CAPSTONE PROJECT

CS392

FINAL PROJECT REPORT

COLLABORATIVE INTEREST APPLICATION

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ACKNOWLEDGEMENT

*We'd first and foremost like to thank each of our fellow teammates for their equal and invaluable contribution towards the making of this android application called **CONSONANT**, which is developed as a part of the course - Capstone Project -I. Without the whole team working dedicatedly for the complete semester, we would not have been able to complete a project at this scale on time.*

*Next, we would also like to extend our special thanks of gratitude to our primary mentors Mr. Amit Kumar (NU Mentor), Mr. Manish Hurkat and Mr. Pradeep Nandi (NIIT Mentors) who gave us the golden opportunity to do this wonderful project - **Collaborative Interest App.** They also helped us in doing a lot of research and we came to know about so many new things, methods, procedures, and standards and we are really thankful to them for this. We were able to complete this application with all the requirements implemented, only with constant support and guidance from them over time. Thirdly, we'd like to thank the evaluation panel members in **Panel 3**, as their suggestions and feedback played an important role in shaping this project to its output.*

And lastly, we would like to thank NIIT University and the CSE Department at NIIT University, including the Head of Department (Professor Prosenjit Gupta), for bringing this course in our academic curriculum. We learned a lot through the project we undertook during this semester, concepts that surely cannot be grasped in the classroom, concepts that'll definitely help us frame our career in the future.

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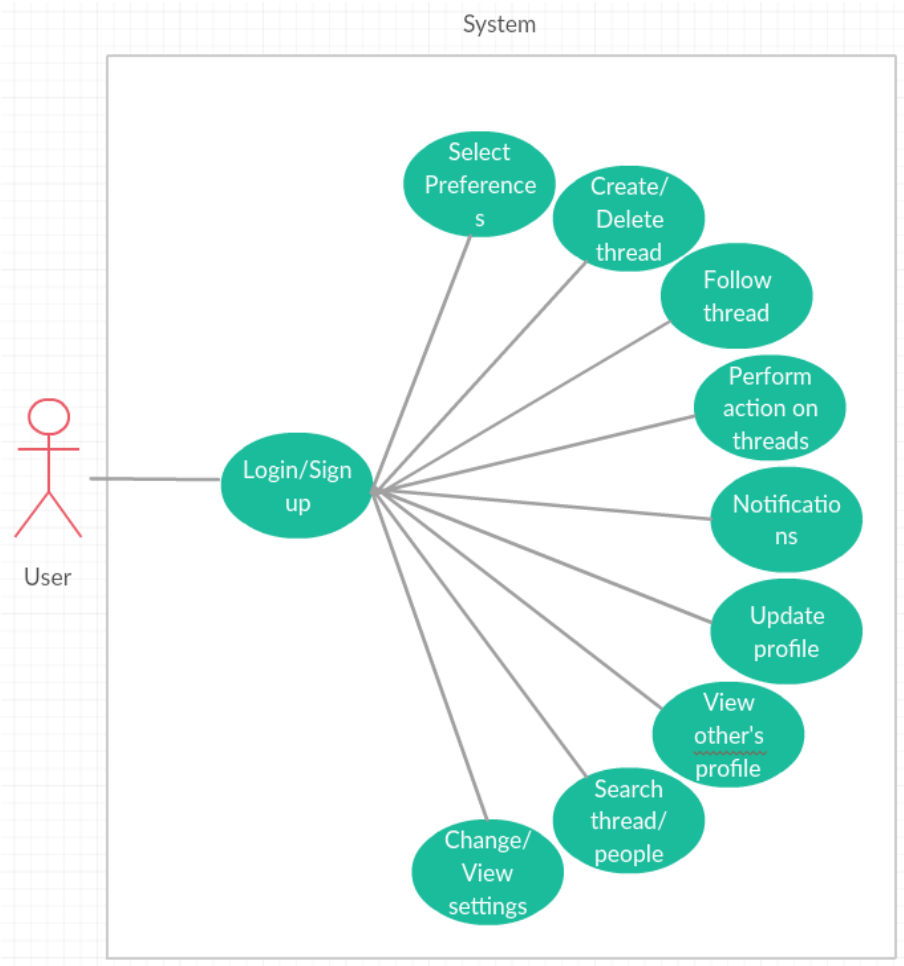
DESCRIPTION OF THE PROJECT

Consonant *is an Android application which is essentially a collaborative interest group app. Once a user installs this app onto any Android device, he/she can register an account via normal/standard email, Facebook or Google email. After doing so, being a user of Consonant, the user can then proceed to build a profile by uploading a profile photo, write a short one-line status and finally select his collaborative interest groups. Having set the preferred collaborative interest groups, the user will see only those threads/posts other users had created, tagged under those common collaborative interest groups, populating his feed. Any user can choose to create a thread or comment on a thread that had been tagged under a particular collaborative interest group. In general comments/threads are reviewed by an administrator by virtue of administrator's choice or as and when a thread was reported by a user. This ensures the quality of content posted in Consonant. If the admin verified that the complaint received is genuine or not, accordingly that thread is removed or the complaining user is notified for his incongruent behavior. A user viewing a particular thread can choose to add a comment to the comment list or perform an action on the thread such as liking the thread or checking the number of views of the thread. All the aforementioned functionalities of the app are accessed via a minimalistic and yet appealing user interface. This is our interpretation/execution of the capstone project for creating a collaborative interest app.*

The interest group that our application includes are the following:

1) Travel
2) Life Style
3) Education
4) Entertainment
    a) Movies
    b) Anime
    c) Music
5) Sport
6) Philosophy
7) Psychology
8) Medicine and Pharmacy
9) Science

USE CASE DIAGRAM



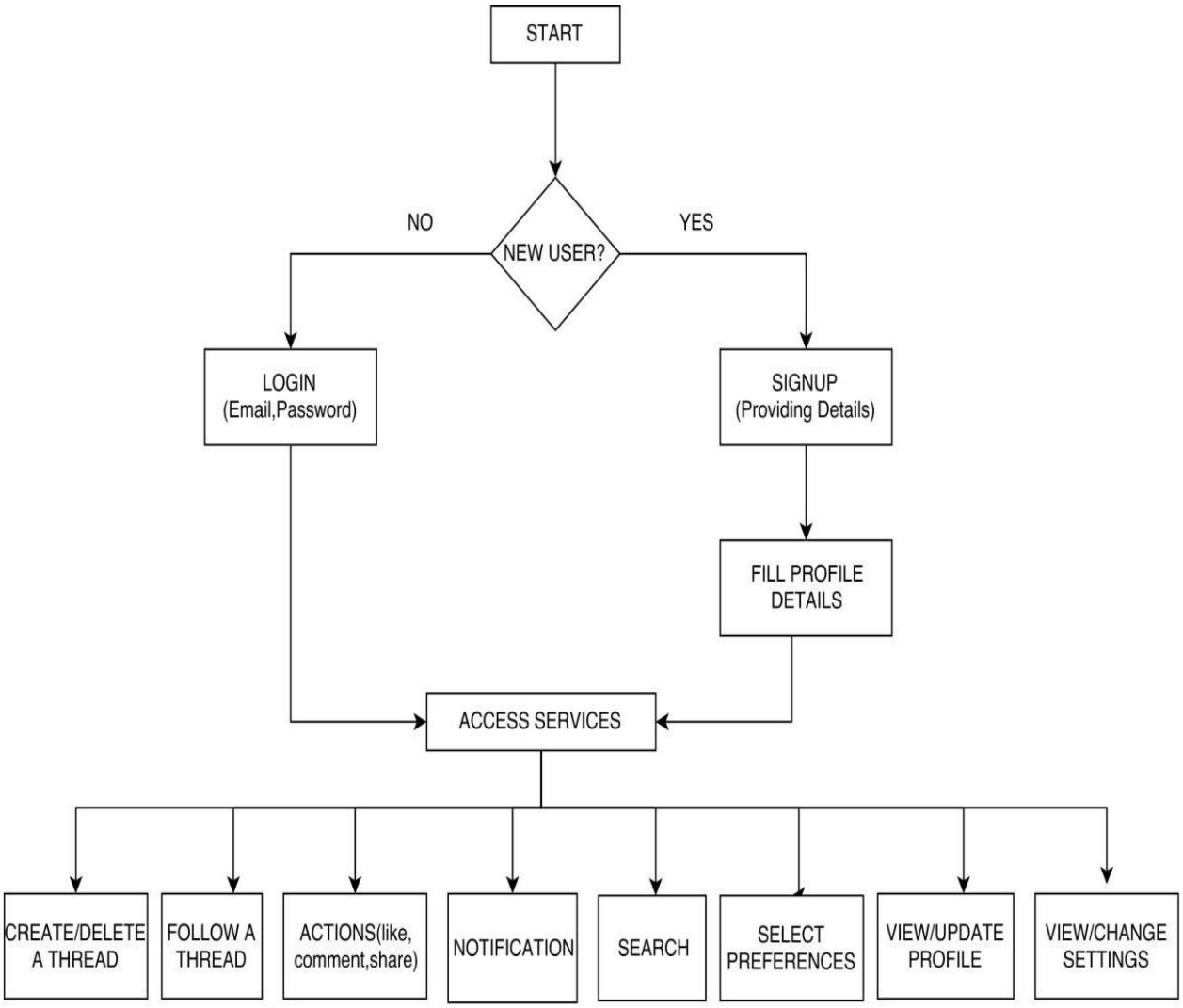
USERS FEATURES:

- *In our app, the user after logging in/signing up will be able to select preferences (interest groups) that he wants to follow.*
- *He can add a post to the network by uploading image from his gallery or any other source from his mobile phone and add title, description and the interest groups associated to it.*
- *He or she can initiate a thread/activity of his choice and other users with similar taste of preferences can contribute to the thread by commenting, upvoting and so forth.*
- *The user will also receive notifications from the admin about activities on his/her initiated thread or the threads that the user has contributed to.*
- *He can also update his profile and preferences as and when he feels like.*
- *He also has the provision to search for a user and also view others user profile.*
- *He can also report against a post to the admin and the post will be hidden from the network.*

ADMIN FEATURES:

- *Apart from the above-mentioned provisions, an admin has some discretionary powers of blocking/unblocking a user.*
- *Admin also has the power to approve/disapprove requests of complain against a post by deciding if the post is unfit for display in the dashboard.*
- *Admin can send the push notification regarding any notice or updates to all the users.*
- *Admin can modify the interest groups according to the suggestions given by the users.*

FLOWCHART


START
NEW USER?
NO
YES
LOGIN
(Email,Password)
SIGNUP
(Providing Details)
FILL PROFILE
DETAILS
ACCESS SERVICES
CREATE/DELETE
A THREAD
FOLLOW A
THREAD
ACTIONS(like,
comment,share)
NOTIFICATION
SEARCH
SELECT
PREFERENCES
VIEW/UPDATE
PROFILE
VIEW/CHANGE
SETTINGS

DETAILED FEATURES OF THE APPLICATION

AUTHENTICATION MODULE

1. *SIGN-UP/REGISTER:*

After the user has downloaded the Consonant app, and launches it for the first time, he is displayed a login screen which consists of two text fields for email id and password. The user may choose to fill up these two details if the user prefers signing in through standard/normal email login. There are two buttons that are for login with Facebook and login with Google. However, since the user has launched the app for the first time and doesn't have an account registered with the app, he can click the hyper-link at the bottom of the screen which reads "Don't have an account? Register here.". On clicking the hyper-link, the app directs the user to a new screen which contains text fields for entering normal/standard email-id, password, confirm password and register button. When the submit button is clicked, the user will be directed back to the first screen for login with a toast message displaying the following message, "A verification link has been sent to this email". If the user chooses to sign up with Facebook, the app via the Facebook Graph API is shown a pop-up window where the user has to enter his registered Facebook phone number/email id and the password. After clicking the submit button, the user will be redirected back to a new screen wherein the user needs to select his collaborative interest group preferences, enter his bio and upload/select a user photo. On completion of these, the user will be directed to the feed screen. If the user chooses to sign up with Google, the app via the Google Auth API is shown a pop-up window where the user has to enter his registered Google email id and the password. After clicking the submit button, the user will be redirected back to a new screen wherein the user needs to select his collaborative interest group preferences, enter his bio and upload/select a user photo. On completion of these, the user will be directed to the feed screen. If the user already has registered an email into Consonant, then on trying to register using these same credentials, the app will be redirected back to the login screen with the toast message displaying the following message, "This email has already been registered".

2. *LOGIN:*

Every time a user launches the Consonant app, the app will show the login screen. This screen will show the user two text fields for email id and password. The user may choose to fill up these two details if the user prefers singing in through standard/normal email login. Additionally, there are two buttons that are for login with Facebook and login with Google. If after filling up the details for standard/normal email login and the user clicks the sign in button, the user will be directed to the feed screen on successful email authentication. However, if the normal/standard email isn't registered, then the app will clear the two text fields and a toast message will be displayed, "This email is not registered with the app". However, if the normal/standard email has been registered but the verification mail that had been sent to the user wasn't used to verify the email then the app will clear the two test fields and a toast message will be displayed, "This email hasn't been verified". If the user chooses to login with Google, the app via the Google Auth API is shown a

pop-up window where the user after filling up his registered Google email and password will be directed to the profile screen wherein the user needs to select his collaborative interest group preferences, enter his bio and upload/select a user photo. On completion of these, the user will be directed to the feed screen. If the user chooses to login with Facebook, the app via the Facebook Graph API is shown a pop-up window where the user after filling up his registered Facebook email and password will be directed to the profile screen wherein the user needs to select his collaborative interest group preferences, enter his bio and upload/select a user photo. On completion of these, the user will be directed to the feed screen.

3. SELECT PREFERENCES:

On first login with Google or Facebook, the user is shown a screen wherein the user can select preferences. Preferences here refer to collaborative interest groups such as music, movies, politics, education, philosophy, medicine, travel, tv shows, sport etc. These preferences are displayed in a multiple-check box select fashion. Depending on the preferences the user selects here will affect the user's feed displaying only those posts tagged with those preferences the user has selected.

PROFILE MODULE

1. VIEW PROFILE:

When a logged in user clicks the top right icon of the news feed activity screen, the app directs the user to a new screen where the profile details of the logged in user will be shown. At the top of the screen the name, the user photo, the number of posts posted by the user, bio/status, the number of likes the user received. Also, the user's preferences will be displayed in a horizontal scroll fashion. As the user scrolls down, the posts posted by the user will be shown one after the other. The user can click on any post and the app will be directed to a new "View Post" screen regarding the post the user has just selected. The user can also view profiles of other users when the user's scrolling down the feed containing posts posted by other users. These profiles of other users will be shown in a manner as described above.

2. EDIT PROFILE:

When a logged in user is currently viewing his/her profile, the user can choose to edit the profile by clicking one of the drop-down options after clicking the top right menu button. On doing so, the user is shown a screen where the user can change his photo by clicking the appropriate photo field, edit his name in the corresponding text field, edit his status in the corresponding test field and edit his preferences using the multi checkbox select area. These changes will be saved once the user clicks the "Done" button on the top right corner or reject these changes by clicking the back-arrow button on the top left corner.

3. VIEW ANOTHER USER'S PROFILE:

A logged in user can view another user's profile by clicking the user's photo or clicking the hyper-link on the user's name. The app will then direct the user to a new screen where the profile details

of the logged in user will be shown. At the top of the screen the name, the user photo, the number of posts posted by the user, bio/status, the number of likes the user received. Also, the user's preferences will be displayed in a horizontal scroll fashion. As the user scrolls down, the posts posted by the user will be shown one after the other. The user can click on any post and the app will be directed to a new "View Post" screen regarding the post the user has just selected.

NEWS FEED MODULE

1. *VIEW POST:*

When a logged in user is viewing a post in a feed activity or viewing a user's profile then that particular post enlarges and occupies the screen. The image related to the post is displayed first, the post title is displayed underneath the image, the name of the user who posted this post will be displayed in smaller font underneath the title. A user can view the user profile by clicking the hyper-link of the user-name. Underneath this, represented by appropriate icons and text, number of users who've viewed the post, the number of users who have liked the post, the number of comments for this post and the age of the post will be displayed horizontally. Underneath this, a description of the post will be displayed. Finally, as the user scrolls horizontally, the comments posted by other users will be shown one below the other. A comment from a user consists of the user photo, the comment by the user, a hyper-link on the user's name that will direct the app to the user's profile after being clicked and the age of the comment. The user can choose to add his comment to the post's comment list by typing into the corresponding text field and finally clicking "Send" to submit the comment. The user can also like the post by clicking the appropriate icon. For a post submitted by the logged in user, he can choose to edit the post or delete the post by clicking the top right menu button and selecting the appropriate drop-down option. On clicking "Edit post", the user is directed to the "Edit post" activity. On clicking "Delete post", the post will be removed from the user's feed as well as from his profile view. For a post submitted by another user, a logged in user can choose to complain by clicking the top right menu button and selecting the appropriate drop-down option.

2. *EDIT POST:*

When a logged in user chooses the "Edit Post" option, the app is directed to a new screen where the user can change the post's image, the post title, the post description and these changes can be confirmed once the user clicks the top right "tick-mark" button or reject them by clicking the top left "backwards" button.

3. *NEW POST:*

A logged in user can choose to submit a new post by clicking the "plus" button located at the bottom right corner when the user in the feed activity. In the activity that follows once the user clicks this button, the user can choose to upload an image of his choice, give a title to the post and provide a description to the post. Finally, the user can submit the post to the app by clicking the "Post" button at the top right corner of the screen or reject the changes by clicking the "Back

arrow" button on the top left corner of the screen. A user that has created a post and submitted it will not only show in the feed activity but also in the user's "View Profile" activity.

4. DELETE POST:

A logged in user can choose to delete a post that he has created by first viewing the corresponding post that is to be deleted, clicking the top right menu button and clicking "delete post" from one of the drop-down options. The post will then be removed from the Firebase database and then will cease to appear not only in a feed activity but also in the "View Profile" activity. These changes are real time.

5. COMPLAIN POST:

A logged in user can choose to complain a post that he/she finds offensive or inappropriate by first viewing the corresponding post, clicking the top right menu button and clicking "complain" from one of the drop-down options. The post will cease to appear for that particular user's feed activity and subsequently when the admin reviews the post that is submitted as a complaint, the admin shall take subsequent action to delete the post from Firebase or reject the complaint.

USER ACTION MODULE

1. ACTION 1- LIKE:

A logged in user when viewing a post can give a like to the post by clicking the "heart shaped" icon and on doing so the number next to the icon will increment by one and also the icon will get highlighted. The user can undo the like action by simply clicking the icon again and on doing so the number next to the icon will decrement by one and also the icon will revert back to original value.

2. ACTION 2: COMMENT:

A logged in user when viewing a post can give a comment to the post by typing into the corresponding text field and finally clicking "Send" to submit the comment. The comment will then appear in the comment list of the corresponding post.

3. ACTION 3: CHECK VIEWS

A logged in user when viewing a post either of its own or others can can see the number of people viewed the post. This will appear in each and every post.

DISTINGUISHING FEATURES OF THE APPLICATION

1. *Ability to make organized interest groups.*
2. *Ability for the user to connect with strangers based on their shared interests in threads/interest groups.*
3. *Moderators/score point system over content ensures that the user sees quality/original comments on the top of the comment tree.*

APPROACH TO THE SOLUTION

We have used a modular approach in building our application

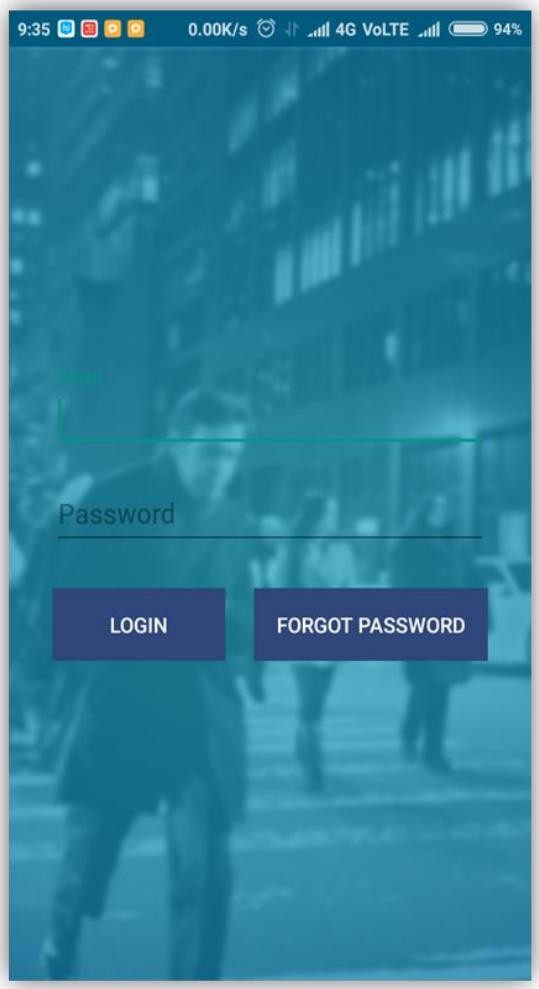
- *Building the Skeleton designs of the application*
- *Authentication Page Designs*
- *Backend Integration of Authentication*
- *Profile Module and Menu Design*
- *Thread Designs*
- *Account Settings*
- *User Feed Design*

MODULE COMPLETED AND WORK DIVISION

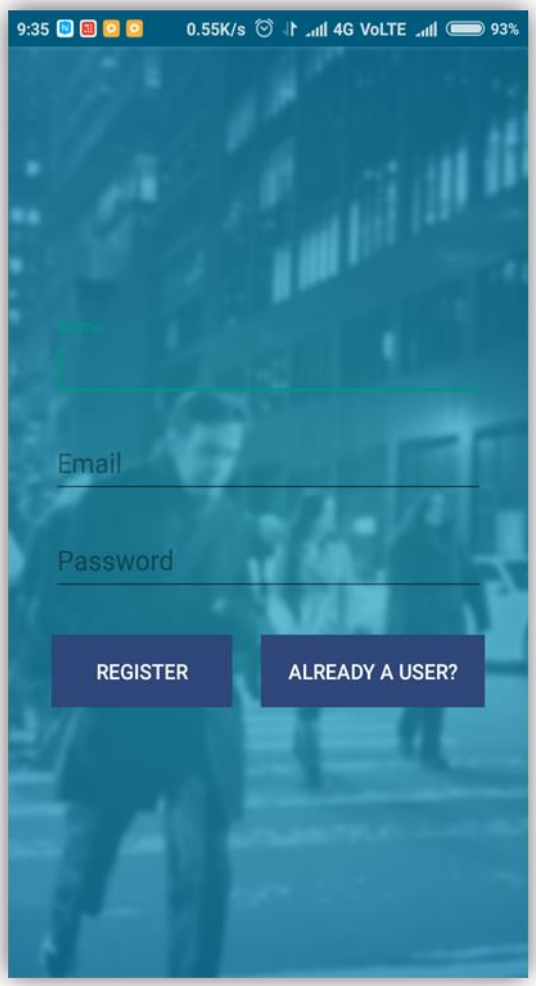
AUTHENTICATION MODULE

1. *E-mail Authentication:*

*Made by **Rishabh Kumar Kandoi** with this module, a user can register using an existing valid e-mail and password combination and after submitting the credentials to the app, the app invoking the appropriate Firebase API methods will register user into the Firebase database upon successful authentication.*

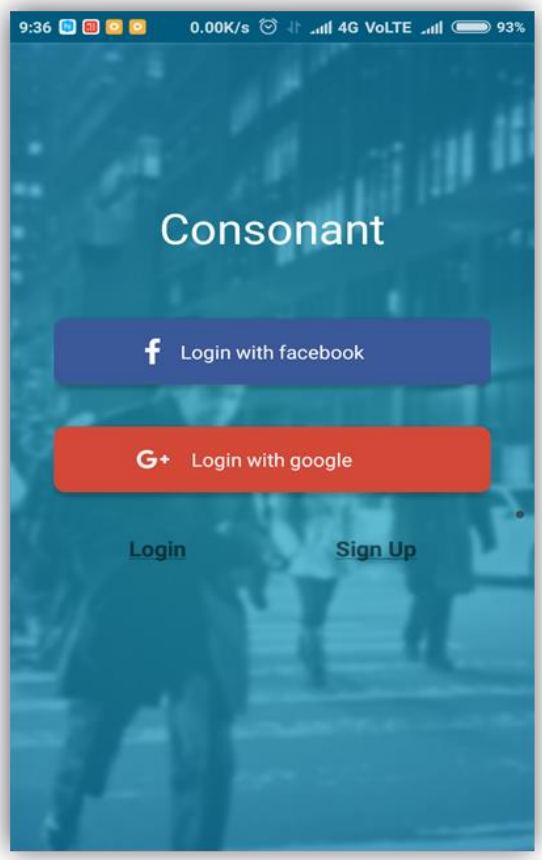


Login



Sign up

2. *Google and Facebook Authentication*



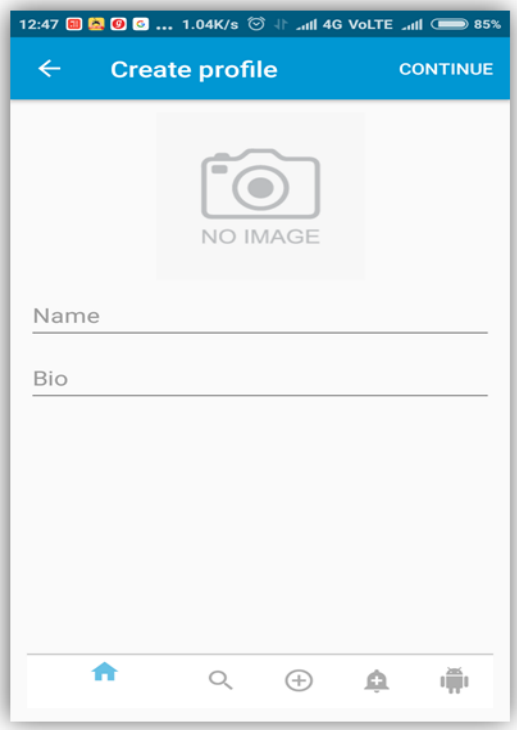
- ***Facebook Authentication:***

*Made by **Kumari Renuka** with this module, a user can register using his/her Facebook credentials with the app invoking Facebook Graph API, and upon Successful verification, the app will register the user into Firebase using these Facebook credentials.*

- ***Google Authentication:***

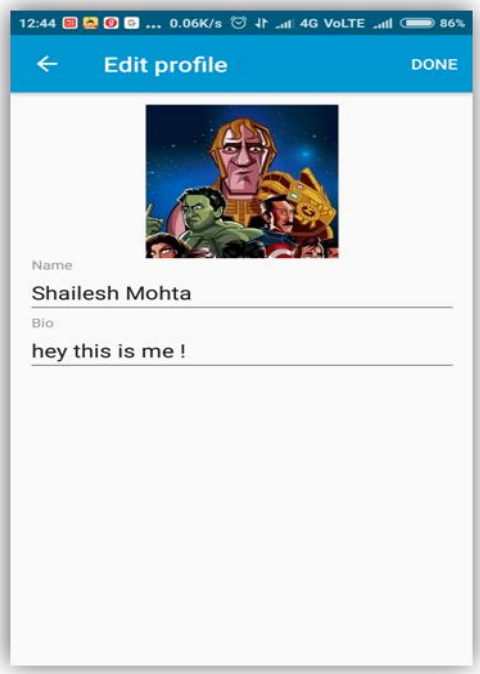
*Made by **Shailesh Mohta** with this module, a user can register using his/her Google e-mail and password combination through the Google Auth API, and upon successful verification, the app will register the user into Firebase using these Google credentials.*

PROFILE MODULE



Create Profile

Profile

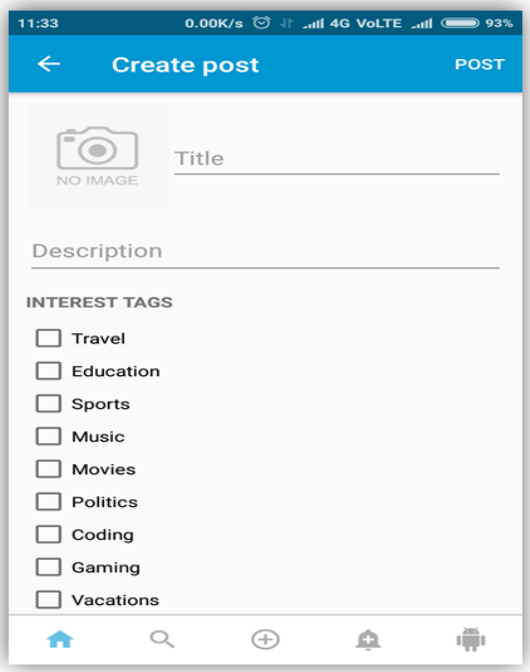


Edit Profile

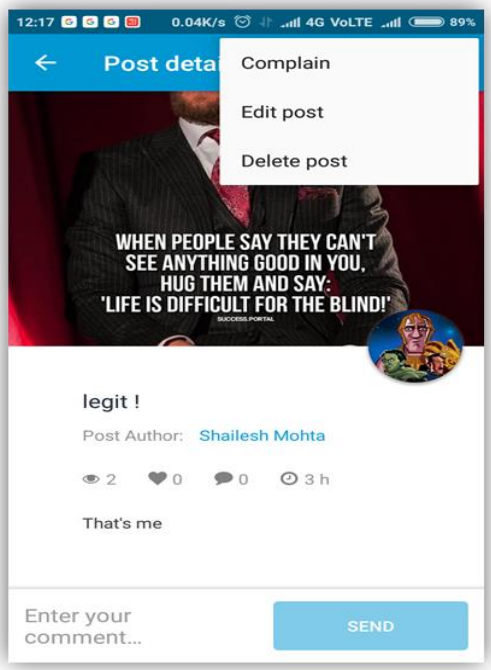
*Made by **Kumari Renuka** and **Sudarshan Raghavan**, this shows the user his profile page which apart from displaying details like name, bio, interest groups followed, profile photo, it also shows in chronological sequence, the threads contributed/initiated by him.*

THREAD MANAGEMENT MODULE

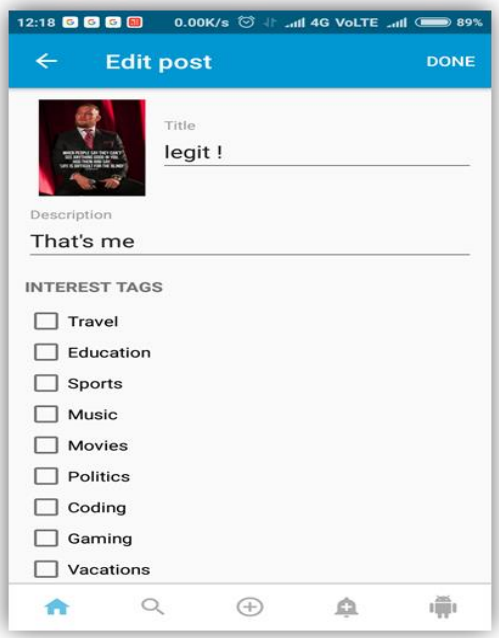
1. *POST MODULE*



Create Post



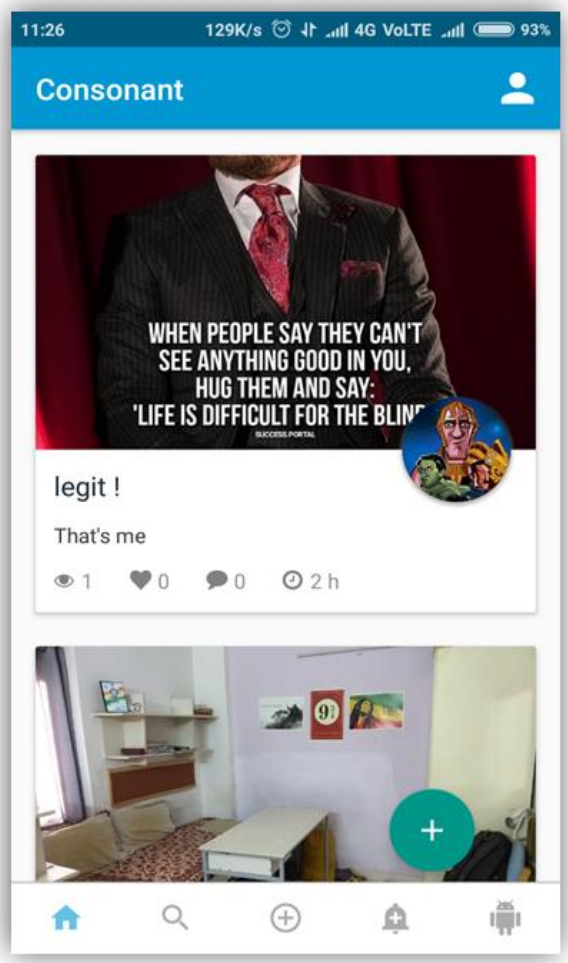
Post Detail



Edit Post

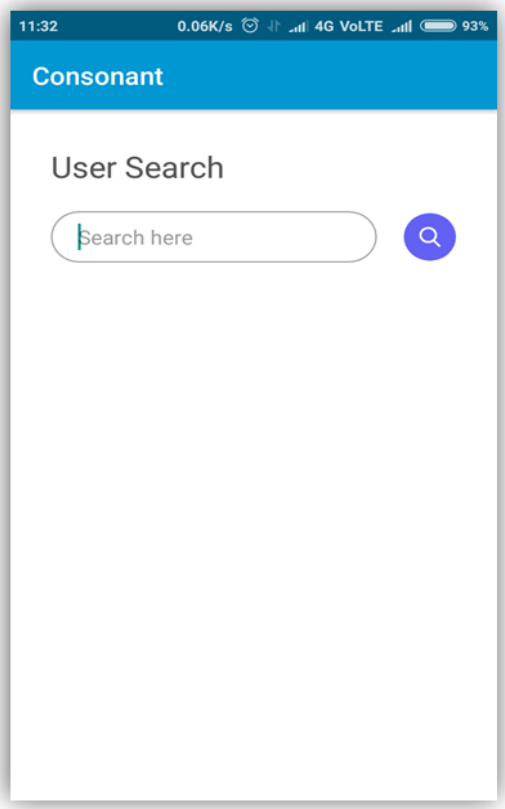
*Made by **Harshit Budhraja** and **Shailesh Mohta** this shows the user his profile page which apart from displaying details like name, bio, interest groups followed, profile photo, it also shows in chronological sequence, the threads contributed/initiated by him.*

2. DASHBOARD MODULE



*Made by **Harshit Budhraja** and **Sudarshan Raghavan** This is the public forum where a particular user can view all the post created by all other user on the different domain preferences. A user can view, like, comment on the threads/ feeds of other users using our app.*

SEARCH MODULE



*Made by **Rishabh Kandoi**. This is where a user can look for any other user and then view their profiles.*

INTEGRATION OF AFOREMENTIONED MODULES:

This was done by the whole team and the aforementioned modules were integrated into a working prototype on top of which the remainder of the work plan will be subsequently carried out. Some additional backend functionalities were also made. For example, the admin can now choose to block a registered user from the Firebase developer's console.

TECHNOLOGY STACK

PROGRAMMING LANGUAGES USED

- Java, HTML, CSS, JavaScript, MySQL, jQuery, AJAX, PHP

DATABASE MODEL –

- Firebase NoSQL Database, MariaDB

THIRD PARTY APIS USED

- Firebase API, Google Auth API, Facebook Graph API

TOOLS USED

- Gradle, Android Studio IDE, Git, Adb, Logcat, Keytool etc

CASE STUDY BASED UPON DIFFERENT USERS THEIR INTEREST GROUP

CASE STUDY 1:

Suppose a student has to give an NPTEL examination in Delhi but he/she is actually studying in Jaipur. Also, he/she happens to be the only person from his college who is scheduled to give this exam. The student is in need for some information regarding people in Jaipur who will give the examination in Delhi on a certain date, so that the student can collaborate with these people and discuss means to form a study group or some kind of travel group to Delhi where they will give this examination. Nowadays, there are quite a lot of online forums or similar websites dealing in the functionalities of collaborative interest groups. However, some of them lack a coherent Android app and hence deal with user interface issues by just functioning as a website.
This is where "Consonant" comes into the picture by first, being an Android app and second, having the needed functionalities of collaborative interest groups and third, having a simplistic yet appealing user interface. The student can use this app to form a thread titled something like "NPTEL examination on (course name) in Delhi on (examination date)". The student can then tag this thread under collaborative interest groups like "Education", "Travel" etc. so that this thread will come under the collaborative interest groups as tagged by the thread whenever the user browses for threads under these groups. Other users who are interested in this particular thread can then participate in the comment list in this thread and the student who had created the thread shall, from reading the comment list, know that other students in Jaipur wishes to give the NPTEL examination on Delhi and are willing to form a study or travel group so that everyone is benefitted.

CASE STUDY 2:

Suppose, in a city such as Gurgaon, a much-hyped science fiction horror movie just got released. It has been in development hell for as long as five years. Finally, it has been released nationwide after a successful test screening. Let's assume an enthusiastic movie-goer after watching this horror movie wants to discuss certain aspects of the movie such as: pop-culture references, the plot holes in the movie, certain hints throughout the movie that audiences may not catch on a first viewing, or even more specifically, the ambiguous nihilistic ending. This movie-goer may not find answers to some of his many questions by relying on his day to day conversations with his friends or parents. As early back as the 2000s, there were many online forums with rudimentary looking HTML user interfaces. However as far long as those forums have survived in the Internet as of 2018, most of them do not receive an Android application conversion and thus many users do not have any knowledge about them because of the fact that they prefer an apps to run on their smartphone's operating system as compared to opening a particular website on their mobile browser. That's where "Consonant" comes into the picture. First of all, it is an Android application. Second, it has the functionalities of such online forums in the form of collaborative interest groups and third having a minimalistic yet eye capturing user interface. The movie goer

can register an account into Consonant with the help of normal/standard email address or Google account or even a Facebook account. When the movie-goer is selecting his preferences during the profile creation stage, he/she can select "movies" as one of his preferences. After that, while browsing the "movies" feed, he can at any time, create a thread appropriately titled, "Official discussion – (Movie Name)". Once this has been done, after some amount of time, he will notice in the comment list that there are other such movie goers who have the answers to some of the movie-goer's many questions, have put forth many interesting observations and also have drawn similarities to other such movies the movie goer may not have heard of.

CASE STUDY 3:

Suppose, a tennis match had just concluded. This match garnered many viewers and every game played in this match kept the audience at the edge of their seats. Let's assume a viewer during the course of the match wants something more than the commentary offered during the tennis match. The viewer wants to view again certain portions of the game such as the 50-shot rally. The viewer also wants to hear certain observations about the game that he/she thinks the commentators had missed. The viewer cannot be expected to boot up the computer and search for some particular website that does genuine live streaming of the tennis match. Doing so would require the user to be far away from the television screen and chances are that the viewer would miss another 20-shot thrilling rally and in all likelihood the viewer will lose interest in his endeavor to look for a live stream of the match on the Internet. That is where the "Consonant" comes into the picture. First, of all it is an Android application. The viewer can simply install the app in his Android device with zero hassle. Second, it has the functionalities of collaborative interest groups that allow for creation of threads under any subtopic. Also, the app features an appealing user interface. The viewer can after installing the Android app can register an account into "Consonant" using a standard/normal email account or a Google account or even a Facebook account. When the viewer is selecting the preferences during the profile creation stage, he/she can select "sports" as one of the preferences. Later while browsing the feed, the viewer can explore the threads created under "sports" collaborative interest group. The viewer may see that a thread has already been created regarding the tennis match and the comments vary from key observations missed by the commentator to short embedded videos that satisfy the viewer's needs regarding viewing again certain portions of the game. Since "Consonant" manages data using Firebase, the viewer can, when viewing a live match on television, browse through the threads regarding the match and view the live streaming of comments in those threads.

CASE STUDY 4:

Suppose, an actor wants to host a "Ask Me About Anything" (AMA) session on an online forum. The actor hopes to have a conversation with authentic social media followers on the Internet. The actor wishes to know the true sentiment of his fans as opposed to the content published by the media. The actor desires to know from such conversations from these fans, how much of an impact his work on screen translates into conversations/discussions on social media. There are online forums in the Internet but they aren't as user friendly as an Android application. Furthermore, such online forums lack admins that curate the content present in them to be devoid of fake facts, trolls etc. That's where "Consonant" comes into the picture. First of all, it is an Android application. The actor can simply install the app on his Android device with zero hassle. Second, the app has the features of collaborative interest groups that allow for the creation of threads under any subtopic. Also, this app features an appealing user interface. Having installed the

"Consonant" app, the actor can create a thread under the interest group called "AMA" which all about the creation of threads that deals with asking the subject of the thread questions of any category. Being an actor, the admin of the "AMA" collaborative interest group can verify that the actor is a genuine person. All that remains is for the actor to view the questions posted by the users and for the actor to answer them.

CASE STUDY 5:

Suppose, in India, the government has recently introduced a unified taxation system that will replace preceding conglomeration of taxes. Let's assume a citizen of India who is a follower on political related developments in India. He reads newspapers, catching up on every economists' views on an Act passed in Parliament. However, with this recently launched unified taxation system, the citizen has certain doubts over the implementation of it. Moreover, he wants to know the short term/long term benefits of this taxation system. The viewer doesn't want to watch late night debates on news channels that for the most part, fall into circumlocution. He doesn't want to read editorials comments on newspaper columns that will change as time goes by. He also is averse to using the Internet on a computer because of the fact that he's not cognizant of malicious ads on online forums and general web browsing. That's where "Consonant" comes into the picture. First of all, it is an Android application. The citizen can download the app onto his Android device and install the app without any hassle. Second, the underlying principle of "Consonant" is collaborative interest groups. A thread about any subject under a specific collaborative interest group can be created. Also, the app has a user-friendly interface; the navigation is self-explanatory and citizen doesn't have to consult any documentation just for the sake of using an Android app.
Having registered an account with "Consonant", the citizen can view threads under the "Politics" collaborative interest group. He can then view a thread based on the unified tax system and read/participate in the conversation with other like-minded individuals.

CASE STUDY 6:

Suppose, a new game got released into the market. The game received critical acclaim from critics and gamers alike. The studio/publisher behind this release is highly regarded/respected for their history of publishing distinct, genre breaking titles. Let's assume a veteran gamer had recently purchased his copy of this newly released game. He installs and starts playing the game but encounters a glitch while playing a certain level of the game. The gamer is distraught and wishes to know the reason behind this glitch. Due to the fact that the game was recently released, the gamer is unable to find any articles or videos that conform to his dilemma. The gamer on coming across every article comes to the conclusion that the glitch encountered is his own problem and that he should consider simply exchanging his copy of the game for another one. He's got no patience to sift through myriads of forums on the Internet from a computer to isolate a particular gamer who has also encountered the same glitch. This is where "Consonant" comes into the picture. First of all, it is an Android application. There are no complications to be encountered when installing a simple Android app. Second, the underlying principle for Consonant is in collaborative interest groups. Users can contribute/view threads under any collaborative interest group. The gamer having installed the app and registered an account using standard/normal email, Google email or Facebook account, he can create a post giving a title and description that is specific to his problem. After doing so, due to the fact that the thread was created under

"gaming" collaborative interest group, followers of this interest group will be able to view this specific thread and provide suggestions to the gamer with regards to the glitch he encountered.

CASE STUDY 7:

Suppose, there was a piece of news just recently released that Intel product line of Silicon chips will be replaced by Graphene ones. Let's assume that an avid reader of science & technology came across this bit of news in an article published in the newspaper. He reads that the famous observation known as "Moore's Law" will not persist in the near future due to decreasing costs of manufacturing graphene films. However, the reader isn't convinced with the quality of the news article. He checks online, but all other news articles he has encountered are simply just the first news article's words but written in a different form. There aren't any comments or observations or some form of speculation about the viability of such rational decisions. The reader has certain thoughts or opinions about the future of graphene chips and seeks to discuss this with other like-minded individuals. This is where "Consonant" comes into the picture. First and foremost, "Consonant" is an Android application. This means that there are no hassles when it comes to downloading and installing an Android app on an Android device. Second, the very fact that "Consonant" features the ability to create threads in collaborative interest groups means that any user can seek to find features of online discussion forums in an Android app. Thus, after the reader has registered an account with "Consonant" with a standard/normal email account or Google account or Facebook account, he can go to the collaborative interest group known as "Futurology", which contains threads ranging from exoskeletons, space travel, biohacking, gene therapy and more. The reader can post a thread giving a title regarding his concern about Graphene and in the description, the reader can go into length about his concerns for Graphene computer chips and thus the community of "Futurology" will provide their thoughts to this topic and thus ever expanding the comment list.

CASE STUDY 8:

Let's assume a person wants to expand his horizon. More specifically, the person wants to break into the art of photography. The person is unsure regarding the type of camera to purchase, either film stock or digital? Which lens to purchase? How to frame a photograph with precision? Although a simple web search will reveal a plethora of articles to solve, the person is however, looking for personal experiences from other people who had also started into photography without a single idea regarding where to begin and with time, became amateur photographers. They would have valuable advice to impart to this person so that the person isn't swayed into making any erroneous decisions. He is not looking for any professional photographer's experiences crafted into abstract and esoteric sentences. This is where "Consonant" comes into the picture. First and foremost, "Consonant" is an Android application. This means that there are no hassles when it comes to downloading and installing an Android app on an Android device. Second, the very fact that "Consonant" features the ability to create threads in collaborative interest groups means that any user can seek to find features of online discussion forums in an Android app. Thus, after the person has registered an account with "Consonant" with a standard/normal email account or Google account or Facebook account, he can go to the collaborative interest group known as "TeachMe", which is a collaborative interest group dedicated to those users that desire to for example, learn how to play a piano, looking for tips and tricks to improve their musical dexterity. Whether it be academic, art, music or sports, this interest group will help those individuals

desirous to learn a new skill. The person can post a thread under "TeachMe" and give a brief description regarding his need to break into photography and thus will expect in return, the community to provide responses to advice this person.

CASE STUDY 9:

Depression is a sense of low mood swing that has adverse impacts on the person's thoughts, behavior, feelings and sense of well-being. It is one of the major causes or risk factors of suicide among adolescents and more than half of suicide victims in this age group are diagnosed with depressive orders before their demise. Given this information, let's assume that a person in his early twenties suffered a serious tragedy. His father had succumbed to cancer. This person's financial future is at stake and cannot seek to earn enough to support his family given that he has his own college tuition fees to pay. He cannot seek professional help or consult a psychologist since he cannot afford to do so. There's no benefit derived from reading online articles to get help because it may have written by individuals passing themselves off as experts. This is where "Consonant" comes into the picture. First and foremost, "Consonant" is an Android application. This means that there are no hassles when it comes to downloading and installing an Android app on an Android device. Second, the very fact that "Consonant" features the ability to create threads in collaborative interest groups means that any user can seek to find features of online discussion forums in an Android app. Thus, after the person has registered an account with "Consonant" with a standard/normal email account or Google account or Facebook account, he can go to the collaborative interest group known as "GettingOverIt", which is a positive community dedicated to overcoming challenges faced by members dealing with conquering depression, anxiety, trauma, doubt and apathy. Once the person has created a new thread and given a description of his problem under this interest group, the person will expect to see advice coming in that will help him get over his depression and move on in life.

CASE STUDY 10:

Suppose a student of a university wishes to organize a cultural fest due to the fact that it is tradition followed yearly. The student wishes to seek for sponsors, ideas and have a discussion with interested people to help him achieve this task. Although, the student having partnered with other fellow students, might as well rely on his personal contacts to draw in potential sponsors and run a survey within his own university seeking ideas for this cultural fest. This seems way quicker than the student and his collaborators doing the legwork themselves. This is where "Consonant" comes into the picture. First and foremost, "Consonant" is an Android application. This means that there are no hassles when it comes to downloading and installing an Android app on an Android device. Second, the very fact that "Consonant" features the ability to create threads in collaborative interest groups means that any user can seek to find features of online discussion forums in an Android app. Thus, after the person has registered an account with "Consonant" with a standard/normal email account or Google account or Facebook account, he can post thread tagged under collaborative interest groups such as, "Travel", "Education", "University", "Entertainment" etc. Having done so, the student will expect to gain a nexus of information/ideas from the comments list of threads as posted in the aforementioned collaborative interest groups.

CASE STUDY 11:

Suppose a seasoned coder has recently tried his best coding down the logic he has in mind for a competitive level difficult problem in a language like Java. The coder tried his best ensure code efficiency, code correctness and also whether code follows the format as expected when trying to code for such problems. The coder doesn't want to browse through popular coding discussion forums and he wishes for immediate feedback about the code he had just written. This is where "Consonant" comes into the picture by first, being an Android app and second, having the needed functionalities of collaborative interest groups and third, having a simplistic yet appealing user interface. Once the coder downloaded the app and installed it and successfully created an account with it, he can now create a thread giving appropriate title and description, tagging it under "Coding" collaborative interest group and finally expect to see responses from the community in the form of comments.

CASE STUDY 12:

Suppose an avid reader of science fiction books wishes to discuss certain aspects of a science fiction literature with a group of other like-minded readers who having also read this piece of literature. Doing so, allows the reader to gather various views/perspectives from other people.
The reader doesn't want to use online discussion forums some of which don't have Android app counterparts or lack enough users. This is where "Consonant" comes into the picture by first, being an Android app and second, having the needed functionalities of collaborative interest groups and third, having a simplistic yet appealing user interface. Once the reader downloaded and installed the app onto his Android device and successfully created an account with it, he can now create a thread giving appropriate title and description, tagging it under "AskScienceFiction" collaborative interest group and finally expect to see immediate responses from the community in the form of comments.

CASE STUDY 13:

Suppose an avid reader of history books wishes to discuss certain aspects of a literature piece on Harrapan Civilization with a group of other like-minded readers who having also read this piece of literature. Doing so, allows the reader to gather various views/perspectives from other people.
The reader doesn't want to use online discussion forums some of which don't have Android app counterparts or lack enough users. This is where "Consonant" comes into the picture by first, being an Android app and second, having the needed functionalities of collaborative interest groups and third, having a simplistic yet appealing user interface. Once the reader downloaded and installed the app onto his Android device and successfully created an account with it, he can now create a thread giving appropriate title and description, tagging it under "AskHistorians" collaborative interest group and finally expect to see immediate responses from the community in the form of comments.

CASE STUDY 14:

Suppose a mechanical engineer is constructing models for creating a hybrid car. Having studied/done online training regarding automobiles and having completed many automobiles related projects before, the engineer wishes to tackle hybrid cars. However, he encounters a roadblock when trying to model the problem using CAD/CAM technology. The engineer doesn't want to use online discussion forums some of which don't have Android app counterparts or lack enough users. This is where "Consonant" comes into the picture by first, being an Android app and second, having the needed functionalities of collaborative interest groups and third, having a simplistic yet appealing user interface. Once the engineer downloaded and installed the app onto his Android device and successfully created an account with it, he can now create a thread giving appropriate title and description, tagging it under "AskEngineers" collaborative interest group and finally expect to see immediate responses from the community in the form of comments.

CASE STUDY 15:

Suppose an avid reader of technology wishes to know of a resource that helps a reader gain knowledge of a wide variety of concepts without necessarily understanding the underlying science as may be explained in research papers or encyclopedias. This is where "Consonant" comes into the picture by first, being an Android app and second, having the needed functionalities of collaborative interest groups and third, having a simplistic yet appealing user interface. Once the reader downloaded and installed the app onto his Android device and successfully created an account with it, he can then browse threads tagged under "ExplainLikeIAmFive" collaborative interest group and on reading the comments for each of those threads, the reader can then gain some sort of understanding of a wide variety of abstract science concepts.

CASE STUDY 16:

Suppose there's a person who is very much into deep intellectual thoughts which can be about anything. He wishes to know of an online forum that contains threads about something to stimulate and excite his neurons; that contains threads which mention about things to ponder on. The person wouldn't expect casual chats from his social circle to help him here. This is where "Consonant" comes into the picture by first, being an Android app and second, having the needed functionalities of collaborative interest groups and third, having a simplistic yet appealing user interface. Once the person downloaded and installed the app onto his Android device and successfully created an account with it, he can then browse threads tagged under "FoodThought" or "ShowerThoughts" collaborative interest groups and on reading the comments for each of those threads, the person's aforementioned requirements shall be satisfied.

CASE STUDY 17:

Suppose there's an avid reader of comics and he wishes to know of a platform/online forum wherein he can expend time browsing threads related to comic strips, manga or for a particular comic book. The person wouldn't expect casual chats from his social circle to help him here. This

is where "Consonant" comes into the picture by first, being an Android app and second, having the needed functionalities of collaborative interest groups and third, having a simplistic yet appealing user interface. Once the person downloaded and installed the app onto his Android device and successfully created an account with it, he can then browse threads tagged under "Comics" or "Manga" collaborative interest groups and on reading the comments for each of those threads, the person's aforementioned requirements shall be satisfied.

CASE STUDY 18:

Suppose there's an avid watcher of television shows and he wishes to know of a platform/online forum wherein he can expend time browsing threads related to television shows and have intellectual discussion on any particular TV show or series. The person wouldn't expect casual chats from his social circle to help him here. This is where "Consonant" comes into the picture by first, being an Android app and second, having the needed functionalities of collaborative interest groups and third, having a simplistic yet appealing user interface. Once the person downloaded and installed the app onto his Android device and successfully created an account with it, he can then browse threads tagged under "Television" collaborative interest group or even a collaborative interest group with the same name as that of the TV show the person is a fan of and so on reading the comments for each of those threads, the person's aforementioned requirements shall be satisfied.

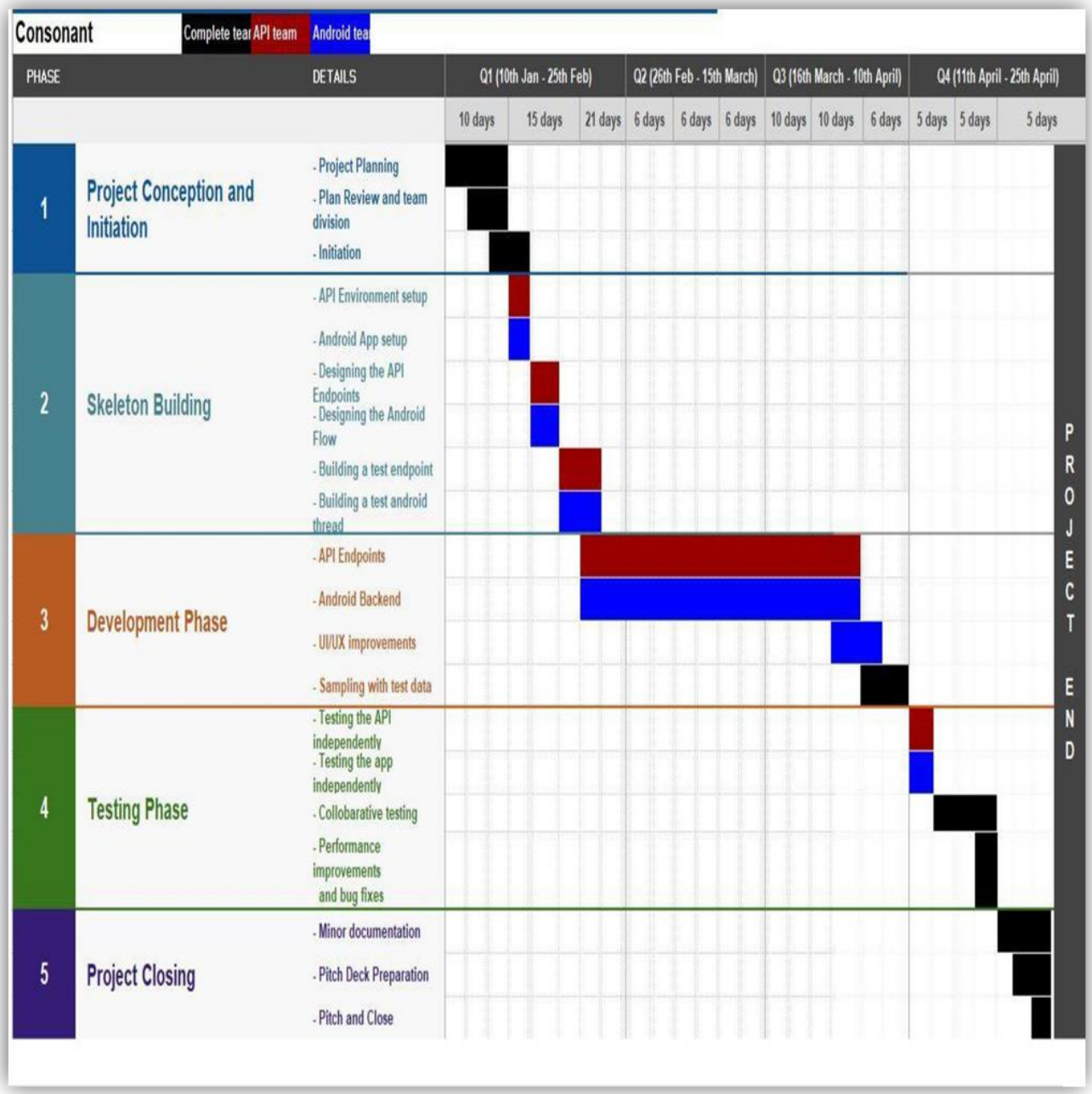
CASE STUDY 19:

Suppose there's an amateur photographer and he wishes to know of a platform/online forum wherein he can share personal clicks that he had painstakingly done so and expect others to provide feedback for appreciation and areas of improvement. The person wouldn't expect casual chats with his social circle to help him there. This is where "Consonant" comes into the picture by first, being an Android app and second, having the needed functionalities of collaborative interest groups and third, having a simplistic yet appealing user interface. Once the photographer downloaded and installed the app onto his Android device and successfully created an account with it, he can now create a thread giving appropriate title and description, tagging it under "PhotoCritique" or "ITookAPicture" collaborative interest group and finally expect to see immediate responses from the community in the form of comments.

CASE STUDY 20:

Suppose there's a person who is a lover of data visualization and searches online for visual representation in the form of data graphs, charts, maps etc. on wherein aesthetics plays a very important part of information visualization. This is where "Consonant" comes into the picture by first, being an Android app and second, having the needed functionalities of collaborative interest groups and third, having a simplistic yet appealing user interface. Once the person downloaded and installed the app onto his Android device and successfully created an account with it, he can then browse threads tagged under "DataIsBeautiful" collaborative interest group and looking at the content present in each of the threads, the person's aforementioned requirement shall be satisfied.

TIMELINE


Consonant
Complete tear
API team
Android tea
PHASE
DETAILS
Q1 (10th Jan - 25th Feb)
Q2 (26th Feb - 15th March)
Q3 (16th March - 10th April)
Q4 (11th April - 25th April)
10 days
15 days
21 days
6 days
6 days
6 days
10 days
10 days
6 days
5 days
5 days
5 days
1
Project Conception and Initiation
- Project Planning
- Plan Review and team division
- Initiation
2
Skeleton Building
- API Environment setup
- Android App setup
- Designing the API Endpoints
- Designing the Android Flow
- Building a test endpoint
- Building a test android thread
3
Development Phase
- API Endpoints
- Android Backend
- UI/UX improvements
- Sampling with test data
4
Testing Phase
- Testing the API independently
- Testing the app independently
- Collobarative testing
- Performance improvements and bug fixes
5
Project Closing
- Minor documentation
- Pitch Deck Preparation
- Pitch and Close
PROJECT END

As per the timeline, the complete project has been completed in including the initiation, skeleton building, development phase and testing phase.

The followings experiments were conducted to check the usability of the application-

- *Secure login/sign up implementation*
- *Testing & implementing dynamic stability of the app*
- *Bug fixing*
- *Alpha-testing of app*
- *Collaborative testing*
- *Made the app run on different android versions*
- *Regressive testing*