, Department
Description:	User changes his password with a new one.
Preconditions:	User already has an account.
Postconditions:	Password has been reset successfully.
Priority:	Medium
Frequency of Use:	Rare
Normal Course of Events:	1) User clicks on the "forgot my password" button. 2) Password reset interface shows up, the user will be asked to enter his/her registered email address.

	<p>3) System sends password reset email to the corresponding user's email address.</p> <p>4) User clicks on the link in the verification email to be directed to a page where he/she can enter his/her new password.</p>
Alternative Courses:	<p>1) User has already logged in to the system and wants to change his/her password.</p> <p>2) Clicks the account settings and starts the password reset process by pressing the "Reset Password" button.</p> <p>3) System sends password reset email to the corresponding user's email address.</p> <p>4) User clicks on the link in the verification email to direct to a page where he/she can enter his/her new password.</p>
Exceptions:	<p>12.EX.1. Given mail address does not exist in the system. (Response: Systems informs the user with a message and asks for a new one).</p> <p>12.EX.2 Given a new password is too short/long, includes special characters e.g (Response: System informs the user with a message).</p>
Includes:	No includes
Special Requirements:	No special requirements
Assumptions:	No assumptions
Notes and Issues:	No notes and issues

Use Case ID:	13		
Use Case Name:	Account Settings		
Created By:	Group 4	Last Updated By:	Group 4
Date Created:	16.03.2020	Date Last Updated:	13.04.2020

Actor:	Applicant, Department, Grad School
Description:	User can change his/her personal information such as their phone number, password.
Preconditions:	User is logged in.
Postconditions:	User's account deletion operation or changing of his/her personal information is successfully done.
Priority:	Low
Frequency of Use:	Few times a year per user
Normal Course of Events:	<p>1-) User clicks on the 'Account Settings' button.</p> <p>2-) User changes his/her personal information related to his/her account or deletes the account.</p> <p>3-) System asks for confirmation for the changes made.</p> <p>4-) User confirms the changes.</p>
Alternative Courses:	No alternative courses
Exceptions:	No exceptions
Includes:	No includes
Special Requirements:	No special requirements
Assumptions:	No assumptions
Notes and Issues:	No notes and issues

5. Other Nonfunctional Requirements

5.1 Performance Requirements

5.1.1 Capacity

The system uses Firebase servers as dbms this way it can support 100 hundred simultaneous user interactions as a base plan, firebase plan could be increased to a higher plan to support simultaneous connections as much as there is need.

System will allocate up to 10mb of space per document. All data will be string handled as json and uploaded documents will be stored as pdf.

An applicant user will upload at most 9 documents which will require 90 mb of storage per application. For his/her personal information along with other application information such as program to apply, working status, etc 100KB will be allocated.

5.1.2 Dynamic Numerical Requirements

Processing the transactions, the request time from the system and the return time will be, on average, less than 2 seconds.

Biggest time consuming part of the software is expected to be where it will list both the reviewed and unchecked applications. Since it includes transactions as fetching data from the server, converting each data into a displayable HTML element, it's estimated to take no more than 3 seconds.

Host servers will be available at least %98 of the time considering maintenance, hardware failure, human error, power outages and security threats.

When the system crashes, it is expected to recover in at most 2 hours. CPU speed or RAM of the device is not a big concern. Performance requirements of a web browser will be greatly matched with this program's.

5.2 Safety Requirements

There will be a report system available where users can submit their feedback about the program and report any bugs they have encountered so that the developers can fix it in the next release.

The database will backup its data 2 times in a day automatically in a scheduled manner, and all actions will be logged as they happen to prevent the data loss due to crashes. Database will recover itself from logs under 1 hour, if it can't, the transactions will have to be redone by the appropriate user and the user will be notified via their email.

5.3 Security Requirements

Based on personal data protection laws, users' personal data and documents will be kept in the Firebase Realtime Database and Google Cloud Storage so that every information is server side encrypted.

Password needs to be at least 8 character length. Needs to include at least one upper case letter, lower case letter, digit and special character.

System uses phone verification to complete the registration process. This will mostly prevent spam account creation. User needs to enter the 6 digit verification code in 2 minutes otherwise the registration process will fail.

During the login phase if the system detects 5 invalid submissions (with an incorrect password for the given email) then the account will be blocked from login. An email will be sent to their email to unblock and reactivate the account.

Data access is controlled on a user basis, for instance, an applicant user cannot see or change another applicant's data, a department user can only list and confirm applicants that applied for that department, etc. Each user is given necessary read or write access only when it's necessary.

5.4 Software Quality Attributes

Functionality

- The system is capable of doing any requested tasks by the user, the results of these tasks are provided to the user with accuracy, that is, the ratio of the number of successful transactions to the total number of transactions are almost always 1. Success of each transaction is measured mostly by the accuracy of the data they return from the database. (For example whenever the department user requests to see a particular applicant's info, system returns the correct information)
- Confirmed applications are kept in the database according to the departments they belong to. Thus, they can be listed any time by their departments for setting interviews.
- Each progress about an applicant, interview and application information are updated in his/her application status in realtime.
- When the results are announced, an automatic email is sent to each applicant.

Reliability

System withstands (and recover) from component, or environmental failure, with the help of the logs and regular backups. Users can continue their application without losing progress after the network goes down for up to 10 mins. For instance, while the applicants are uploading the documents to the system, the uploading process is stopped and documents that have been uploaded are saved in the system if the network connection is interrupted.

Usability

Before the release of the system, interfaces have been tested by 20 users and %90 (18 users) of users found them user-friendly and easy to use.

For understandability purposes the system contains a user guide that explains the application steps clearly. Apart from that, departments don't have to search all confirmed applications to find ones that belong to them. The system automatically lists only the confirmed applications of the relevant department.

Efficiency

System achieves much lower response times by using firebase realtime database (NoSQL) compared to SQL alternatives like MySQL, "Response time for MySQL is 3218 milliseconds and for Firebase is 37 milliseconds." (Ohyver, Moniaga, Sungkawa, Subagyo, & Chandra, 2019). We also use Google Cloud Storage for much faster upload and download speeds that only limitation on data transfer speed caused by the user's internet bandwidth.

The system uses pagination whenever possible, breaking up the data into certain amount of pieces (pages) making the process faster because only a certain amount of data is fetched per page instead of fetching all at once.

Maintainability

For the maintenance purposes the changes made in the system will have less side effects due to our well designed system structure. System admin can easily maintain applications with firebase console, it provides many monitoring tools to analyze data flow and errors.

Portability

According to the master's regulation; there may be changes in the type and number of documents, the personal data request for application. Also according to user requests, new features needed to be added accordingly. Therefore, our system is designed in such a way that the application form content and all the other features can be easily changed and adapted to the new regulation by our project team. Since it is a modern responsive web application it can run on many devices and operating environments.

5.5 Business Rules

This part is intentionally left blank.

6. Other Requirements

Appendix A: Glossary

Firebase: A mobile and web application development platform developed by Firebase, Inc. in 2011, then acquired by Google in 2014. As of March 2020, the Firebase platform has 19 products, which are used by more than 1.5 million apps.

Abstract User: It defines a user that hasn't been assigned to a specific role.

CRUD: In computer programming, create, read, update, and delete (CRUD) are the four basic functions of persistent storage. Alternate words are sometimes used when defining the four basic functions of *CRUD*, such as *retrieve* instead of *read*, *modify* instead of *update*, or *destroy* instead of *delete*.

NoSQL: A NoSQL (originally referring to "non SQL" or "non relational") database provides a mechanism for storage and retrieval of data that is modeled in means other than the tabular relations used in relational databases. NoSQL databases are increasingly used in big data and real-time web applications.

Appendix B: Analysis Models

