
Software Requirements Specification

for

NuForAll

Version 1.0 approved

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction –

The Developers as a team are planned to develop a web application to integrate the core and frequently accessed features of Gatepass ,Library and Nucleus.

1.1 Purpose –

This is a web app which is compatible on all platforms and its revision version being 1.0.By this app,the efforts required by the NU students to apply gatepass,issue a book or checks his/her attendance and timetable will be reduced,since it will be accessible from a single app,easy to use.

1.2 Document Conventions –

In this SRS document used fonts are Calibri font and will be using appropriate bullets for describing or pointing out different features of the product. Font size is 16 throughout the document. The headings are bold and the contents are italics. Several important phrases and words are underlined and bold defined for grabbing attention. Word spacing is same throughout and there is a gap of 2 units of line spacing after each sub topic. The app is planned in a way that every requirement statement has its own priority.

1.3 Intended Audience and Reading Suggestion -

This SRS Document is intended to be read by all the users of our app including faculty,students,product manager and owner as well. It will also suffice for the developers involved in Hybrid applications to get a gist of

the ionic frameworks that we used. It will also be helpful to the documentation writers to know the way and format to present.

It is intended for all the readers defined to read this SRS in order as given to understand the functionalities and non functional requirements that our app possess.

1.4 Product Scope –

This web app provides benefits to the students at NU to see their gatepass status, books availability with their due amounts and look for their attendance and timetable “At One Click”. These features being accessed from a single app removes the amount of work and efforts for the students ,saving their time.This app will surely help all those students who have to go to library for book availability checking and have to go to wardens in regard for the gatepass cancellation and all,for that they only have to login in our app.

This App will not be the replacement of Library model or the Gatepass system, As to issue a book a student has to go to library. This app is a model which is product based ,designed to create the comfort for the NU students at one click.

1.5 References –

Refer to the attached USE-CASE Diagram attached with this file.

2.Overall Description :

2.1 Product Perspective –

The product defines a component of a very large system of NU Gatepass, Library and ERP. What perspective our web app consists of includes the integration of core and frequently accessed features of all three in a single application which is compatible on all platforms. Hence neither called as replacement or a follow-on member, it can be viewed as a software model dedicated to the purpose to provide ease access to the users involved.

2.2 Product Functions –

The web application consists of three models which includes Gatepass, Library and Nucleus/ERP. The app will have a function to authenticate the user with Google ST account Login. Each model consists two basic and highly frequent functions. Gatepass includes a function to apply a Gatepass and a function to check current status of approval and rejection. Library module has two functions which includes a function to check the availability of a book in library and second one to enable and check the due date notification after an issue. Finally ERP module ,first one to check the timetable or schedule of classes and the second one to check attendance since last week till date.

2.3 User classes and characteristics –

The Product has a single defined user class and that is NU Students who will use the product functions defined above in the most frequent manner . They are those for whom the product is to be developed. Pertinent characteristics of our NU Students include the benefits that they will avail by this app in order to access the features of all the three modules with a “One Click”.

2.4 Operating Environment –

The product is a Web Application which means it will co-exist on all platforms of Android,ios,Windows and Browser. This app will be built on IONIC-2 Framework adjoint with Angular-2 modules in typescript mode with installed Cordova Plugins. Firebase will be used as a BaaS. It will exist on all defined versions of Platforms and operating systems.Talking about the OS, the app is formulated on UBUNTU 16.04 with installed text editor like VS code and Atom. The development language used includes Html,Css,Javascript,Angular-2 or the Angular-JS.

2.4 Design and Implement Constraints –

The Constraints defined for the product includes the restriction on other than NU students to access the webapp. It comes under the regulatory policy that we will enable. This app will not work on Very very older versions of platforms which are unable to be compatible for newer software developments, if not upgraded or updated. There are hardly any constraint on timing and memory requirements.This app will be made available in English language. Further defined constraints include the constraints on DATABASE access on Firebase and NU server access. Since the app will interfere with the currently active Gatepass system and Library KOHA database, we will not be given full control over these stuffs. The development team will be responsible for maintaining the delivered software.

2.5 User Documentation –

Not prepared till date, but will be prepared afterwards.

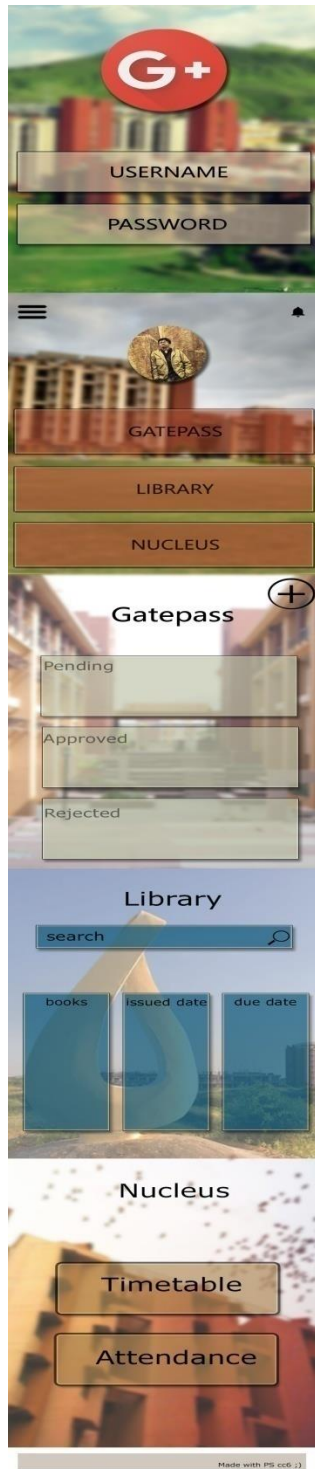
2.6 Assumptions and Dependencies –

The product needs an regular API calls to the database managed by TCO and NU servers to receive the user data and updated changes involved. Issues involved in are to make sure there should not be any kind of unauthorized access to the NU server database, No hacks possible and no unwanted changes to be made in there. This is the dependency involved in our product. Besides this On commercial components we may plan to use paid cloud service in Firebase to enable storage and hosting component for our app deployment. Issues involved in there includes the management of CLI for ionic and importing its Angular module.

3. External Interface Requirements :

3.1 User Interfaces Requirements –

This section talks about the user end that how the user will see the web app and regarding the interfaces or GUI on the user end. As per the user interface, attached image will explain.



3.2 Hardware Interfaces –

The software product can run on all device types and platforms including Android, ios, Browser or windows. The Data flow will be synchronised

between database , its queries and our app.This data in our software regarding each and every user will be fetched from the database of ERP or Moodle via API calls that will be made by the interface.Communication protocols includes the FTP and HTTP involved in API calls and retrieval of informations.

3.3 Software Interfaces –

This product named “NU For All”,version 1.0, is built on Linux as OS and on Ionic-2 framework to provide a good and user interactive GUI. As our BaaS we included Google Firebase to host, store and deploy our web application. As our support we need to fetch data from Moodle and ERP servers .As the library we need to import Angular-2 modules and various cordova plugins for local notifications and all. Data that will come in will be the result of database queries made by API calls and data that moves out includes the API calls to know about the gatepass status,library module and ERP module features. All communications are made to follow the HTTP protocol mostly, but ome features also include FTP. App need to connect with the Gatepass Database through REST API which is to be developed by us. Also the app need to connect to the Nucleus API to get the records of the Timetable and Attendance. Obviously Finally need to connect the KOHA database to have the details of the Library enquiries.

3.4 Communications Interfaces –

Library module will need to have the Email notifications to be raised in regard of the Due dates to inform and Whenever books are issued or else. This Auto-generated email is sent only when there are certain changes made in our Database via API calls and updations, which makes it sure to implement this network communication in HTTP. Mostly all Database

exchange of informations are made in HTTP, Few are implemented in FTP when there are local data exchange like enabling local notifications. To make database secured , wel use MD-5 encryption.

In case of Google authentication by firebase, the app will be using the FCM, to send the notification to the client side application.

4. System Features

4.1 Google Authentication

4.1.1 Description and Priority

Any user who need to access the app must be signed in by google “ST” account.

Priority – High

4.1.2 Stimulation/Response Design

The system will respond to it by asking the user to fill in the login details by opening the login page to the user and getting him/her authorised.

4.1.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data packs should be on the device.

RQ-3 : Valid ST account.

4.2 Gate pass

4.2.1 Description and Priority

This feature contains the material for the students to interact with the gatepass system , including apply gatepass and cancel the pending request with checking the status.

Priority – Medium

4.2.2 Stimulation/Response Design

The system responds to the user by opening up the page for where it asks the user to apply gatepass options.

Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU moodle server should be listening.

4.3 Library

4.3.1 Description and Priority

This feature enables the user to manage their library requirements in terms of book availability queries and getting notified.

Priority – Medium

4.3.2 Stimulation/Response Design

The user is provided by the system response which pops or opens the page to manage library requirements including a button to search for a book and a response by the system to get notified.

4.3.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU Koha Database should be up.

4.4 Nucleus

4.4.1 Description and Priority

It contains the feature which makes the students see his/her timetable and attendance .

Priority - Medium

4.4.2 Stimulation/Response Design

The system will respond with a form page which makes the user fill his/her requirements and then return the user with the excel sheet as output.

4.4.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU ERP server and Database should be up.

4.5 Apply Gate pass

4.5.1 Description and Priority

This feature enables the students to apply for gatepass , which further leads to various features included in it.

4.5.2 Stimulation/Response Design

The system will now open up the options for the user whether they want to apply for local gatepass or outstation gatepass.

4.5.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU server should be up

4.6 Local Gate pass

4.6.1 Description and Priority

It enables the user/students to apply local Gatepass which already has two features Fixed Gatepass and Flexible timing.

Priority - High

4.6.2 Stimulation/Response Design

The response generated by the system includes the opening of a page which asks the user to ask for fixed timing or flexible timing.

4.6.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU server should be up.

4.7 Fixed Timing

4.7.1 Description and Priority

This feature enables the user to apply gatepass on auto-approve basis, without the involvement of the warden.

Priority - High

4.7.2 Stimulation/Response Design

When the user clicks on it, the system will respond with the auto-approval status of the gatepass.

4.7.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU server should be up.

4.8 Flexible Timing

4.8.1 Description and Priority

This feature enables the user to apply gatepass on auto-approve basis, without the involvement of the warden.

Priority - High

4.8.2 Stimulation/Response Design

The system will respond with a page which requires the user to fill in required date and address and warden name to whom the request is to be made.

Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU server should be up.

4.9 In-out time

4.9.1 Description and Priority

This feature will make the user explain about the in and out time of the arrival and departure in case of flexible timing of the gatepass request.

4.9.2 Stimulation/Response Design

When the user will fill the in and out time , the system will make the user proceed with the required details further to chose warden and after that the submit button.

4.9.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU server should be up.

4.10 Choose Warden

4.10.1 Description and Priority

This feature gives the functionality to the user to select warden of his/her choice to whom he want to send the gatepass request. This functionality appears every time when the user wants to apply for local gatepass.

4.10.2 Stimulation/Response Design

The system will respond with a drop-down menu which shows the name of the wardens.

4.10.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU server should be up.

4.11 Submit

4.11.1 Description and Priority

This feature is an included associational relationship with the fill form use case which enables the user to submit and request for the desired outstation gatepass and is also available for the local gatepass in case of both fixed or flexible timing.

Priority - Medium

4.11.2 Stimulation/Response Design

The system will respond with a status bar showing approved and pending request.

4.11.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU server should be up.

4.12 Apply Outstation Gatepass

4.12.1 Description and Priority

This enables the user to apply the outstation Gatepass.

4.12.2 Stimulation/Response Design

The system respond with opening the form which enables the user to fill the form regarding the address and purpose of leaving together with the warden name to whom the request is to be made. Besides this it also requires the user to submit the opened form.

Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU server should be up.

4.13 Form fill**4.13.1 Description and Priority**

This feature enables the user to fill the form while applying in outstation gatepass, regarding the date and time of arrival departure together with the purpose of visit and name of the warden to whom the request is to be made.

Priority - High

4.13.2 Stimulation/Response Design

The system will respond with the user with a submit button after the user is done with the form fill.

4.13.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU server should be up.

4.14 Status bar

4.15 Status bar

4.11.1 Description and Priority

This feature is an included feature of gatepass, which shows the current request status of the gatepass Aproved,pending or reject.

4.15.1 Stimulation/Response Design

The system will respond with the notification pop-up indicating whether the request is approved or pending.

4.15.2 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU server should be up.

4.16 Cancel request

4.16.1 Description and Priority

This feature enables the user to cancel his/her pending gatepass request.

4.16.2 Stimulation/Response Design

The system will respond with the cancellation of pending gatepass request.

4.16.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU server should be up.

4.17 Notification of issued book or due date

4.17.1 Description and Priority

This feature gives the details about the due date regarding the books issued.

4.17.2 Stimulation/Response Design

The system will give the push notifications to the user about the due dates of book issued.

4.17.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU Koha database server should be up.

4.18 Search Book**4.18.1 Description and Priority**

This feature enables the user to search for a book in library to check whether it is available or not..

4.18.2 Stimulation/Response Design

The system will respond with a query result whether the book is available or not.

4.18.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU server should be up.

4.19 Timetable**4.19.1 Description and Priority**

This feature gives the details to the user regarding timetable or his schedule of classes.

4.19.2 Stimulation/Response Design

The system respond to this by replying the user with the excel file showing his/her timetable.

4.19.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : NU Koha database server should be up.

4.20 Class schedule notification

4.20.1 Description and Priority

This feature appears as an included feature in timetable use-case of Nucleus module. It gives notifications about the venue, time and date of the class next to current time.

4.20.2 Stimulation/Response Design

The system will return a notification to the user giving all the details of the class going to be the next.

4.20.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : ERP should be up.

4.21 Attendance

4.21.1 Description and Priority

This feature enables the user to look for his/her attendance without lot of efforts and login, done now at “one click”. It includes the user to have two options for the same like checking last week attendance or the current day one.

4.21.2 Stimulation/Response Design

The system will respond to the user query showing his/her attendance in terms of percentage and also gives the detailed or summarized report of the same.

4.21.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : ERP should be up.

4.22 Present day

4.22.1 Description and Priority

This feature is an extended functionality of the Attendance feature. It gives the users current day attendance only.

4.22.2 Stimulation/Response Design

The system will respond to the user query showing his/her attendance in terms of percentage and also gives the detailed or summarized report of the same.

4.22.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : ERP should be up.

4.23 Last week

4.23.1 Description and Priority

This feature enables the user to look for his/her attendance of last week and can also check till date since last week.

4.23.2 Stimulation/Response Design

The system will respond to the user query showing his/her attendance in terms of percentage and also gives the detailed or summarized report of the same.

4.23.3 Functional Requirement

RQ-1 : Properly installed APP on the mobile devices.

RQ-2 : Wifi or data should be on the device.

RQ-3 : ERP should be up.

Identifier for Req.	Short Name	Short Description
RQ1	Google Authentication	<i>Enables the user to login by the Gmail Google account to get authenticated.</i>
RQ2	Gate pass	<i>Contains all the frequently used functionalities involved in Gate pass, treated as a module of the app.</i>
RQ3	Library	<i>Contains the basic functionalities of Library, treated as a module of the app.</i>
RQ4	Nucleus	<i>Contains the functionalities of ERP : Timetable and Attendance, treated as a module of the app.</i>
RQ5	Apply Gate pass	<i>Enables the user to apply the Gate pass of his/her choice with ease.</i>

RQ6	Local Gate pass	<i>Enables the user to apply the local Gate pass, which is divided in fixed timing and flexible timing.</i>
RQ7	Fixed Timing	<i>Enables the user to apply the fixed timing for the local gate pass, which comes under Auto-Approval..</i>
RQ8	Flexible Timing	<i>Enables the user to apply the Variable timing Gate pass, which has to be accepted by the warden.</i>
RQ9	In-Out time	<i>An extension of Flexible gate pass which make the user to include to make the in-out time fill it and then submit.</i>
RQ10	Choose Warden	<i>An extension of flexible local gatepass which makes the user to make the request to his/her selected warden and can note down his/her number in case of any dispute.</i>
RQ11	Submit	<i>This functionality comes under local as well as outstation gate pass which enables the user to successfully request for his/her gate pass.</i>
RQ12	Apply outstation gate pass	<i>Enables the user to apply for out station gate pass.</i>

RQ13	Form fill	<i>As a stimulus of the outstation gate pass, form will be generated to be filled by the user which contains the destination address and date and time of arrival and departure .</i>
RQ14	Status Bar	<i>Contains the current status of the requested gate pass by the user, showing whether it is approved, pending or rejected.</i>
RQ15	Cancel Gate pass	<i>Shows the functionality to cancel the pending gate pass by the user.</i>
RQ16	Notification of issued book or due date.	<i>Gives the notification to the user regarding the due date for book issue and also the book check-out.</i>
RQ17	Search book	<i>Enables the user to search for a book in the library whether it is available, reserved or not present.</i>
RQ18	Timetable	<i>Enables the user to look for his timetable schedule.</i>
RQ19	Class schedule notification	<i>It is a stimulus generated by the system to notify the user regarding the class notification that which are the up-coming classes.</i>

RQ20	Attendance	<i>Enables the user to look for his/her attendance.</i>
RQ21	Current day	<i>Enables the user to look for his/her attendance.</i>
RQ22	Last week	<i>Enables the user to look for his/her attendance of the last week.</i>

5. Other Nonfunctional Requirements

5.1 Performance Requirements

Here we need to specify the performance requirements of our product. Design tools or platforms that we use is the IONIC-2 framework imported with Angular-2 modules and libraries. This makes our web app work fast and smooth with better UI and proper interface. All our three modules that we have works equally faster with very little hangs involved, independent of all platforms. Suppose User phone shuts down suddenly with his/her app open

the our app responds to this only circumstance with making the user logged out immediately without taking any input to trigger any action.

It also requires the app to be able to run in 2G Data speed as well. Besides this the developers should try to make it run in offline mode with all data already synced at one time.

5.1 Safety Requirements

Here we need to mention the safety issues that we need to take in consideration while building, maintainance and running of our app. In our all the three modules we need to ensure with MD-5 encryption that none of the database of ERP or MOODLE servers get damaged or leaked or do some invalid options that they are not meant to do so. We do provide invalid login as safety moves if anyone with his/her entry not present in the database of ST account, tries to login in our app.

5.1 Security Requirements

First thing is our login option in our app. To do so we used Firebase as our login authentication with IONIC-2 framework. This provides securities which makes sure that only authorized users will login successfully and not the other way round. Our app makes regular API calls as database queries to our Moodle or ERP database, So we need to ensure proper securities enabled like data retrieval in JSON with encryption MD-5.

5.4 Software Quality Requirements

Here we may add some burger menu in our app which may include an option to remember Username and Passwords that can suffice. Besides this it may include some features like Bar Code Scanner to avoid the manual use of

Identity cards. Other features to be think of may include some offline data synchronization to avoid use of data packs all time, hence making the app easy to use and providing Robustness. Also we can have a help menu in our burger bar to provide some helps on “How to use the App”.

5.5 Business Rules

In general our users are all the students at NU. So they are the ones who will use the apps and generate DB Queries frequently. But in case of failure of some logins or DB queries , TCO or related server managers will be needed to enforce the correctness of our app at backend.

6 . Other Requirements

More or less all requirements are included in the SRS. Besides all, considering about database requirements we need to have access provided by NU for making our app run, considering about the internationalization requirements we have nothing to include much since we made our app run in English and since the app is made to be run in NU so there are no regional preferences and sections involved and now considering about the legal requirements, here we need to have some legal policies to be incorporated by NU.

Appendix A : Glossary

IONIC-2 : A framework to build Web Applications.

MD-5 : Type of Encryption

HTTP : Hyper Text Transfer Protocol

FTP : File Transfer Protocol

Cordova : Apache plugins for IONIC framework

CLI : Command Line Interface

Firebase : A Google cloud integration as BaaS

Appendix B : Analysis Models

For knowing about the analysis models, refer to the attached Use-Case diagram.

