



AN-Najah National University Faculty of Engineering & Information Technology
Computer Engineering Department

Graduation Project I

Med_Aid

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Computer Engineering.

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Disclaimer:

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Abstract :

Many people get lost in work or in their life events leading them to ultimately careless for their bodies and health , from forgetting to buy their medicine from the pharmacy and forgot to drink their medicine regularly.

The project aims to create an application, this application is meant to make an easy way for buying medicines to keep time for users and to remind them of their medicines.

To develop the app, we will use Flutter SDK and API. First, we will complete the design process for the basic user interfaces, then add the features one by one, testing each of them for functionality, and doing the needed research to ensure the provided information is accurate, After that we will connect it to the data base.

other countries might have pharmacy applications but there is none in Palestine, our application has a map to detect which pharmacies are closer to the user which makes it different and gives it an advantage to other apps.

Chapter 1: Introduction

Statement of the problem:

Many people get lost in work or in their life events leading them to ultimately careless for their bodies and health , from forgetting to buy their medicine from the pharmacy and forgot to drink their medicine regularly .

Objectives:

Creating an application with a friendly user inter face that has the following features :

- Keeps track of a set of timers or reminders that each user sets for medicines ,and notifies the user when it's time for their medicines or pills, according to the information that the user sets.
- Drug database for each pharmacy, which users can easily access. The database contains different drugs divided by categories of drugs, so users can easily see what drugs each pharmacy contains.
- A map-linked search area that allows users to search for medications and shows which pharmacy that contain the medication closest to the user's current location.
- Track what each pharmacy has in its category in a user friendly way so users can see drugs and see their description, price and form.
- An online order section where the user can quickly order certain types of medicines online and an order page to see what the user has ordered.
- Conversation section with Auto answer for quick medical advice and access to appropriate medications.
- Connected to an Admin page (web part),pharmacies can register their own medicines according to medicines they have and delete medicines they no longer have. This part to manage pharmacies work in fast and easy way and the ads displayed on home page in the application.

Scope of the work:

The application keeps track of most things that the user wants and needs from a pharmacy, notifies the users based on their timers, gives them the ability to easily search for a medicine and see the nearest pharmacy by map locations .Also , a friendly way to order online drugs from pharmacies.

The application keeps track of pharmacies and what each of them contained with short description and information about each item.

The application has trained chatbot to describe an appropriate medicine for user who chat with it.

The application has advertisement space for different companies to take advantage of, leading to economic advantage to the application owners, the admin page controls the ads displayed on the home page.

Significance or importance of the work:

Med Aid application mainly helps people to know the nearest pharmacy to them to make health care process in a simplest form to take care of themselves. Our bodies are our image on earth, it's up to us how to take good care of them. A simple solution for people not to over think, Med Aid gives you the trust that you can keep living mindlessly ,and a notification will get your mind back into your body ,to care for it.

Chapter 2: Constraints

- *Limited time:*

It was difficult to manage our time between project development and coding while also attending to the other classes we had, but we took turns problem-solving and our teamwork got us over the difficulties we encountered along the road.

- *Project Adjustments through the developing process:*

In the beginning, we had many features in mind, but because we lacked experience with the new development tools and coding techniques, we had to cut back on our time and sacrifice some features. Nevertheless, we obtained the necessary experience and much more to maintain the application's quality.

- *Learning new skills and using previously learned skills:*

We had to learn new languages and frameworks, and we were exposed to new ideas while putting the project together. We learned Dart and used Flutter as a software development kit to create our mobile application. We also used Visual Studio Code and Android Studio for the development, a MySQL server for our database, and a Node js back end environment. To save time, we built a simple admin using web pages in html and php that we had previously worked with.

- *Lack of data:*

We were forced to collect and create a big database form medicines ,due to a lack of knowledge and information in the field.

Chapter 3: Literature review

The human body has certain substance needs that need to be fulfilled to keep the body functioning and to keep it healthy , however each bodies needs are different than others.

Most of us find it difficult to go to pharmacies, and the lack of the required medicine in one of the pharmacies requires lengthy research and finding other alternative pharmacies to obtain it.

Preoccupation with the course of life may give some people a sense of neglect of health, which may be represented in not taking the appropriate medicine at the appropriate time or not visiting the pharmacy to obtain the medicine.

We must not forget that we are responsible for our bodies.

Chapter 4: Methodology

- *Research process:*

We started by searching for pharmacies in Nablus with its precise location on the map using coordinates, and then familiarizing ourselves with most of the classifications of the contents of pharmacies in general to distribute them in categories such as vitamins, analgesics, sanitary , and so on.

And then collecting information and consulting with specialists to create an integrated database for these pharmacies, their classifications, and their contents.

- *Development process:*

After that, came time to start developing and coding the actual application, we decided for the front end on creating a flutter application due to many reasons, flutter uses dart as a programming language, Dart has an explicit and easy programmable layout, it is simple to read and visualize, Flutter supports both android and iOS, with the possibility of turning an application from android to iOS and vice versa with no problems.

As for the back end we created a nodejs API that is connected to a MySQL server for the database, Node.js can be easily employed as a server-side, we used nodemon to keep the node application

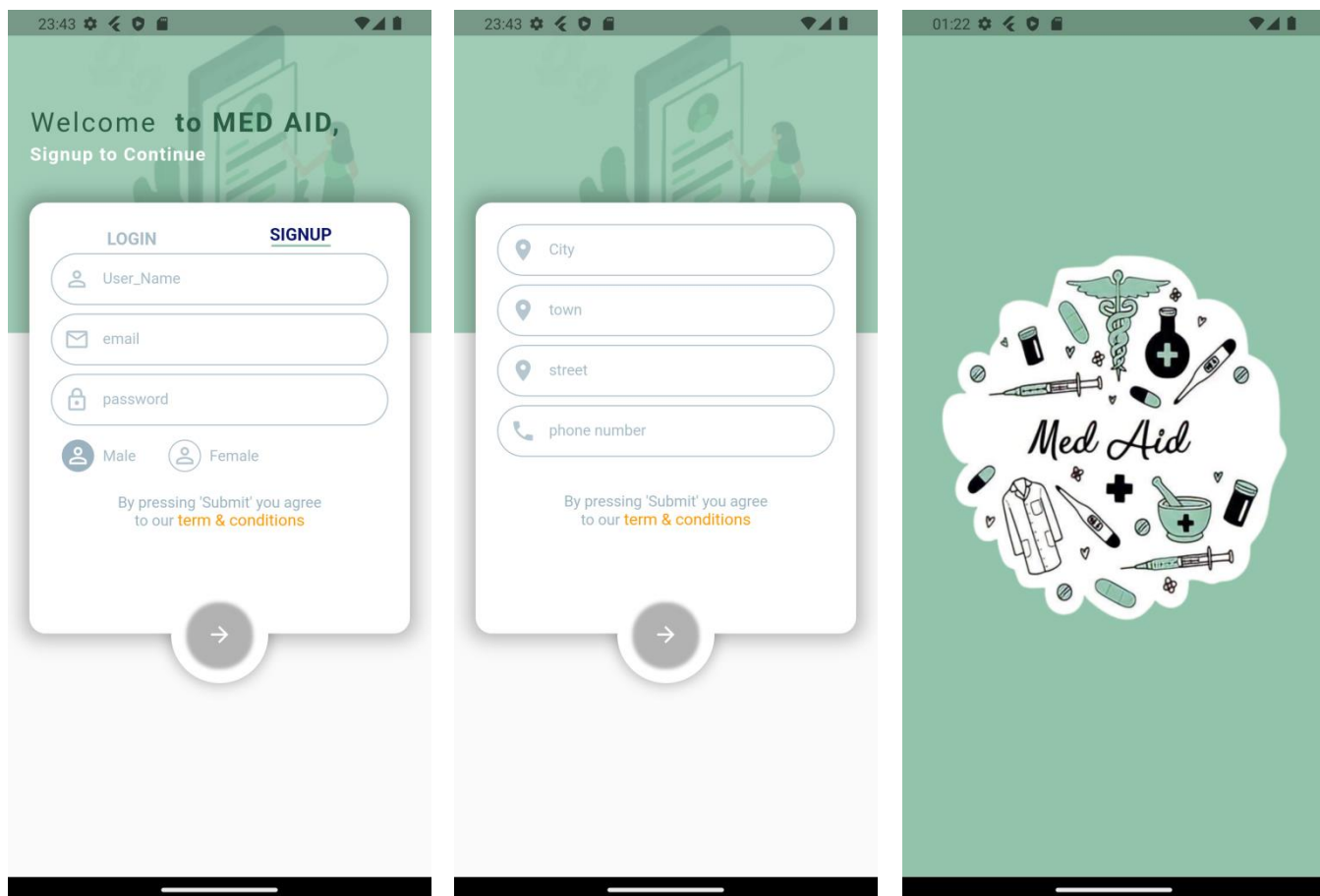
running and restarts it every time a change happens , nodemon saves the time and effort to continuously running the application manually, we used HTTP requests to allow back end and front end Communication.

We used VSCode as a development environment because it provides many useful extensions to use, we used it to code and debug the flutter application with assistance from android studio emulator, as for the node js application we also used vs code with the node js extension, we also used it to implement the admin page using php and html extensions.

Chapter 5: Results

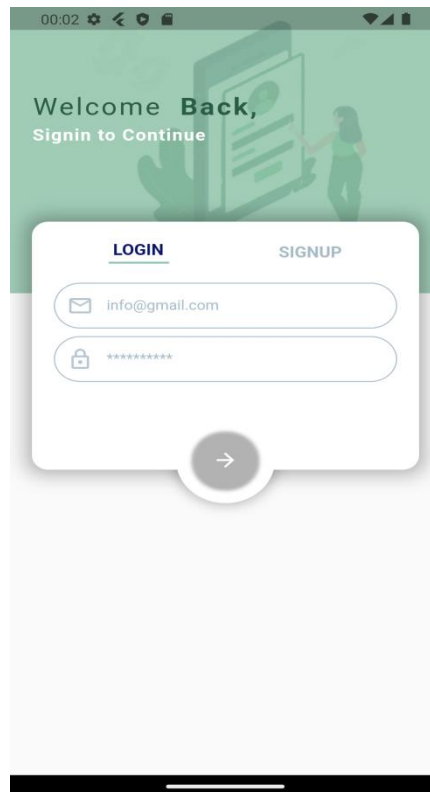
- Sign up and Splash screen Screens

The user should enter your name, email, password, city, street, town and phone number .



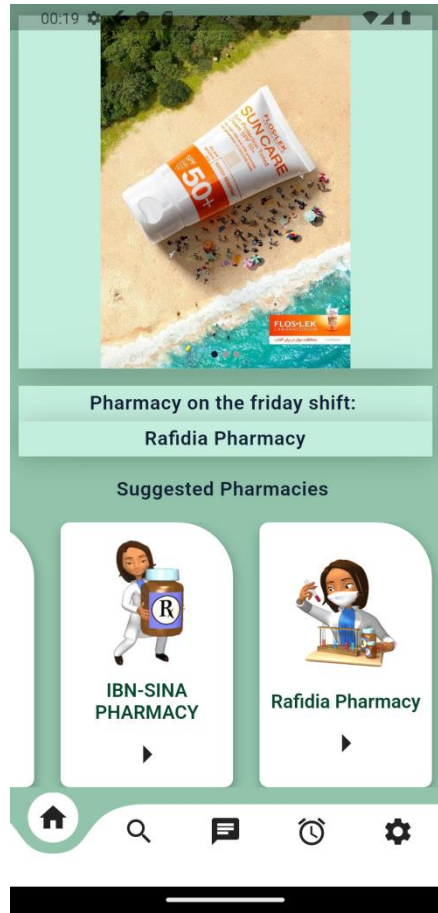
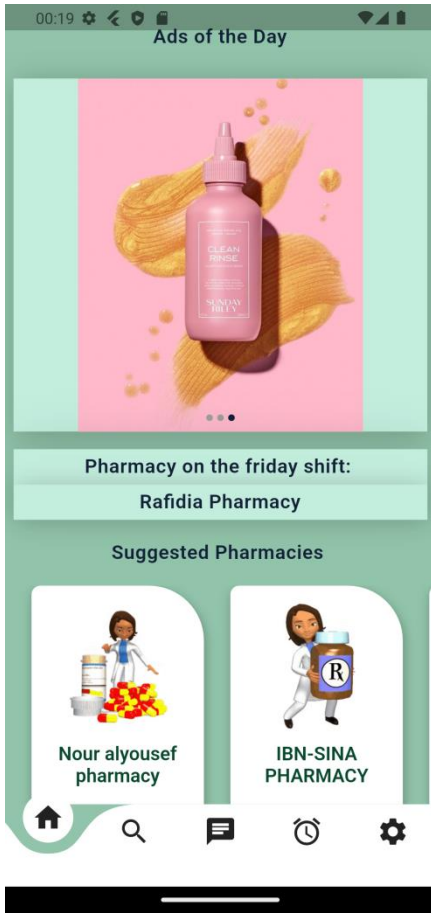
-Log in Screens

The user should enter his/her email and password then click submit icon.



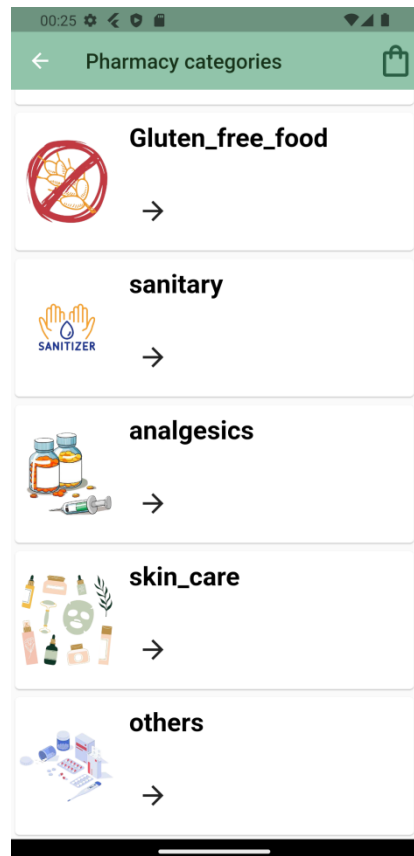
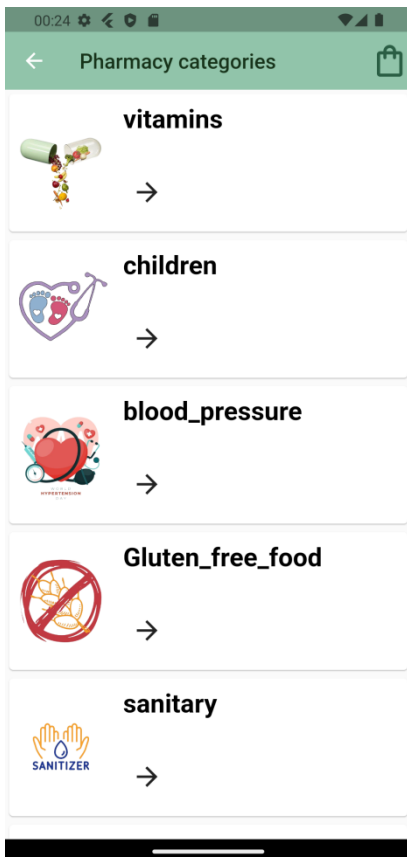
-Home page Screens

The page has a slider on the top to display ads, then display the name of pharmacy that will open on Friday in this week, followed by the pharmacies that in the app , when a pharmacy arrow is pressed, a screen appears to the categories in the pharmacy.

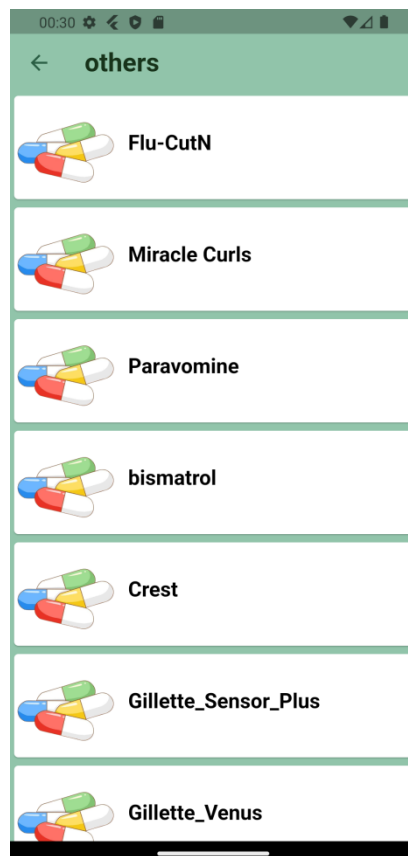
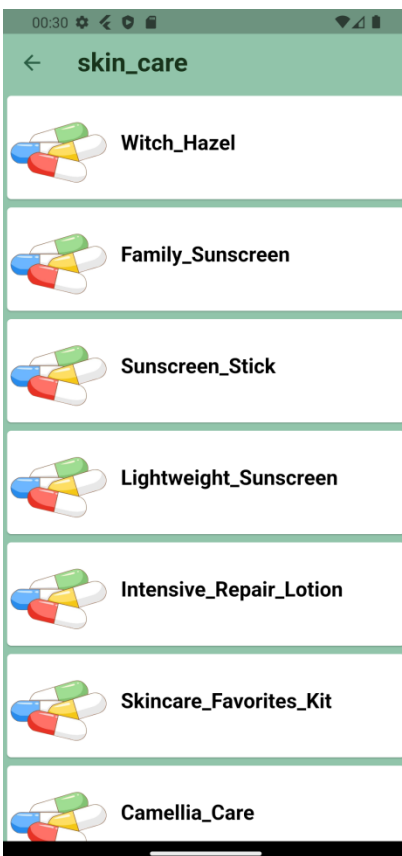
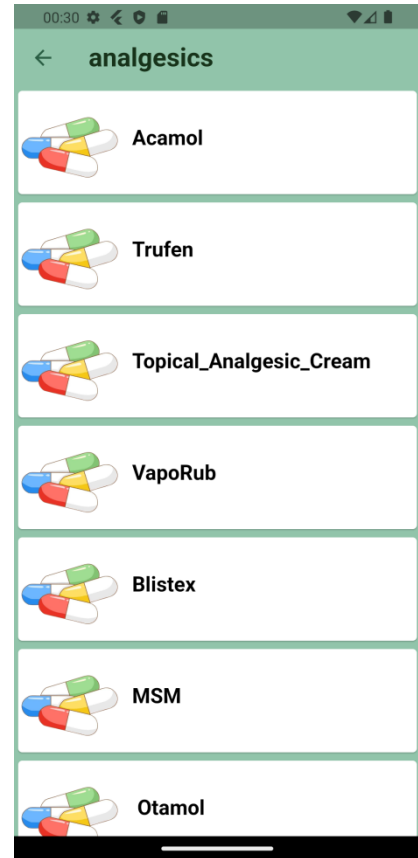
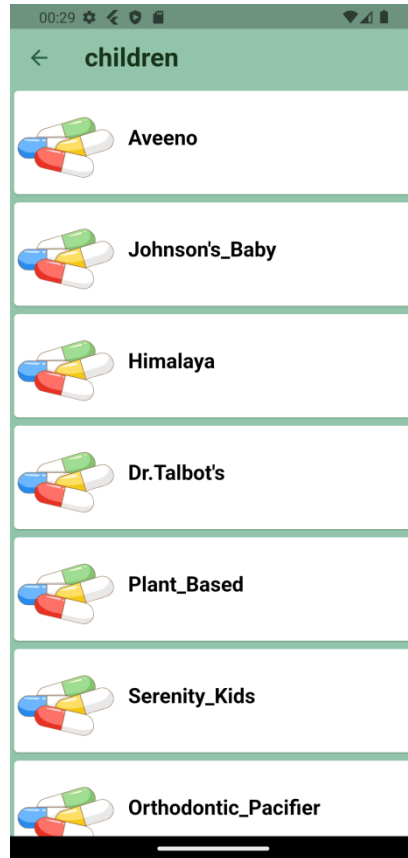
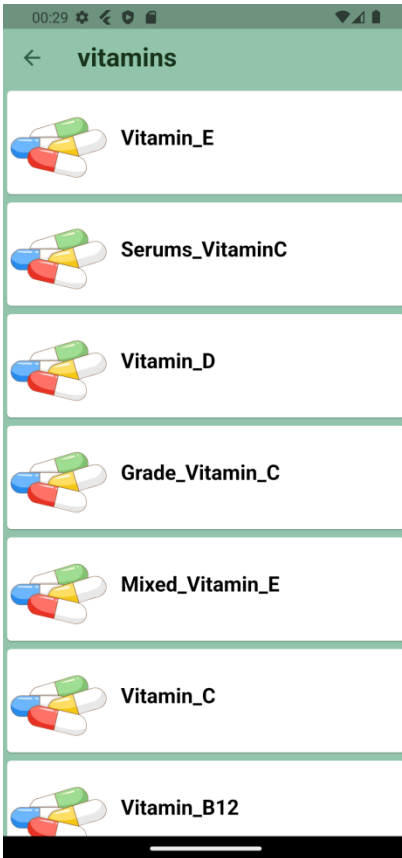


- Categories Screens:

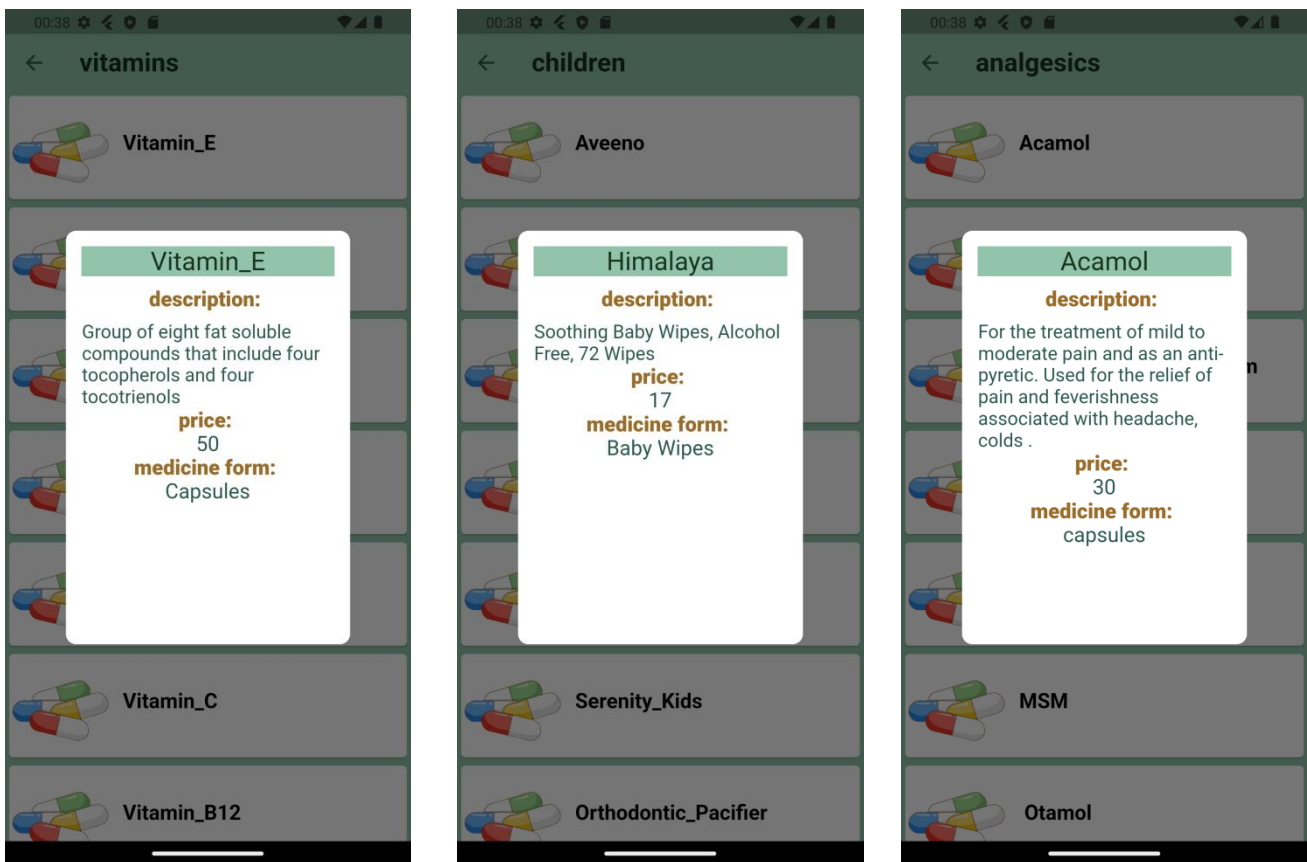
Each pharmacy have categories to classify the drugs it has when click the arrow then the medicines screen is open.



- Medicines Screens:

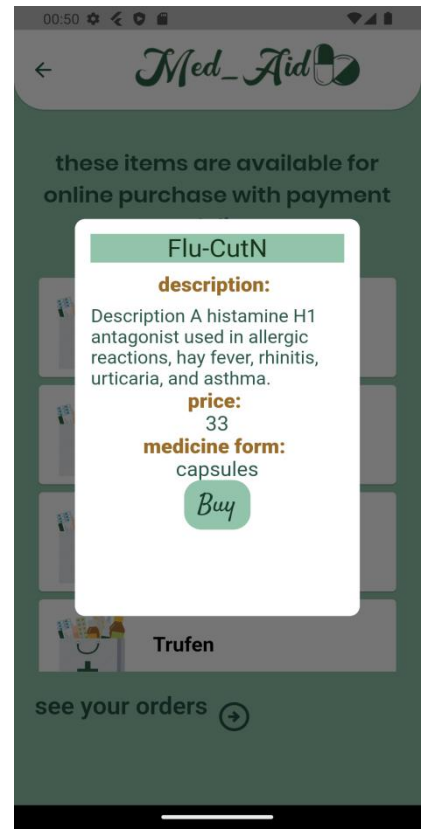
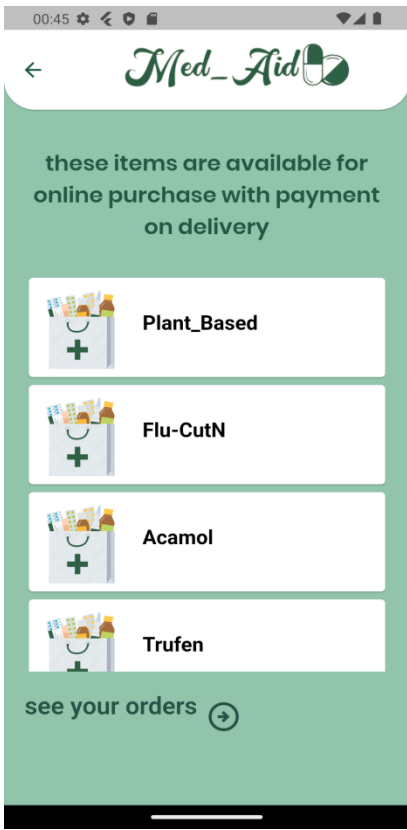


When press the medicine a screen appears to explain the description, price and medicine form for this drug.



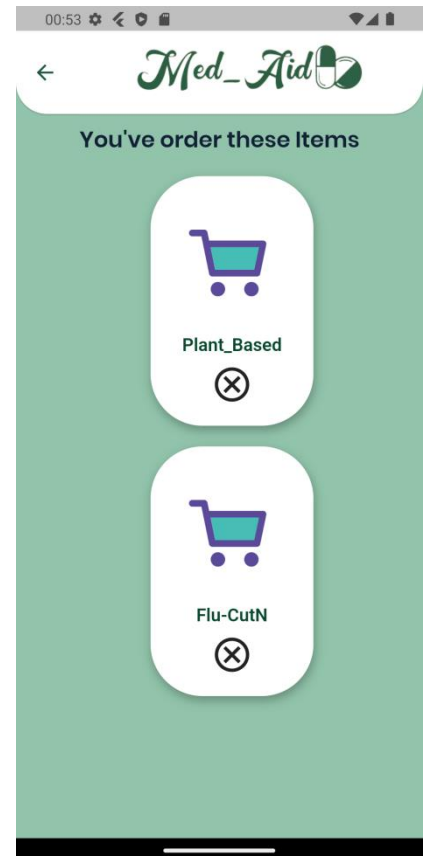
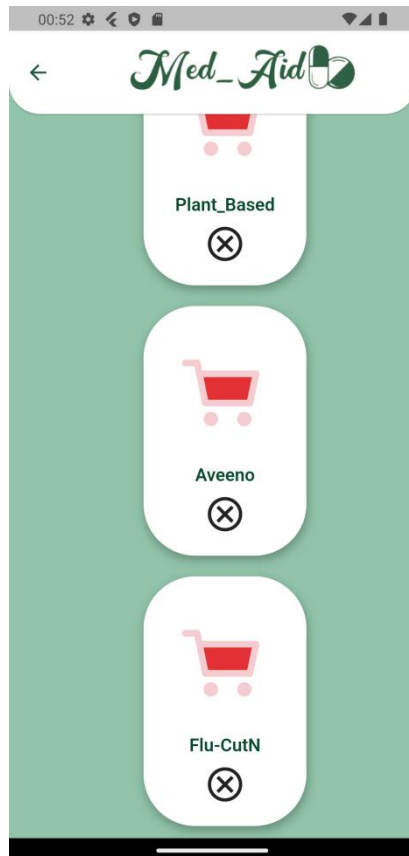
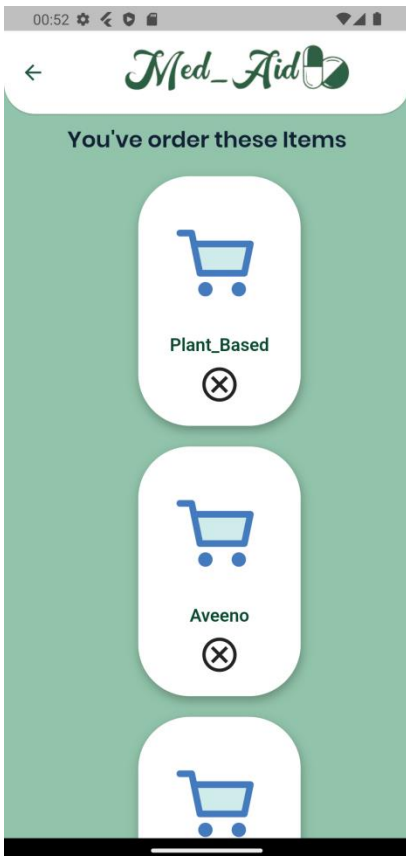
-Online shop Screens:

In categories screen when the icon in the top is clicked the online screen opened which it contains the drugs are available for online purchase .then if the item is pressed a screen appears to explain the description, price and medicine form for this drug and button to order it .



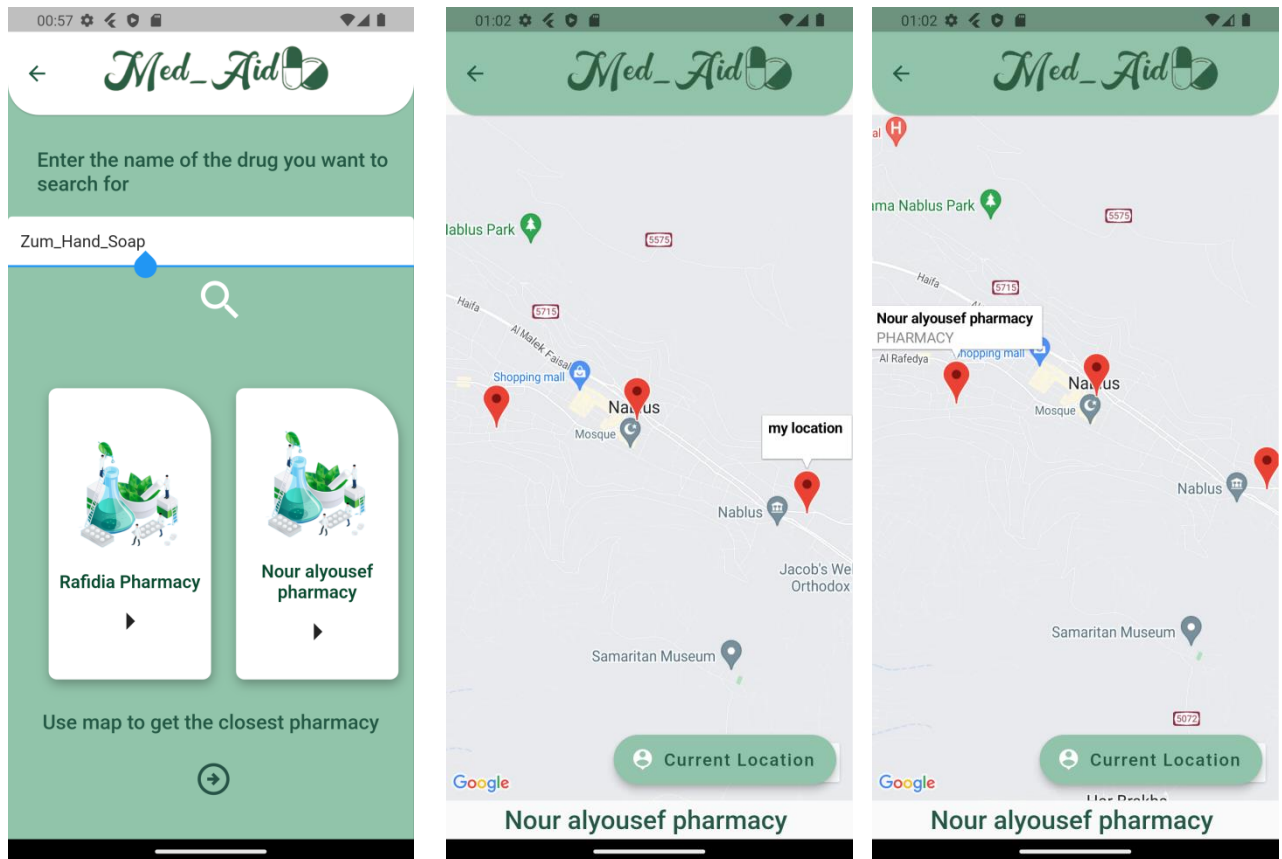
-Order Screens:

This screen to see what drugs the user ordered and the user can delete order. the right photo when delete the Aveeno drugs .

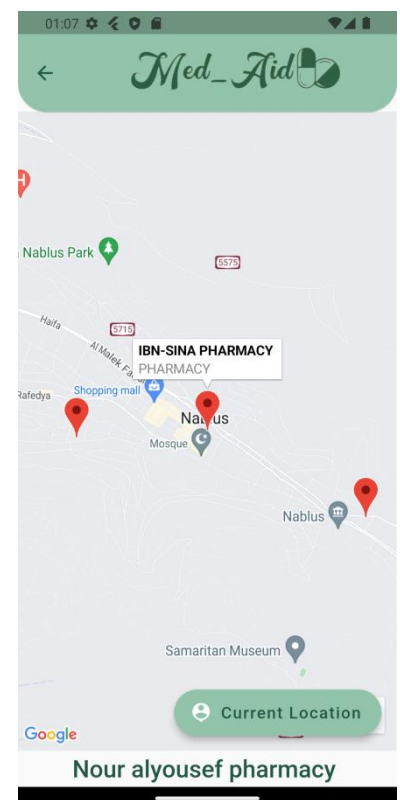


- Search Screen:

A map-linked search area that allows users to search for medications and shows which pharmacy that contain the medication closest to the user's current location.

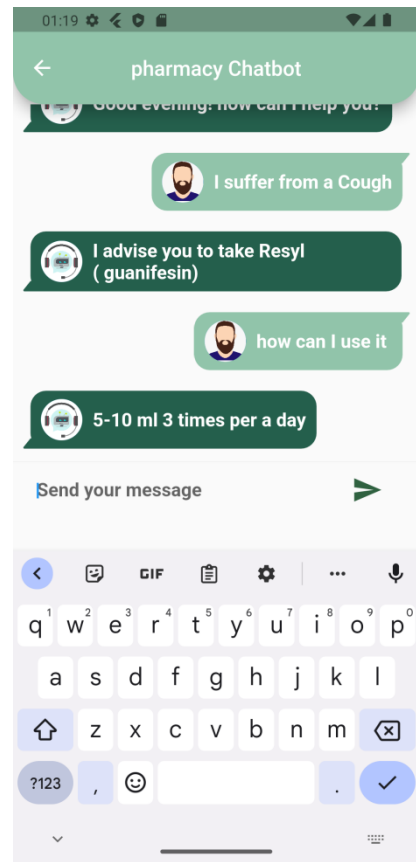
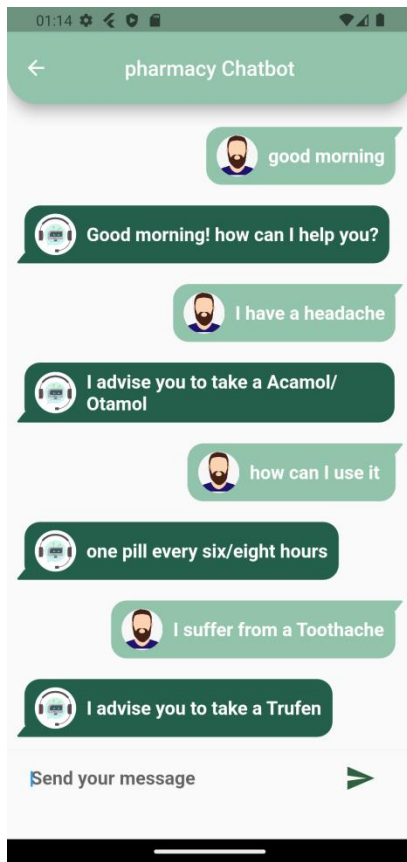


In this case the drug searched , it is found in two pharmacies (nour alyousef pharmacy and rafidia pharmacy).so the closest pharmacy that contained the searched item is nour alyousef pharmacy.(ibn_sina pharmacy closest to user location but it doesn't contained the searched item).



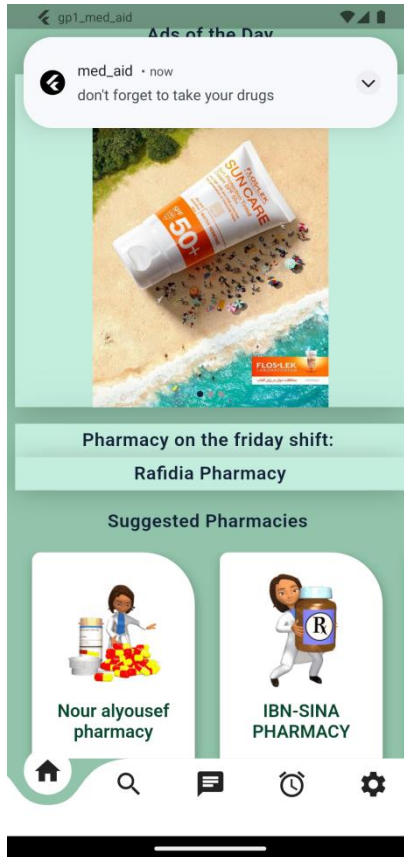
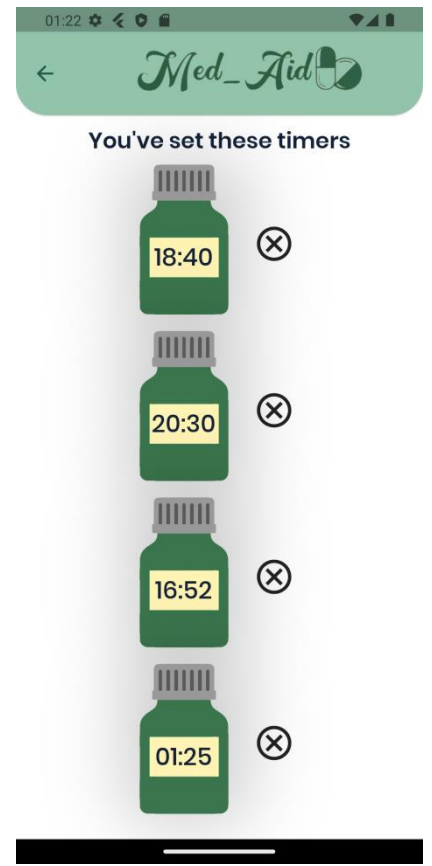
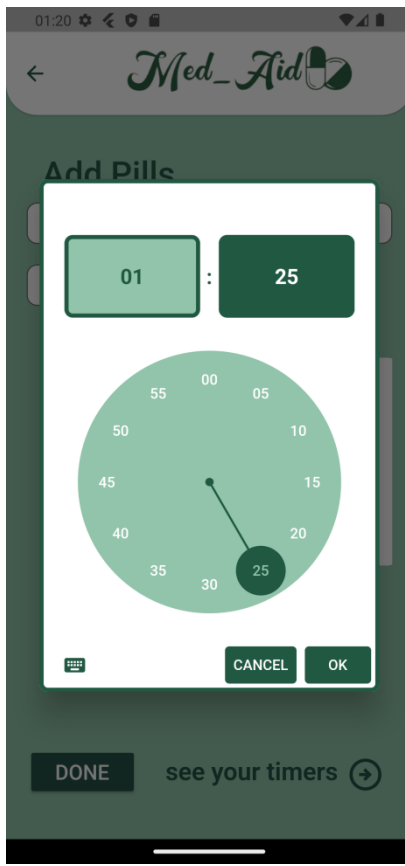
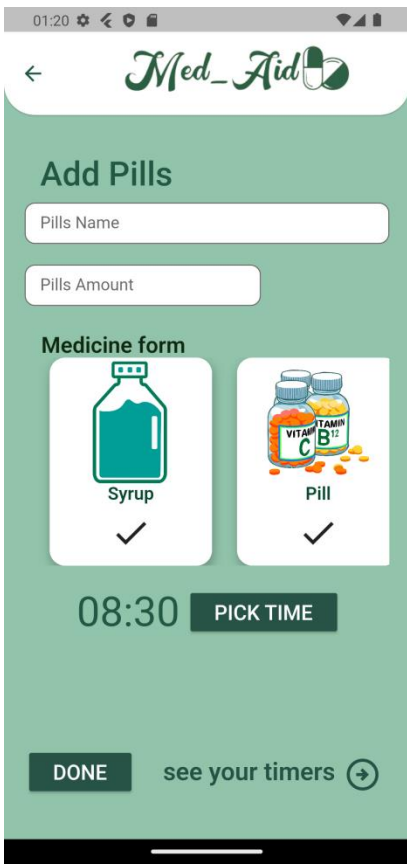
- Chatbot screen:

We used the dialogflow API to make the Artificial Intelligence chat .

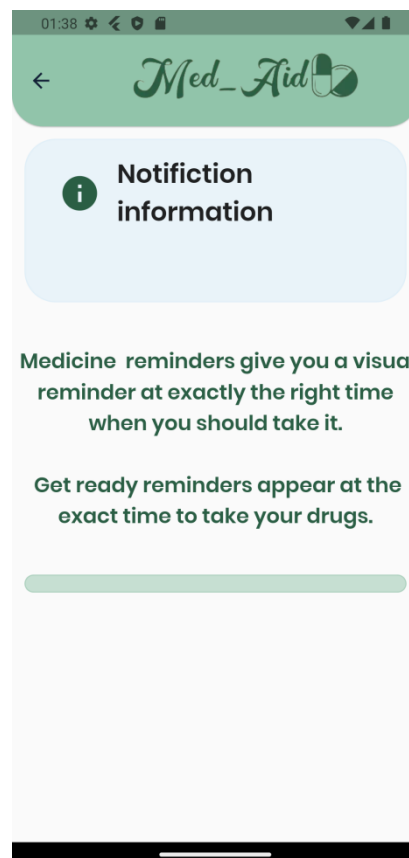
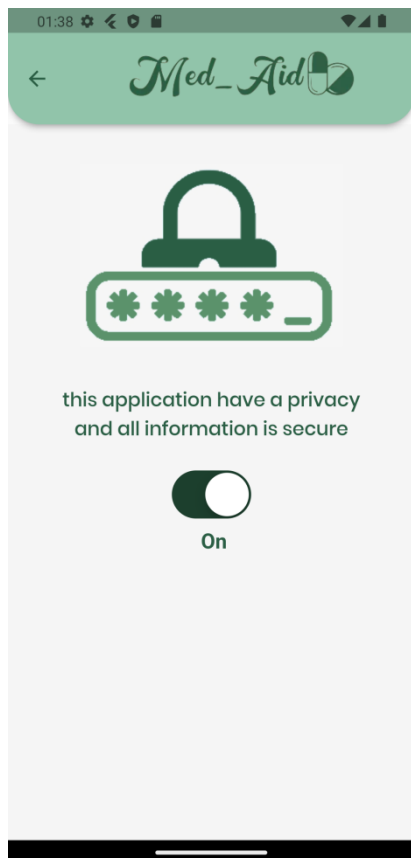
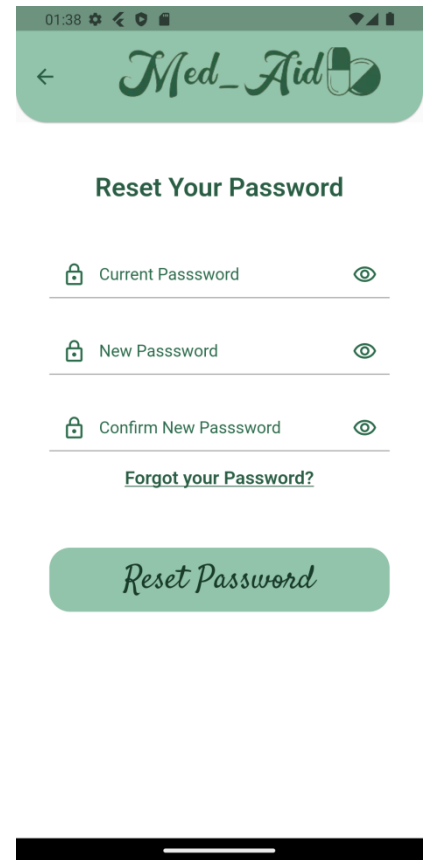
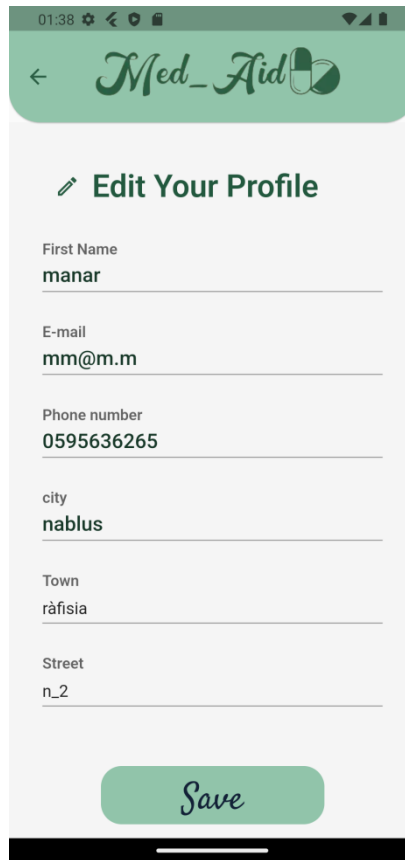
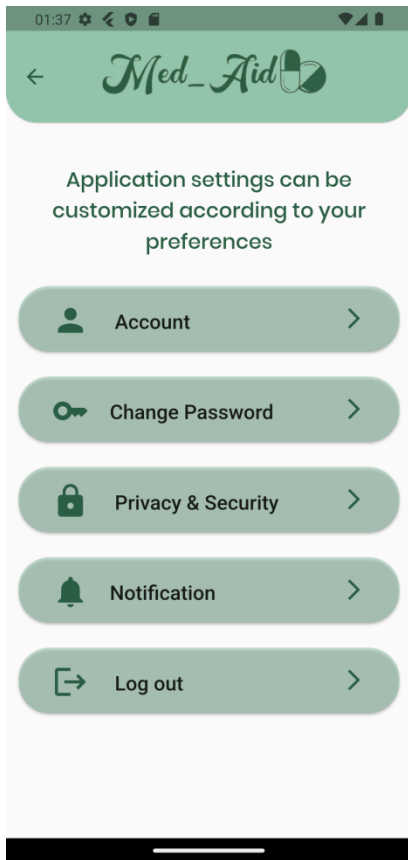


- Timers Setting Screens:

the user can set a timers or reminders for medicines ,and notifies the user when it's time for their medicines or pills. the user can see a time that setting for his reminder and can delete it.

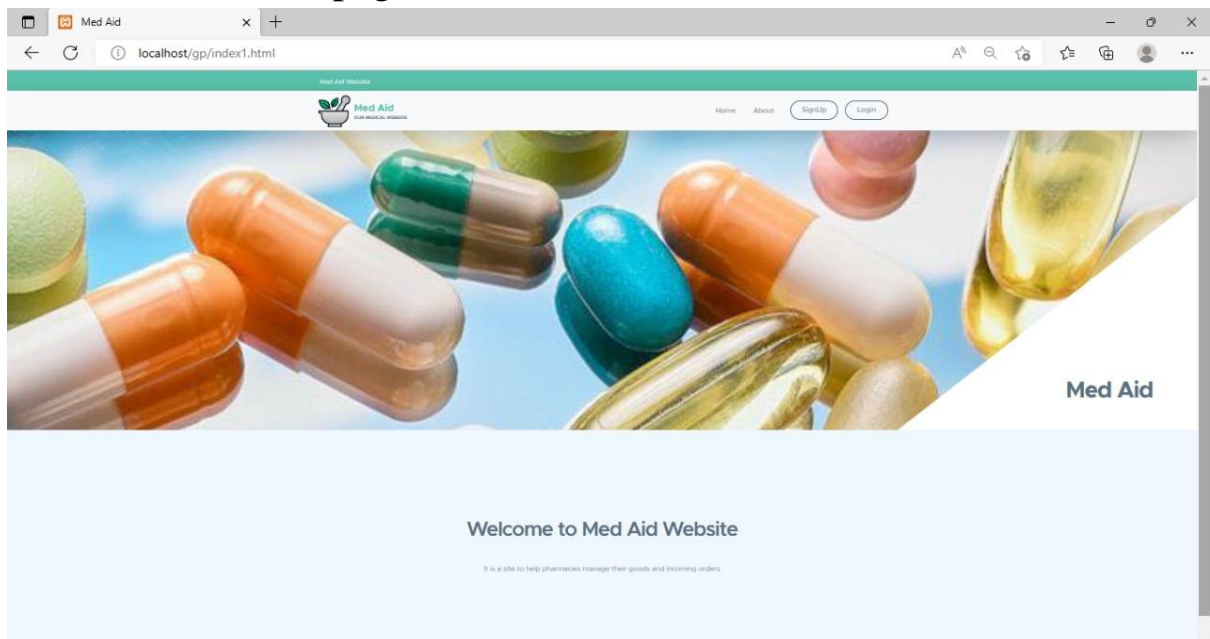


- Setting Screen:

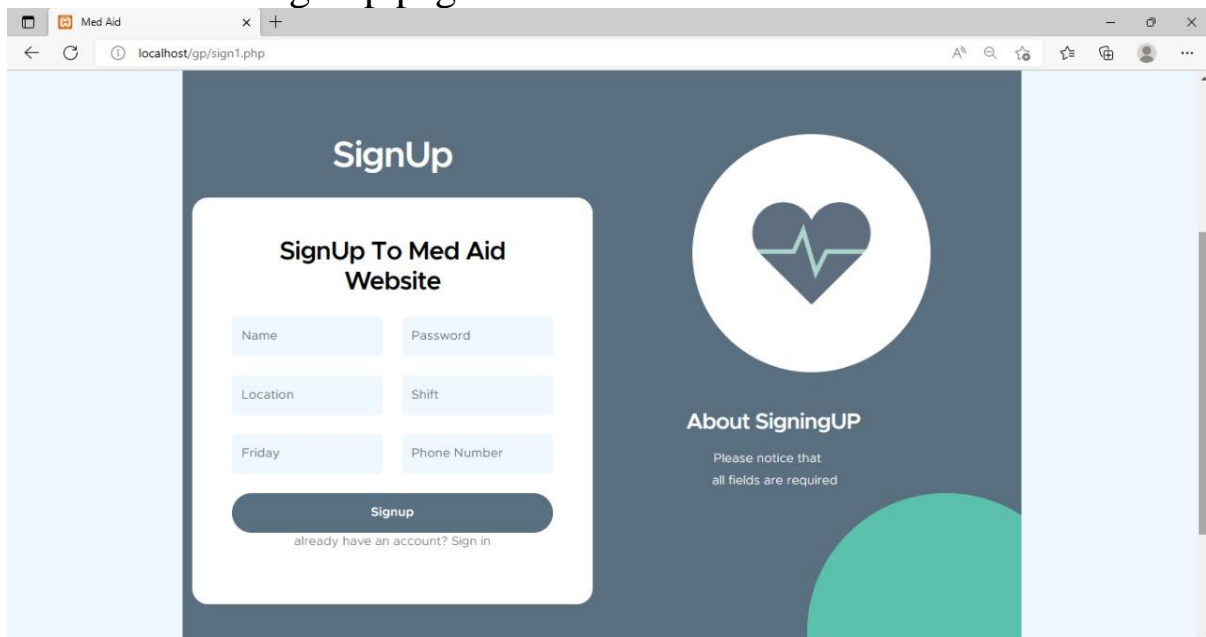


Med Aid Admin Page:

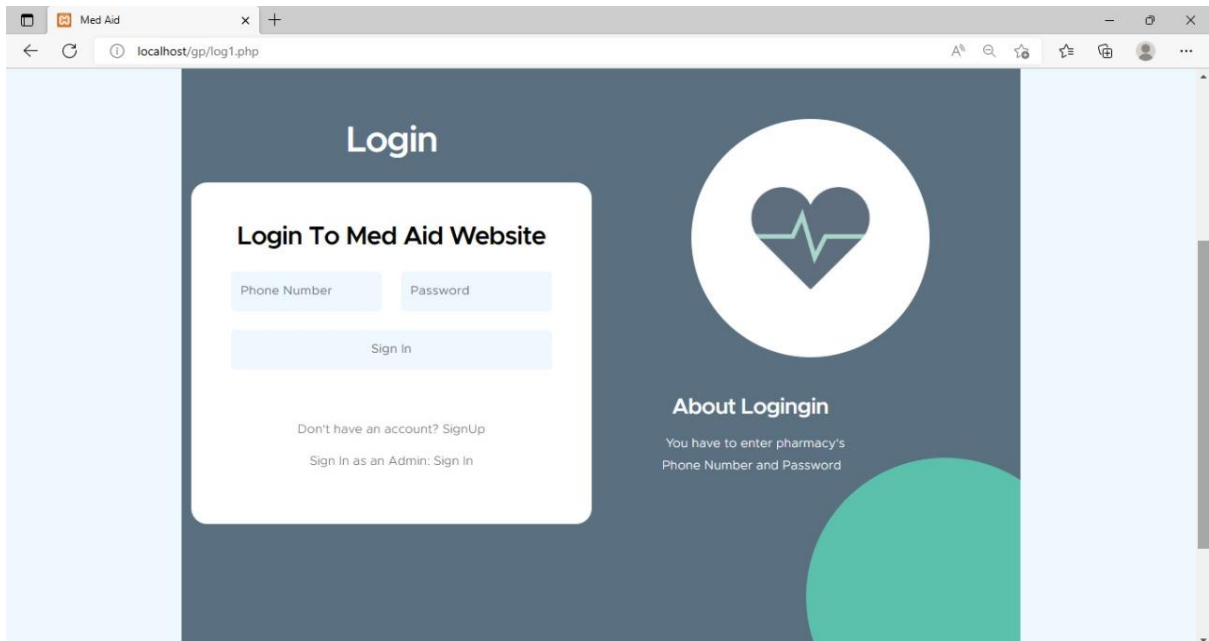
- Home page



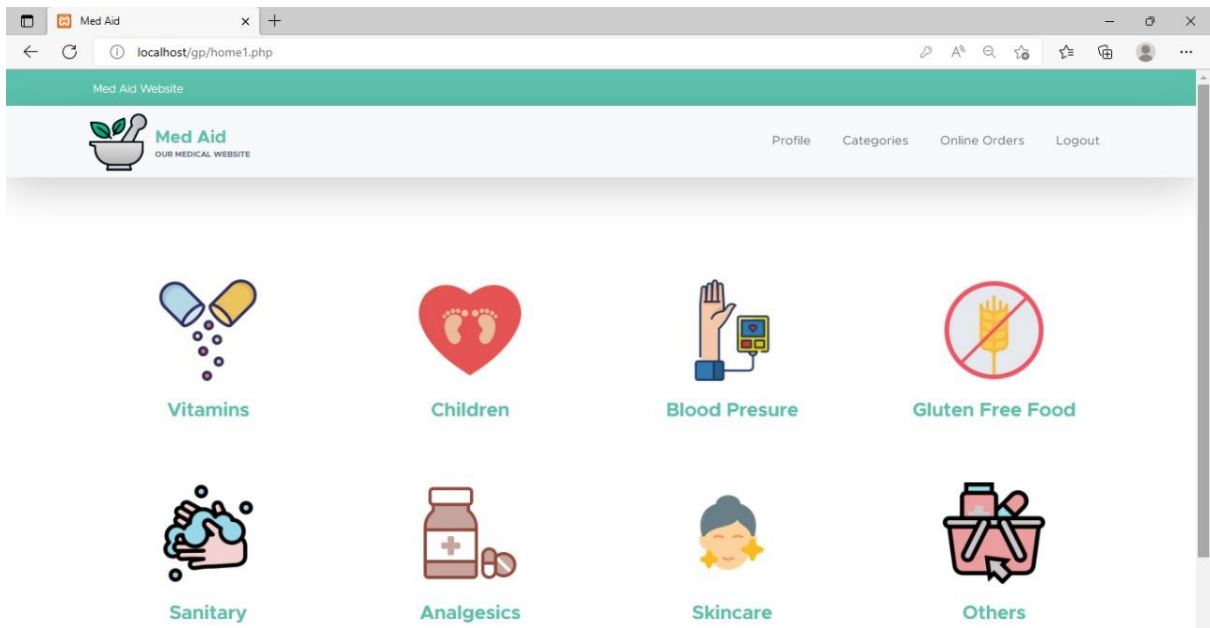
- Sign up page:



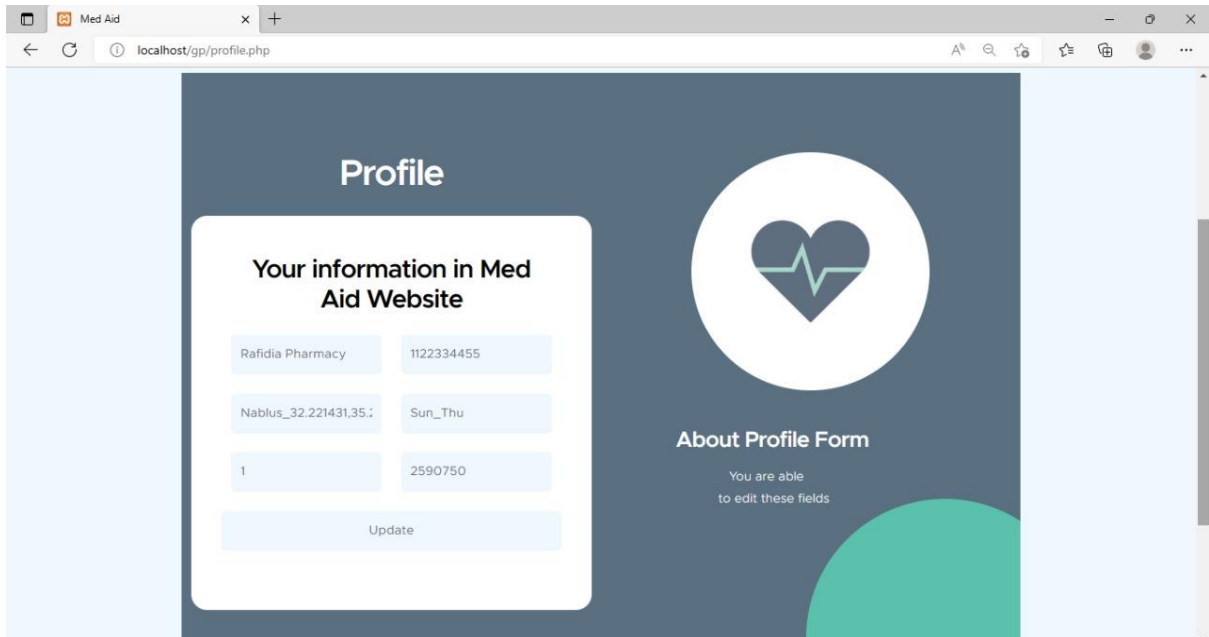
- Sign in page:



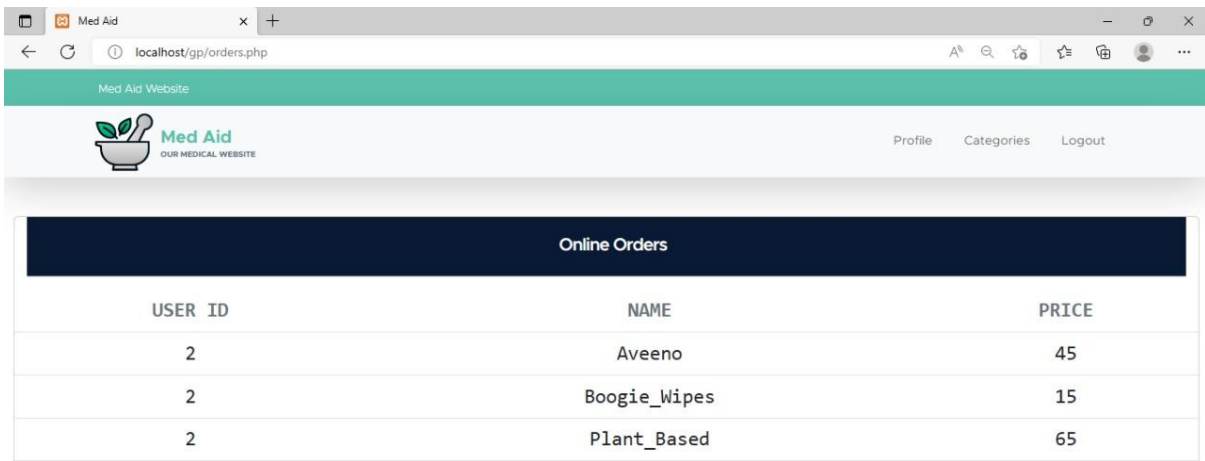
- Main Page:



- Profile Page:



- Online Orders Page:



- Vitamins Category Page:

BARCODE	NAME	TYPE	PRODUCTION DATE	EXPIRE DATE	AMOUNT	DESCRIPTION	PRICE
10	Vitamin_C	Capsules	9/10/2019	12/12/2023	130	Lake Avenue Nutrition, Vitamin C, Quell-C, 1,000 mg, 60 Veggie Capsules	40
11	Vitamin_C	Capsules	1/1/2019	1/1/2023	1800	Dietary supplement with sweetener (chewable tablets with natural orange flavour contain vitaminC)	25
12	Vitamin_E	Capsules	1/2/2021	1/2/2025	100	Group of eight fat soluble compounds that include four tocopherols and four tocotrienols	35
14	Vitamin_C	Serums	12/1/2021	12/1/2025	1877	Trilogy, Vitamin C Booster Treatment, 0.51 fl oz (15 ml)	65
78	Vitamin_D	Capsule	7/8/2019	2/2/2024	1000	NOW Foods, Vitamin D-3 & K-2, 120 Veg Capsules	25
100	Vitamin_D	Capsules	8/9/2010	30/12/2023	130	California Gold Nutrition, Vitamin D3, 50 mcg (2,000 IU), 360 Fish Gelatin Softgels	45
111	Grade_Vitamin_C	Capsules	8/9/2019	5/5/2023	126	California Gold Nutrition, Gold C, USP Grade Vitamin C, 500 mg, 240 Veggie Capsules	12
112	Mixed_Vitamin_E	Capsules	2/2/2018	6/9/2023	130	Natural Factors, Mixed Vitamin E, 134 mg (200 IU), 90 Softgels	15
131	Vitamin_C	Capsules	1/1/2019	1/1/2023	1800	Dietary supplement with sweetener (chewable tablets with natural orange flavour contain vitaminC)	16
159	Vitamin_B12	Capsules	7/8/2019	9/10/2023	986	Doctor's Best, Fully Active B12, 1,500 mcg, 180 Veggie Caps	45
174	Vitamin_B12	Capsules	4/5/2021	6/9/2024	145	Solgar, Sublingual Methylcobalamin (Vitamin B12), 1,000 mcg, 60 Nuggets	20
444	Vitamin_B12	Capsules	2/3/2022	2/7/2024	156	Sundown Naturals, Time Release Vitamin B12, 1,000 mcg, 120 Tablets	25
1122	Super_Vitamin_E	Capsules	7/7/2021	2/1/2024	147	Life Extension, Super Vitamin E, 268 mg (400 IU), 90 Softgels	15

- Children Category Page:

BARCODE	NAME	TYPE	PRODUCTION DATE	EXPIRE DATE	AMOUNT	DESCRIPTION	PRICE
1	Aveeno	shampoo	8/9/2019	9/10/2023	100	Aveeno, Kids, Curly Hair Conditioner with Oat Extract & Shea Butter , 12 fl oz (354 ml)	45
2	Johnson's_Baby	shampoo	1/1/2022	1/1/2024	130	Johnson's Baby, Kids, Ultra-Hydrating Shampoo, 13.6 fl oz (400 ml) Johnson's Baby, Kids, Ultra-Hydrating Shampoo, 13.6 fl oz (400 ml) Johnson's Baby, Kids, Ultra-Hydrating Shampoo, 13.6 fl oz (400 ml)	25
5	Himalaya	Baby Wipes	7/7/2021	10/11/2023	148	Soothing Baby Wipes, Alcohol Free, 72 Wipes	17
6	Dr.Talbot's	Infrared Thermometer	8/6/2020	0	900	Dr. Talbot's, Infrared Thermometer, White, 1 Thermometer	45
8	Plant_Based	Milk Powder	12/12/2022	12/12/2023	1800	Nature's One, Baby's Only, Plant Based Pea Protein Toddler Formula, 12 to 36 Months, 12.7 oz (360 g)	65
22	Johnson's_Baby	shampoo	1/1/2022	1/1/2024	130	Johnson's Baby, Kids, Ultra-Hydrating Shampoo, 13.6 fl oz (400 ml) Johnson's Baby, Kids, Ultra-Hydrating Shampoo, 13.6 fl oz (400 ml) Johnson's Baby, Kids, Ultra-Hydrating Shampoo, 13.6 fl oz (400 ml)	25
102	Serenity_Kids	Milk Powder	7/7/2021	10/2/2023	123	Serenity Kids, A2 Whole Milk Toddler Formula, 12-36 Months, 12.7 oz (360 g)	75
233	Johnson's_Baby	shampoo	1/1/2022	1/1/2024	130	Johnson's Baby, Kids, Ultra-Hydrating Shampoo, 13.6 fl oz (400 ml) Johnson's Baby, Kids, Ultra-Hydrating Shampoo, 13.6 fl oz (400 ml) Johnson's Baby, Kids, Ultra-Hydrating Shampoo, 13.6 fl oz (400 ml)	25
500	Itzy_Soother_Pacifiers	Kids Accessories	7/9/2019	0	123	itzy ritzy, Itzy Soother, Pacifiers with Natural Rubber Nipples, 0-6 Months, Coconut & Toast, 2 Pacifiers	15
501	Orthodontic_Pacifier	Kids Accessories	14/2/2022	0	745	MUK, Orthodontic Pacifier, 0-2 Months, 2 Pack	20
502	Infant_Pacifier	Kids Accessories	7/9/2022	0	365	HubbaNub, Infant Pacifier, 0-6 Months, Tabby Kitten, 1 Pacifier	25
504	Honest_Diapers	Diapers	7/7/2021	12/12/2023	488	The Honest Company, Honest Diapers, Size 3, 16-28 Pounds, Rainbow Stripes, 27 Diapers	35

- Blood Pressure Category Page:

BARCODE	NAME	TYPE	PRODUCTION DATE	EXPIRE DATE	AMOUNT	DESCRIPTION	PRICE
200	Blood_Pressure_Health	Capsules	7/5/2021	6/12/2023	100	NOW Foods, Blood Pressure Health, 90 Veg Capsules	75
201	Blood_Pressure	Capsules	4/5/2021	13/4/2023	147	Healths Harmony, Blood Pressure with Hawthorn Extract, 90 Capsules	95
202	Hawthorn_Extract	Capsules	2/1/2022	13/6/2024	123	NOW Foods, Hawthorn Extract, 300 mg, 90 Veg Capsules	75
203	Blood_Pressure_Health	Capsules	30/6/2021	9/7/2023	123	Kyolic, Aged Garlic Extract, Blood Pressure Health, Formula 109, 240 Capsules	45
204	Blood_Pressure_Formula	Capsules	4/8/2019	28/7/2023	200	RidgeCrest Herbals, Blood Pressure Formula, 120 Vegan Capsules	190
210	Blood_Pressure_Monitor	Monitor	1/12/2022	0	258	Easy@Home, Blood Pressure Monitor, 1 Monitor	230

- Gluten Free Category Page:

BARCODE	NAME	TYPE	PRODUCTION DATE	EXPIRE DATE	AMOUNT	DESCRIPTION	PRICE
859674	Simple_Mills	Flour	4/12/2021	12/12/2023	100	Simple Mills, Almond Flour Crackers, Farmhouse Cheddar, 4.25 oz (120 g)	20
14523698	Annie's Homegrown	Rice Pasta & Cheddar	2/2/2022	2/2/2023	120	Annie's Homegrown, Rice Pasta & Cheddar, Gluten Free, 6 oz (170 g)	30
77889966	King_Arthur_Flour	Flour	8/6/2022	9/9/2023	100	King Arthur Flour, Gluten Free All-Purpose Flour, 1.8 lb (680 g)	45

- Sanitary Category Page:

BARCODE	NAME	TYPE	PRODUCTION DATE	EXPIRE DATE	AMOUNT	DESCRIPTION	PRICE
14227	Zum_Hand_Soap	Hand Soap	8/9/2021	10/10/2023	2130	ZUM, Zum Hand Soap, Lavender, 12 fl oz (354 ml)	35
31407	Zum_Hand_Soap	Hand Soap	8/9/2021	10/10/2023	100	ZUM, Zum Hand Soap, Lavender, 12 fl oz (354 ml)	45

- Analgesics Category Page:

BARCODE	NAME	TYPE	PRODUCTION DATE	EXPIRE DATE	AMOUNT	DESCRIPTION	PRICE
315963	Turmeric	Capsules	30/3/2022	30/2/2025	1300	Paradise Herbs, Turmeric, 500 mg, 90 Vegetarian Capsules	100

- Skin Care Category Page:

BARCODE	NAME	TYPE	PRODUCTION DATE	EXPIRE DATE	AMOUNT	DESCRIPTION	PRICE
13485	Witch_Hazel	Toners	4/9/2019	4/9/2023	1230	Mild By Nature, Witch Hazel, Rose Petals, Alcohol-Free, 12 fl oz (355 ml)	75
13698	Camellia_Care	Skin Care	4/9/2019	2/2/2023	1020	Mild By Nature, Camellia Care, ECG Green Tea Skin Cream, 1.7 fl oz (50 ml)	15
13852	Family_Sunscreen	Body Sunscreen	5/8/2021	1/5/2024	169	Jason Natural, Family Sunscreen, SPF 45, 4 oz (113 g)	105
132365	Lightweight_Sunscreen	Face Sunscreen	12/12/2021	12/12/2023	120	Eucerin, Age Defense, Lightweight Sunscreen Lotion For Face, SPF 50, Fragrance Free, 2.5 fl oz (75 ml)	85
136524	Pure_Hyaluronic_Acid_Serum	Skin Care	4/12/2020	4/4/2023	2130	Cosmedica Skincare, Pure Hyaluronic Acid Serum, 2 oz (60 ml)	25
312022	Sunscreen_Stick	Body Sunscreen	4/5/2022	3/2/2023	120	Cetaphil, Sheer Mineral Sunscreen Stick, SPF 50, 0.5 oz (14 g)	85
314698	Intensive_Repair_Lotion	Lotion	5/2/2022	4/7/2023	137	Eucerin, Intensive Repair Lotion, Fragrance Free, 16.9 fl oz (500 ml)	80
316345	Skincare_Favorites_Kit	Skin Care	2/12/2022	2/12/2025	187	Bepiain, Skincare Favorites Kit, 4 Piece Set	30
318579	Sake_Skin_Care_Cream	Face Cream	8/9/2019	20/12/2023	130	Kikumasamune, Sake Skin Care Cream, 5.3 oz (150 g)	70
3165478	Microneedling_Derma_Roller	Cleansing Tools	5/5/2022	0	1456	Cosmedica Skincare, Microneedling Derma Roller System, 1 Roller	25
3169874	Miracle_Skincare_Sponge	Skin Care Tools	4/12/2021	6/6/2023	2300	Real Techniques, Sponger+, Miracle Skincare Sponge, 1 Sponge	45
31236589	Deep_Exfoliating_Mitt_Face_Scrub	Bath Accessories	5/12/2022	3/3/2024	1800	Dermasuri, Deep Exfoliating Mitt Face Scrub, 1 Mitt	40
31378965	Face_Moisturizer	Moisturizer	8/8/2021	10/2/2023	100	Jergens, Natural Glow, Face Moisturizer, SPF 20, Medium to Deep Skin Tones, 2 fl oz (59 ml)	65
31459822	Exfoliating_Face_Scrub	Face Care	2/2/2021	12/12/2024	167	Crema, Exfoliating Face Scrub, 4 fl oz (118 ml)	70
2147483647	Intensive_Green_Tea_Toner	Toners	7/12/2021	30/5/2023	1289	Idealove, So Soothe Me, Intensive Green Tea Toner, Trial Size, 0.67 fl oz (20 ml)	95

- Others Category Page:

BARCODE	NAME	TYPE	PRODUCTION DATE	EXPIRE DATE	AMOUNT	DESCRIPTION	PRICE
31256	Manicure_Purse	Nail Tools	4/1/2022	31/12/2024	1234	The Vintage Cosmetic Co., Manicure Purse, Leopard Print, 1 Kit	20
31258	Speed_Dry_Brush	Hair Brushes	7/6/2020	8/8/2024	100	Wet Brush, Speed Dry Brush, Pink, 1 Brush	30
31363	Essentials_with_Natural_Deodorizers	Deodorant	1/1/2022	1/1/2024	1213	Arm & Hammer, Essentials with Natural Deodorizers, Deodorant, Rosemary Lavender, 2.5 oz (71 g)	70
31654	Miracle_Curls	Shampoo	7/12/2022	1/12/2023	100	Aussie, Miracle Curls, Shampoo with Coconut & Jojoba Oil, 12.1 fl oz (360 ml)	15
31780	Crest	Toothpaste	4/4/2021	30/3/2023	1000	Crest, Cavity Protection, Fluoride Anticavity Toothpaste, Regular, 5.7 oz (161 g)	45
31789	Solid_Antiperspirant_Deodorant	Deodorant	7/4/2022	7/4/2023	1130	Arm & Hammer, UltraMax, Solid Antiperspirant Deodorant, Powder Fresh, 1 oz (28 g)	65
31853	Gillette_Sensor_Plus	Men's Razors	15/12/2021	12/12/2023	1147	Gillette, Sensor 2 Plus, Pivoting Head, Disposable Razors, 10 Count	40
31897	Gillette_Venus	Shaving And Hair Removal	8/10/2022	10/10/2023	470	Gillette, Venus, Sensitive, 3 Disposable Razors	49
31951	Classic_Lip_Balm	Lip Balm	4/5/2022	4/5/2024	100	Carmex, Classic Lip Balm, Medicated, 0.35 oz (10 g)	65
132156	Essential_Oil_Mouthwash	Mouthwash	7/8/2022	14/12/2023	1020	Nature's Answer, Essential Oil Mouthwash, Peppermint, 16 fl oz	30
134554	Metatarsal_Gel_Pads	Hand And Foot Care	8/12/2020	4/12/2025	2300	ZenToes, Metatarsal Gel Pads, For Ball of Foot Pain, One Size Fits Most, 1 Pair	15
312598	Shape_N_Buff_File_Buffer	Nail Tools	2/5/2022	2/3/2024	8100	Revlon, Shape N Buff File & Buffer, 1 Count	35
313214	Kids_Toothbrushes	Toothbrushes	4/5/2022	8/1/2023	100	Brush Buddies, Kids Toothbrushes, 4 Pack	25
313215	BPA-Free_Toothbrushes	Toothbrushes	1/12/2022	1/7/2023	1820	Hello, BPA-Free Toothbrushes, Soft, Green/Blue, 2 Toothbrushes	35
313652	Clean_Fresh_Toothpaste	Toothpaste	17/12/2022	21/3/2023	1880	Arm & Hammer, Truly Radiant, Clean & Fresh Toothpaste, Spearmint, 4.3 oz (121 g)	45
314896	Facial_Dermaplaner	Shaving And Hair	7/8/2021	6/3/2023	100	Kitsch, Facial Dermaplaner, 12 Count	45

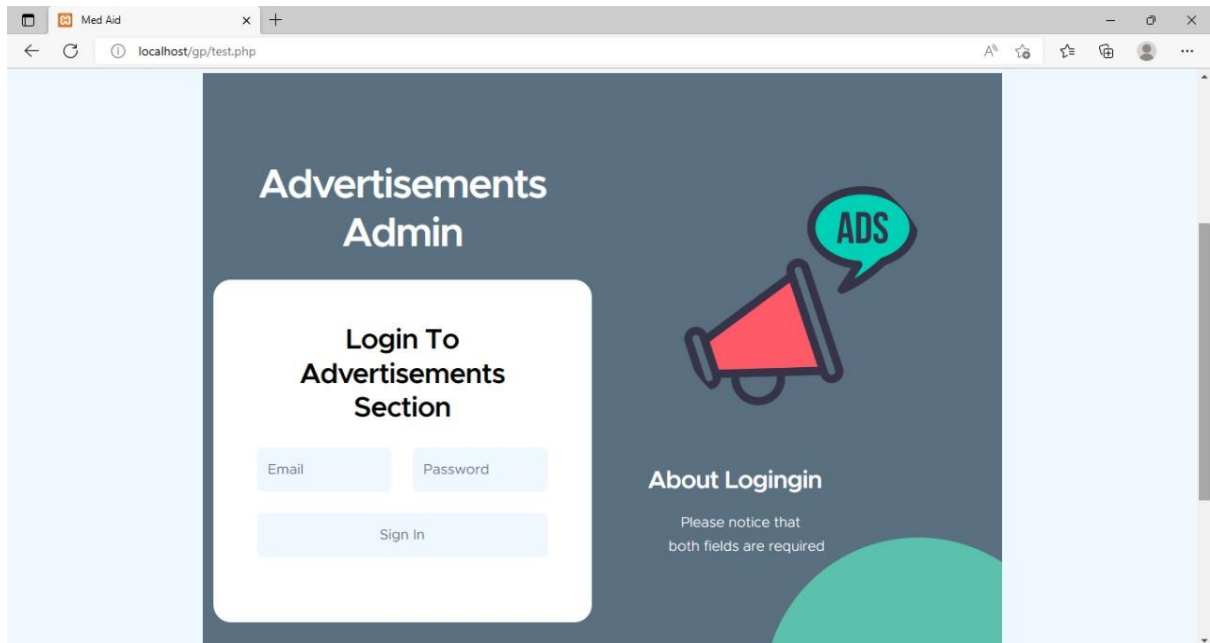
- Delete item from medicine Page:

The screenshot shows a web browser window with the address bar displaying 'localhost/gp/delete.php'. The page header includes the 'Med Aid Website' title, a logo with a mortar and pestle, and navigation links for 'Profile', 'Categories', and 'Logout'. The main content area is titled 'Barcode' and features a single text input field. Below the input field is a green button labeled 'Delete'.

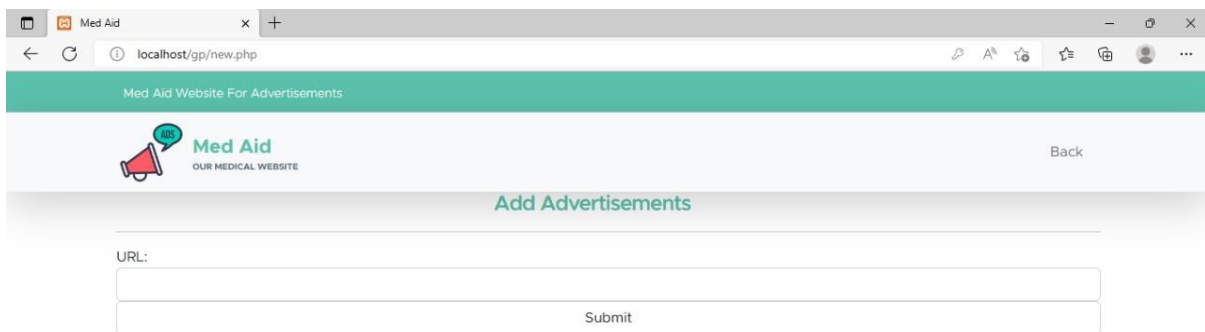
- Add item to medicine Page:

The screenshot shows a web browser window with the address bar displaying 'localhost/gp/add_vitamins.php'. The page header includes the 'Med Aid Website' title, a logo with a mortar and pestle, and navigation links for 'Profile', 'Categories', and 'Logout'. The main content area is titled 'Barcode' and contains several form fields: 'barcode', 'Name', 'Type', 'Production Date', 'Expire Date', 'Amount', 'Description', and 'Price'. Each field has a corresponding label above it. At the bottom right of the form is a green button labeled 'Add'.

- Advertisements Sign in Page:



- Add Advertisements Page:



Chapter 6: Discussion and Analysis

The app tracks most of a user's pharmacy needs, notifies when it is a time to take your medicine based on a timer that user sets, allows users to quickly search for medications, and displays the nearest pharmacies on a map .also an easy way to order medicines online from pharmacies .

the most special feature in this app it contains a chatbot to take a quick medical advice and access to appropriate medications .

We have gained a lot of knowledge and experience. As mentioned earlier, we are able to create cross-platform applications and websites. After creating the database and gathering data for it, we applied the details and guidelines we found in fluttercampus to calculate the distance between two locations to find the closest pharmacy.

to calculate distance between user location and pharmacies:

each location have two points in map(longitude, latitude)

$p = 0.017453292519943295$.

$$\text{distance} = 0.5 - \cos([\text{latitude}(\text{user location}) - \text{latitude}(\text{pharmacy location})] * p)/2 + \cos(\text{latitude}(\text{pharmacy location}) * p) * \cos(\text{latitude}(\text{user location}) * p) * (1 - \cos(\text{longitude}(\text{user location}) - \text{longitude}(\text{pharmacy location})) * p)/2.$$

to get the distance in km we use this function:

$* 12742 \text{ asin}(\text{sqrt}(\text{distance}))$.

Chapter 7: Conclusion and Future work

Since we had previously created a web application and had now created a mobile application, we feel that this was the best step for us to expand our programming expertise. We started from scratch, poured our passion for this career into this project, and used years of study to build it. Our knowledge of mobile application creation has grown significantly, and we feel that this was the best step for us to take.

Because it is a flutter application, our application was created and tested on Android but can simply be converted into an iOS application. Med Aid is also linked to a straight forward admin page to make it simpler for admins to manipulate data in and out of the database.

We were able to develop our network skills by using HTTP requests to communicate between the front end and the back end.

We intend to expand our application and add numerous new features like make it available for all Palestine cities not only in Nablus ,we also plan to give the user ability to see the nearest pharmacy that opens on Fridays and we aim to implement Artificial Intelligence customized ads according to each person instead of random ones.

We advise people to take care of themselves and be conscious of their bodies and health. Flutter was a terrific method to get started in the world of mobile applications. We also want to emphasize that effective time management and teamwork are the keys to any project's success.

Chapter 8: References

- <https://pub.dev/>
- <https://docs.flutter.dev/reference/tutorials>
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