Computing Studies & Information Systems
"Introduction to Mobile Application Development"
Winter 2022: CSIS 3175 – Section 001

Final Project Report: "Body & Beyond"

Application Name: "Body & Beyond"

Group Number: 09

Team Members:

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Video Presentation:

https://1drv.ms/v/s!Av0a-enrGqKhgUntPybCSIaPJq3I

Individual Contribution Percentage:

Team Member	Contribution Percentage	General Functionalities Implemented
Pamela L.	33.3%	Splash Activity, screen to Log in or Create an account (Main activity), Home activity, Back end logic and Profile activity.
Jasmine K.	33.3%	Sign Up details activity, Creation of Database, Diet activity, About Us and Contact Us activities.
Jaspal S.	33.3%	Log In activity, Forgot password, Google and Facebook registration, Steps counter, Calculate again and Exercise activities, and Notification functionality.

Application Description:

Application developed on Android Studio, that offers an integral health care to the user. According with height, weight, age, gender and level of activity, the application calculates BMI "Body Mass Index", and displays the status of user´s health. Results could be Underweight, Normal, Overweight or Obese; and according with that result, the application establishes if user needs to Gain, Maintain or Lose weight. The user could see also the suggested calories intake per day, and the basic physical activity that almost everyone does, walking. We have integrated a step counter functionality and a progress bar, that shows how many burned calories the user needs to target. Finally, we displayed a variety of suggested Diets and Exercises, based on profile of each user.

There are additional functionalities that the user could perform through Body and Beyond application, such as making the calculations again, entering updating information and displaying new results; and through a Hamburger menu, our users could review their Profile information and have the option to update the data. We have developed the functionality to recover the password and log in through Google or Facebook account.

Motivation of the Application:

"Body & Beyond" is a useful application mainly because it is related to wellbeing, users have the possibility to get a general assessment of their health, based on simple information such as height and weight. Moreover, the application will make customized suggestions based on each user profile, determining the necessary measures to maintain good health.

Through very useful functionalities, such as suggested calories intake, application displays a variety of options to eat healthy on a daily basis, and also to stay physically active through the steps target and counter per day, showing accurate progress. If user wants to go further, we provide more detailed exercises based on the activity that they regularly do, according with the registered information when user creates an account.

Another useful functionality is that user could maintain the information up to date, so if they lose weight, or change their activity from Light to Moderate for example, the application dynamically will display the proper information according with updated information.

Feature specifications:

✓ Splash Activity that shows a GIF resource, while application loads fixed databases used for displaying information related to Diets and Exercises.

✓ Main Activity that brings the option to Log In or Create a new Account to the user.

✓ Log In Activity where user could enter previous registered credentials or start using Google or Facebook account. In case that user forgot the password, we have developed the option for assigning a new one.

✓ Sign Up activity to create a New account, providing email, name, age, gender, height, weight, type of activity (light, moderate or active), and assigning a password to that account. All fields have the corresponding validations, displaying Toast activities if users do not enter valid information.

✓ Home Screen, where user have most important information in one place. First of all, we display the result of BMI "Body Mass Index", that is a number that probably does not mean anything to the user, so we also display a dynamic image with the results and the text indicating the ranges of each state. User could see also the required measurement according with the results, and could calculate again, changing the information of height and weight. In the same screen, user could see the suggested calories intake per day, in order to follow some diet. Then we have the information related to the physical activity, displaying both, a count of daily steps and the target steps, as well as burned calories and progress of the day. Finally we have the main menu to display suggested Diets, that could be Vegan or Combination (including meat, dairy, etc) and Exercises, that are categorized in Cardio, Yoga and Weight training.

✓ When the user selects one of the above options for Diets, application shown different meals for breakfast, lunch, and dinner for each day of the weekday, configured on Diet Activity.

✓ If user selects some of the options for Exercise, application display different exercises depending on the level of activity. We have implemented some GIF activities, in order to increase the user experience of the application and user could replicate the exercises correctly.

✓ Application also has a Hamburger menu that display 4 options: Profile, About Us, Contact Us, and Logout.

✓ Inside the Profile activity, user could display all the information previously registered, and have the option to edit and update that information.

✓ About Us and Contact Us are activities that provides general information about the application, as well as email contact of developers, implementing the functionality to send an email with one click.

Technical concepts implemented:

Implementations developed by Jasmine K.:

- Designed full application flow in Adobe XD.
- Worked on Login Activity UI.
- Created Signup and SignupDetails Activity for user details using Image Button, Password text, radio buttons, spinner, plain text, and button.
- Implemented database using Room database: created User and Diet entities, and interfaces for diet and user entity then created application database.
- Created Diet Activity for diet details using recycler view.
- Created the data, logo, and images for the application.
- Worked on clearing data on click of logout in navigation drawer.
- Created About Us and Contact Us activities.
- Logout functionality for clearing shared prefrences.

Implementations developed by Jaspal S.:

- Worked on Login backend logic.
- Created Exercise Activity using recycler view and gif view.
- Created Forget Password Activity and developed backend logic.
- Created BMI calculate again Activity implemented backend logic and validations.
- Implemented database interface queries for Exercise activity, BMI calculate again Activity, and Login Activity.
- Inserted data in Exercise table in database.
- Implemented helper class inside utilities package with a password and email validation.

Implementations developed by Pamela L.:

- Splash activity integrating a GIF image.
- Main activity to Log In or Create an account click listeners.
- Back end design, implementing all the calculations for BMI depending on user profile, ranges for results, suggested calories intake, target steps and burned calories.
- Implementation of Progress Bar, gradient and dynamic design.
- Implementation of recycler view within Fragments to display categories of Diets and Exercises.
- Retrieving the information for database, in order to obtain all the stored information of the profile with active session and make all the corresponding calculations.

- Creation of Profile activity, showing non editable fields, retrieving information from database, and enable edit option if user select a button, update query to overwrite the information on the database.

Technical Extensions:

Extensions developed by Jasmine K.:

- Implemented navigation drawer using navigation framework, android material dependencies, toolbar, menu, and navigation view.
- Created Diet Activity for diet details using scroll view.
- Linkify for email which takes user to any mail app on their device.

Extensions developed by Jaspal S.:

- Implemented third-party logins - Google and Facebook.
- Implemented Step counter and a scheduler for step counter to reset at midnight.
- Implemented notification for application to throw at midnight when step counter gets reset.

Extensions developed by Pamela L.:

- Implementation of TabLayout to swap between Diets and Exercises through the use of ViewPager.
- Implementation of Fragments inside a ViewPager for displaying categories of Diets and Exercises.
- Home screen design with ScrollView functionality, adding a Progress Bar to show advance of steps.
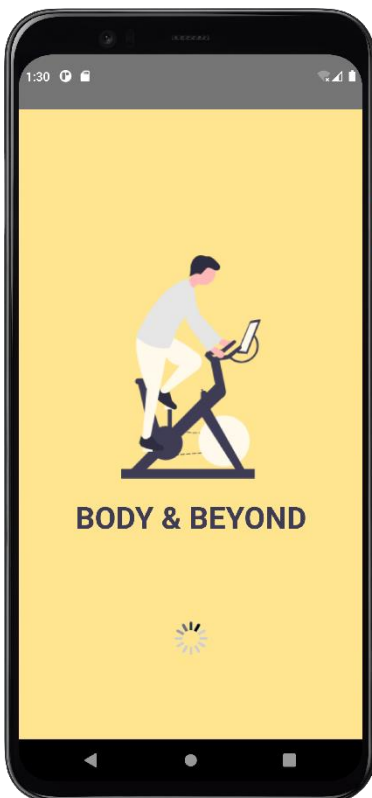
Customer Journey Flow:

Image View and Text View implemented to display Logo and Name of the application, bringing Look and Feel.

Gif Image View implemented through pl.droidsonroids.gif Package.

Usage of Timer Task to remain on the activity for 5 seconds.

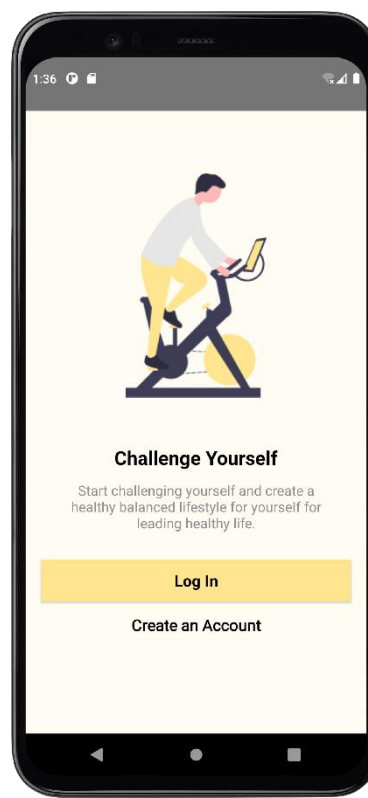Creation of List of Exercise and Diets classes, reading corresponding .csv files.

Image View and Text View implemented to introduce the user to the main purpose of the application.

Usage of Button implementing setOnClickListener to start Log In activity for those users that previously have created an account.

Usage of Text View implementing setOnClickListener to register in our database with a valid email.
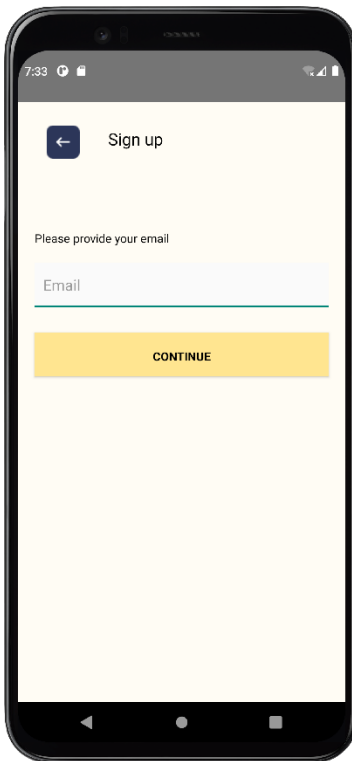
Image Button implementation to return to Main Activity. Text View to specify the title of the screen.

Usage of Edit Text to allow users to enter an email, and a Button to continue to the next page.

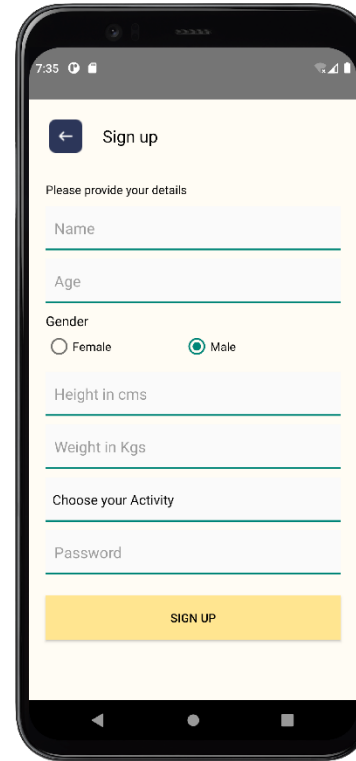Implementation of Helper.emailValidator to check users' input, connection to database to review existing emails.

Image Button implementation to return to first Sign Up Activity. Text View to specify the title of the screen.

Usage of multiple Edit Text to allow users enter account details, a Radio Group to select Gender, a Spinner to select level of physical activity, and a Button to go to Log In screen.

Implementation of Helper.isValidPassword to check users' input, connection to database to create a new User object, and execute corresponding query, validations on users' input.
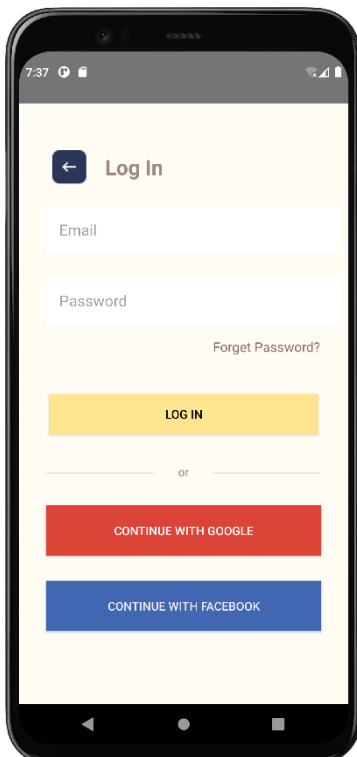
Image Button implementation to return to Main Activity. Text View to specify the title of the screen.

Edit Text to allow user to enter email and password, usages of Buttons to Log In with a valid account or through Google and Facebook. Text View with Listener to start Forgot password activity.

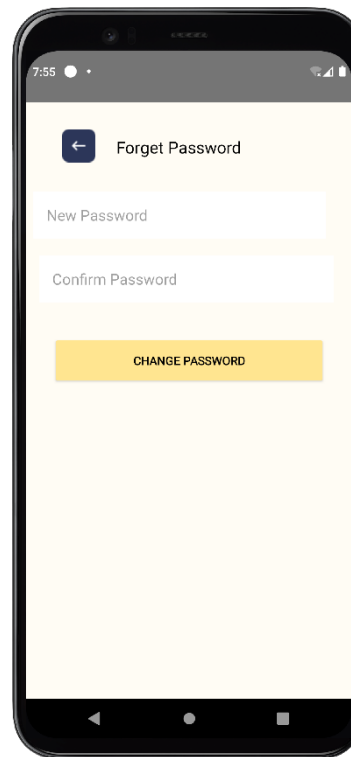Connection to database to get User information.

Image Button implementation to return to Log In Activity. Text View to specify the title of the screen.

Edit Text to allow user to enter and confirm new password and a Button to apply changes.

Implementation of Helper.isValidPassword to check users' input, connection to database to execute update user password query.
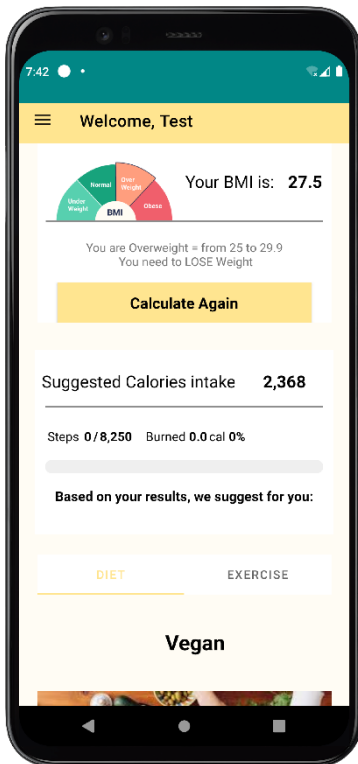
Implementation of a Drawer Layout to create a Navigation Menu and a Tool Bar. Content within a Scroll View in order to scroll down the screen and have access to all content. Within Navigation Menu, user can access to Profile, About Us, Contact Us and Log Out activities.

Usage of multiple Constraint Layouts to separate all the sections.

In the first section, we use an Image view that changes according with the result of BMI and Text View to display relevant information related to results. Button to start Calculate (again) BMI activity.

In the second section, we use multiple Text View to display suggested calories intake, target steps, current steps, burn calories and the percentage of progress, and a Progress Bar implemented with a drawable xml file to establish gradient and shape design.

In the third section, we use a Tab Layout with two Tab Items to implement swap tabs for Diet and Exercise suggestions. Next to the Tab Layout, we implement a View Pager that holds two Fragments through an adapter. Inside both fragments, we use a Recycler View to populate List of Diets and Exercises classes, implemented with a Grid Layout Manager. We created separate adapters with corresponding xml layouts to display title description and the corresponding image for Diets and Exercises categories. Also, we created couple of bundles to pass certain information use for displaying information depending on the selected category by the user and set onItemClick in order to start a new Intent to next activity.

Inside Home Activity class we have implemented all the back-end logic for calculations needed, through methods such as calculateBMI, BMIDescriptionLogic, BMRCalculation, and targetSteps.
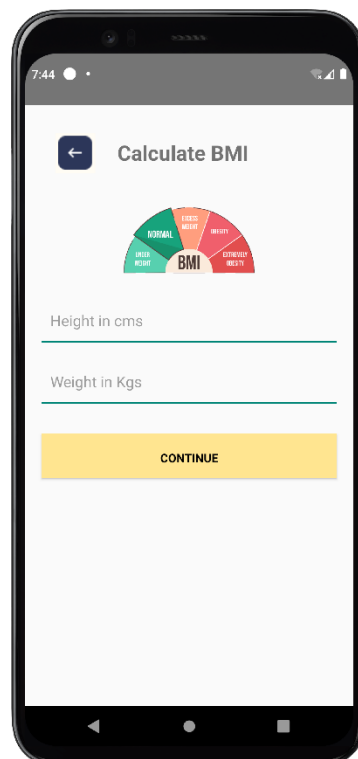

Image Button implementation to return to Home Activity. Text View to specify the title of the screen.

Multiple Edit Text to allow user to enter new information of Height and Weight.

Connection to database to execute insert users query or update user information depending on the way that user select on Log In screen (with an existing account or through Google or Facebook).

Note: if the user Log In through Facebook or Google this screen is display next (instead of Home Screen), because we need to store in the database additional information not provided, such as age, height, weight and level of physical activity. For that reason, age and a spinner for level of physical activity remain hidden.
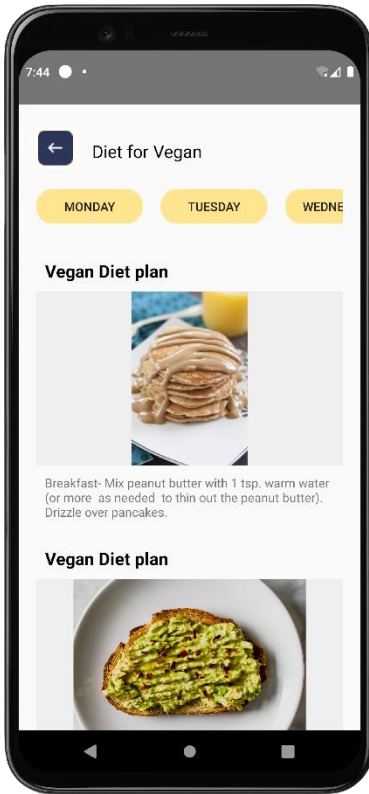
Image Button implementation to return to Home Activity. Text View to specify the title of the screen.

Implementation of a horizontal Scroll view with a Linear Layout to display days of the week and a Recycler view to display all the suggested diets.

Connection to database to retrieve information about diet description and image. Creation of corresponding adapters for recycler views implemented.
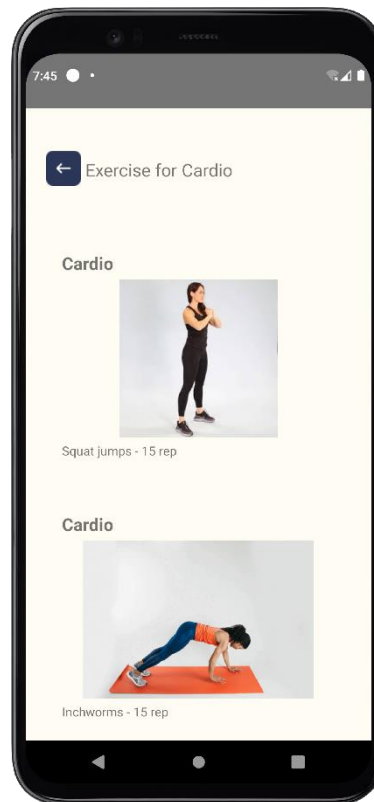

Image Button implementation to return to Home Activity. Text View to specify the title of the screen.

Implementation of Recycler view to display all suggested exercises.

Connection to database to retrieve information about description and image. Creation of corresponding adapters for recycler view.
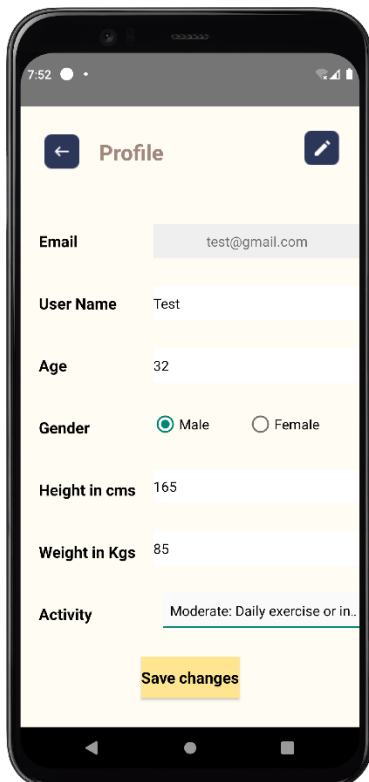

Image Button implementation to return to Home Activity. Text View to specify the title of the screen.

Initial configuration do not allow users to modify information, when user select Edit Button all fields will be editable, not including email because that is our key attribute in database.

Multiple Edit Text to allow users to edit account details, a Radio Group to select Gender, and a Spinner to select level of physical activity.

Connection to database to all retrieve information and execute updateAllProfileInfo query.
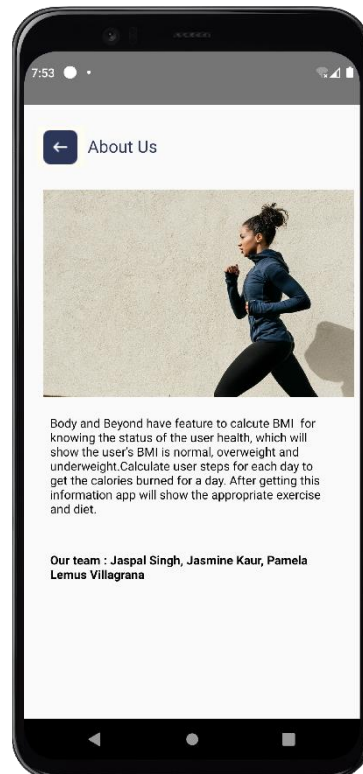

Image Button implementation to return to Home Activity. Text View to specify the title of the screen.

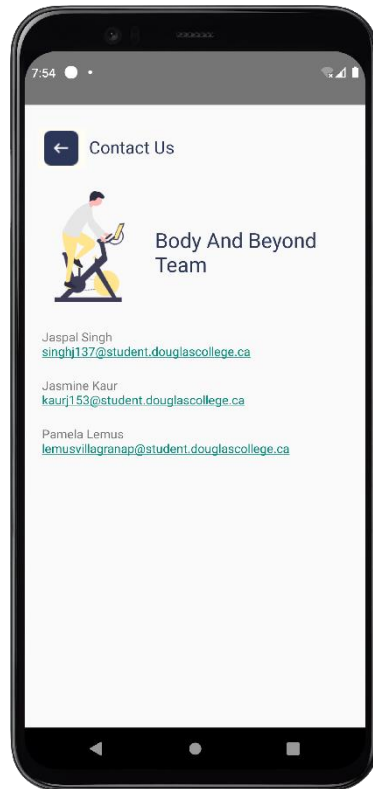Image View and text view with general information about application.

Image Button implementation to return to Home Activity. Text View to specify the title of the screen.

Multiple Text views to display name and email of each team member.

Usage of Linkify.addLinks to implement functionality for send an email and connect to the corresponding application.

New concepts or insights learned:

Pamela:

"I have learned how to debug and troubleshoot the project errors that I encountered while working on the app, also more technical extensions that we can exploit using Android Studio. I learned how to implement a GIF image through a different package, how to create a scrollable screen and that Scroll View can have only one child. I learned how to create queries within an interface and retrieve, modify and make validation with information stored on a database.

I also have discovered multiple options that we can exploit to have swap pages and implementing that in the middle of a page through a Tab Layout element, and as a result how to use fragments. Finally, I learned how to enable and disable an Edit Text, Radio Group and Spinner."

Jasmine:

"I learned about navigation drawer with use of navigation view, drawer layout and android material library elements, also about using gif layout while implementing diet detail page where I also used scroll view layout, I learned about different elements in view like password text and image button, I learned to work with database and checking live data, solving errors in database and also in backend logic   I learned to work on GitHub how to push and pull from branch, stash files and checking history and changes. I also learned about working with nested layouts. I have learned about clearing shared preferences from the app."

Jaspal:

"I learned implementation of sensor while implementing step counter, third party login with Facebook and Google for user sign in, learned registration of Facebook and google on their developer environment and generated SHA for making google email work on devices, implementation of gif image view for exercise detail activity, I learned to implement notification and created time scheduler to run app at specific time. I learned about progress bar for step counter.

I learned to implement step counter and how to debug it and test it for 24 hours that it is working according to the requirement."