HUMAN COMPUTER INTERACTION PROTOTYPE: ONLINE SUPERMARKET

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1.Introduction:

This idea of the online supermarket is it should be an as user-friendly interface where user can log in and choose his/her required product and add them to cart, pay through swish, master card or visa card and get home delivery according to their chosen time slot. Users will get a discount after his/her 10th purchase which they can check by clicking the notification icon. Users will get the notification, have a filter option, and can see the offers going on when they log in to the page.

2.Requirement Elicitation

2.1 Focus Group

For Requirement elicitation phase three Persons were interviewed about my application. Those who are interviewed were working person. All of them showed their interest in it. Several questions are asked to them and discussed about the application. In the interviews all of them were asked how they do shopping, if they are interested in online shopping or not? Also, how they are managing their grocery shopping in the time of this corona pandemic. All the interviews were done one to one through zoom call.

2.2 Requirements:

All the feedback from the participants are expressed as initial requirements for the Prototype. Some list of the requirements is given below:

- Comfortable Shopping is one of the focused parts for online shopping

- Through online shopping, Time management should be done more easily.
- Easy to find or search option should be there.
- Home delivery option is must as now pandemic is going on
- 24 hours service will make this app more flexible to the customer
- Offers best item on budget is one of the requirements from customer side
- Shopping without any health risk one of the important criteria in this pandemic now.
- The Application should be User friendly

2.3 Persona:

Name: Martin Jacobson

Bio:

- 32 Years old
- Currently doing his PHD in KTH
- Living in Stockholm with his 2 kids and wife

Identifiers:

- Stressful schedule
- Struggle to manage fulfil kid's desire
- Love shopping but no time for that

Requirements:

- Comfortable Shopping
- Time management
- Shopping with no risk of life in this pandemic

Martin was born in Sweden and he completed his bachelor and masters from KTH at age of 27. After that he worked as a research engineer in computer science. Currently he is having a tough schedule as he started his PHD. He has two kids and one of them is toddler. In Daily Life he faces some difficulties regarding time management. Also, in this pandemic situation in 2020 it's also not safe to travel. So, he wants a safe way to

fulfil his daily grocery shopping and also save some time for his kids.

2.4 User Scenario:

Martin is generally tired after a hectic day at his university. He has presentations and classes to be completed. Despite of having less energy in his body to focus and complete his work, he cannot ignore the Daily Grocery shopping. Also, he needs to give some time to his kids as his wife is also a working woman. He is also stressed about the pandemic situation.

Online supermarket is an app based on Sweden where any person can buy his desired grocery items and get a home delivery 24/7 according to his expected time. So, after using this online supermarket app martin is really impressed as he can save time after his work and spend more time with his kids. Also, he can maintain a hygienic way during this pandemic now.

3.Initial Prototype Design:

To design a prototype, it is necessary to follow some design criteria and need to fulfill all the user requirements. In this prototype, there will be a login page where the user needs to log in or sign in for the first time to maintain safety and security. Then the user can choose the type of language. As this is a Sweden based app it offers two types of language, that is English and Swedish.

After choosing the language and fulfilling the log-in method user can go to the main page of the app. On the main page

there are several icons such as Filter, Add to cart, Notification, and search. Also, there are other options such as an offer where users can see all the current items on different offers and view all items. It also shows the different categories of items available in the supermarket. Users can choose any item and add it to the cart, or they can buy it directly. When they choose to buy, they will go to a page named delivery where they can add address and choose delivery time according to their choices and add a phone number to get the delivery notification. Later, on the next page, it will show the payment option where they can choose their easiest method to pay. When payment is done it will redirect the user to the home page again. Users can see the notification in the notification bar. Also, the user can search or filter according to their choices.

3.1 Initial Sketch:

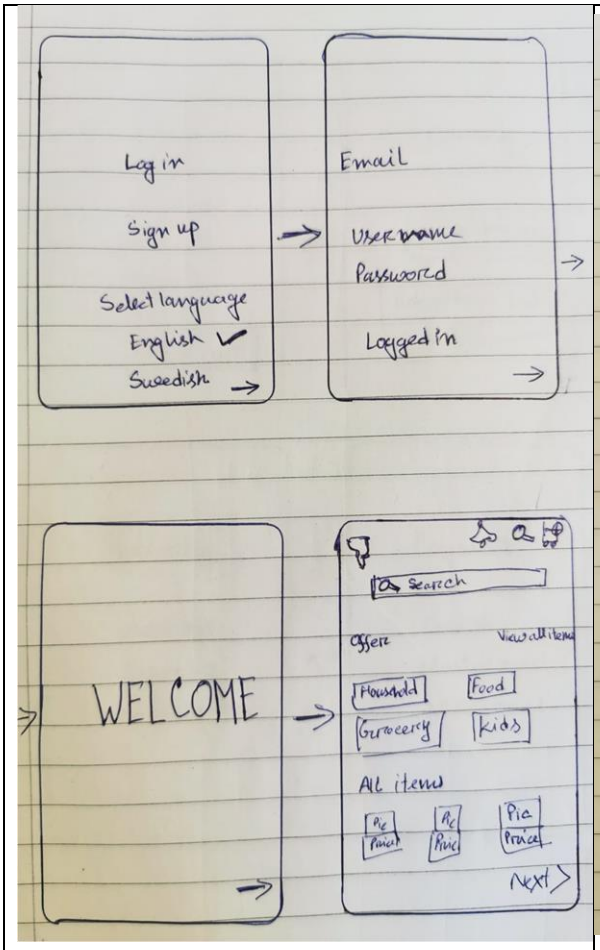


FIGURE 1

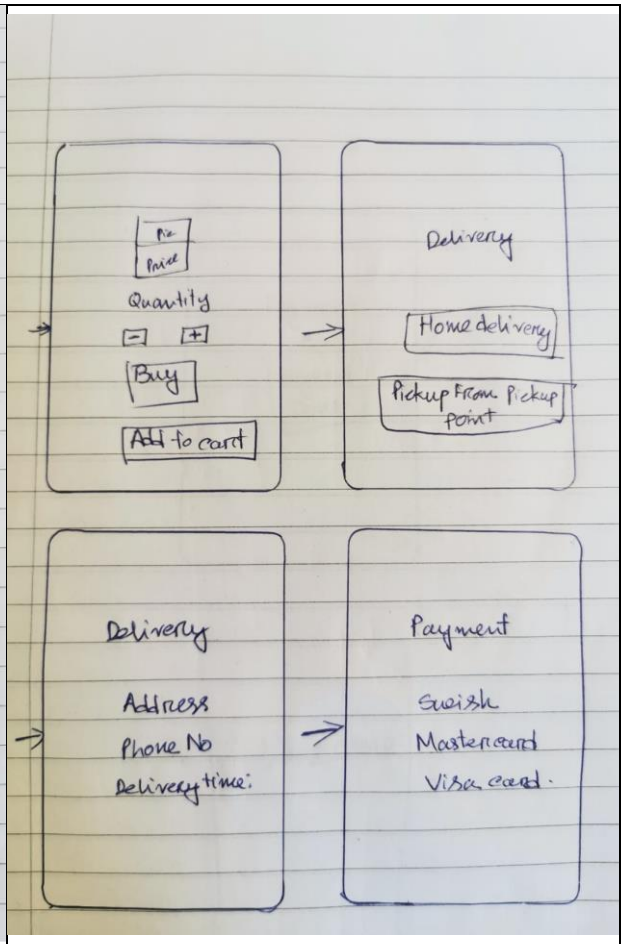


FIGURE 2

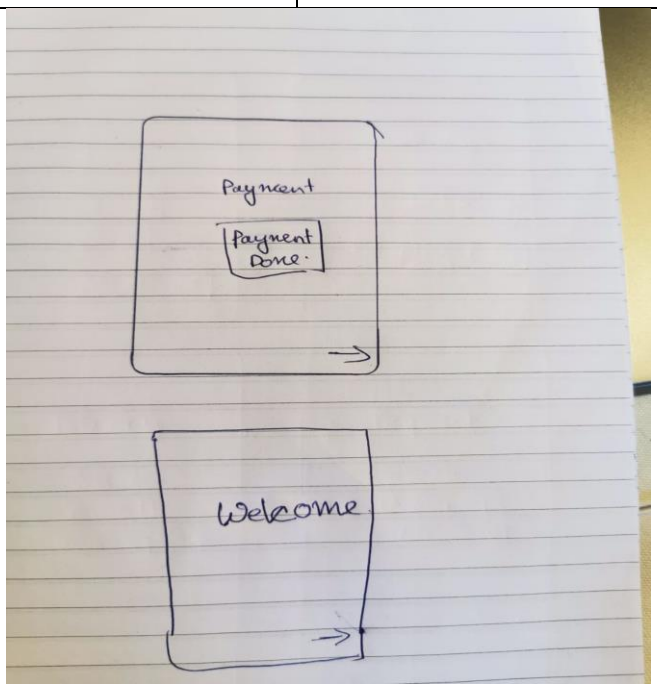


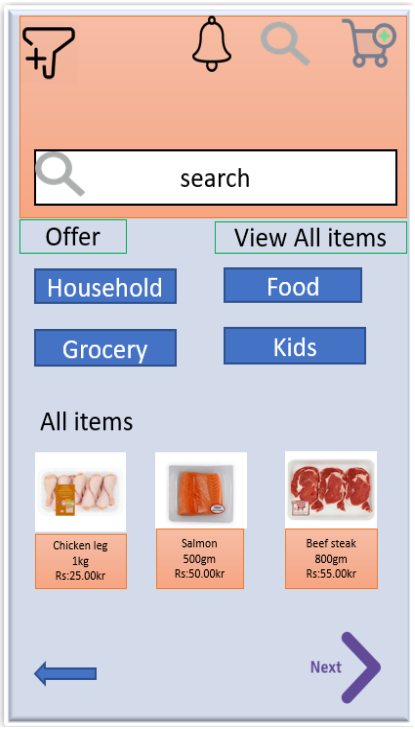
FIGURE 3

3.2 Design Choices:

This app is designed mostly based on Benyon's collection of 12 design principles. According to principles the first criteria of designing is visibility. So the user should know what to do and how to do it. In this system to enter the main page of the system, the user needs to log in to the system. So this log-in or sign-in option is visible to the user. So that by logging in they can go to the main page of the system.

Consistency is another requirement that makes a user more comfortable to use a system. hereafter getting feedback from my seminar group I tried to maintain the layout of the system similar on every page. An example is whenever a payment is done then on the next page it will redirect the user to the system main page.

Another principle of design is familiarity. So, User needs to be familiar with the used language and symbol in the system. Keeping in mind this principle I tried to use all the symbols such as search or bell icon or add to cart or filter



that is already familiar to the user. I asked my seminar group if they are familiar with all these symbols or not. They give me positive feedback about these symbols and used language. So, All these help people to learn, access, and remember the system.

For designing a good system there needs to maintain the affordance of the system which refers that what the system has and how this relates to how the things could be used. That means by clicking different symbol user can get different options that also meet the affordance criteria for designing.

The Fifth and sixth principle for design is the control and navigation of the system. That means the user needs to know what to do and how to do it. This app also provides the user the control and navigation through a user-friendly system. User can buy or choose the product and keep it in the cart

instead of buying it, that gives the user more control on the system. Also user can click on the filter button through which they can select the price range, types of items they want to check. This app has different back and forth arrows through which users can navigate quickly. So, this means with all these arrows user can control the navigation of the system.

Benyon's Seventh principle is feedback Which means the user should know information about their activities. For example, in this system when users pay for the product they will get a page showing payment is done which means their order is confirmed.

According to Benyon’s 12 design principles design needs to be flexible. Here the app can provide different shortcut keys for delivery time and different options for payment, so this system is mostly flexible. A different icon such as search, offer, notification all makes the system more flexible to use.

A system also needs to have a recovery system according to design principles. This system has a recovery system through login to email which makes the system quicker and more effective. Also the system has back option in every page so they can recover easily.

A system should be stylish and maintain its conviviality according to the design principles of Benyon’s. I tried to design this system as colorful, clean, warm, and interactive user-friendly. By adding the real picture of most of the available products the app can become more attractive. As there is a notification symbol in the system all the message for a user is stored there. So whenever the user feels the necessity they

can check the notification which keeps the conviviality of the system.

A new option for user feedback can be added to the system, which will make the system more fruitful.

3.3Usability of prototype:

For assessing the usability of this system, it is used to design evaluation methodology cognitive walkthrough.

For usability tests, four questions from cognitive walkthrough are mostly focused on this system. For this app, most things are clear here.

So, to check the usability of the user can buy a product is possible to describe with several tasks in sequence with four question of cognitive walkthrough.

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Cognitive Walkthrough

Log in to the App:(Figure 1 from initial sketch)

Will the user try and achieve the right outcome?	Will the user notice that the correct action is available to them?	Will the user associate the correct action with the outcome they expect to achieve?	If the correct action is performed; will the user see that progress is being made towards their intended outcome?
Yes, when user start the system, they will see a login page through which they can logged in and go to main page of the app	Yes, user can easily find login or sign in button available to them. Also, when they click any of them, they can find the option of login with email which makes it clear	Yes, user can get a clear idea what each button is doing as all the button is displayed with a task	Yes, with a successful login user will go to the main page of the system.

Order a product: (Figure 2 from initial sketch)

Will the user try and achieve the right outcome?	Will the user notice that the correct action is available to them?	Will the user associate the correct action with the outcome they expect to achieve?	If the correct action is performed; will the user see that progress is being made towards their intended outcome?
Yes, User can choose their desired product and place order	Yes, after choosing a product user will find in the next page +/- sign through which user can decide and also place order through the buy icon.	Yes, the buy or add to cart option will be always there when a user chooses a product	Yes, when user press buys, they will be directed to the next page with option how and where they want the delivery of their product.

Payment of the Product:(Figure 3)

Will the user try and achieve the right outcome?	Will the user notice that the correct action is available to them?	Will the user associate the correct action with the outcome they expect to achieve?	If the correct action is performed; will the user see that progress is being made towards their intended outcome?
Yes, User can choose their desired payment method	Yes, User can see all the icons with a text such as swish, master card, visa card so that they can choose according to their wish	Yes, there is no confusion as all the symbol is presented with a text of what they do.	Yes, so when the payment is done it will show a message in the next page that payment is done

4.Evaluation:

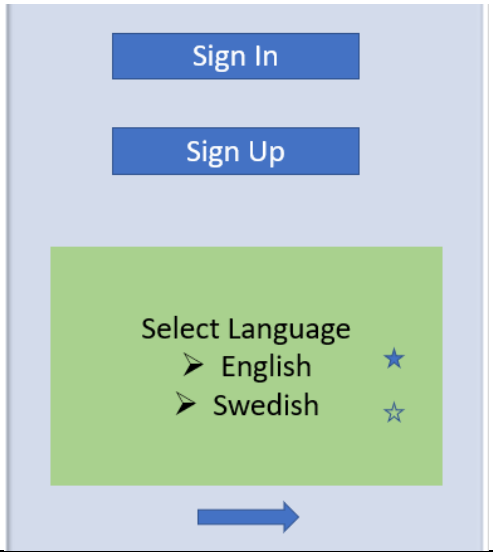
After the initial creation of the online supermarket prototype following the Benyon 12 design principle, the prototype is tested with some real users. So, to improve the usability of this prototype I followed two methods. First think a loud evaluation Is conducted then heuristic evaluation is done

according to the 2014 version of Nielsen's original heuristics. In the third seminar, this evaluation is done.

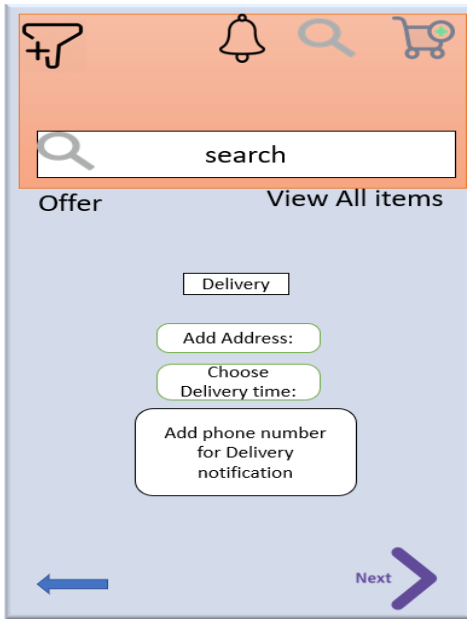
4.1 First evaluation

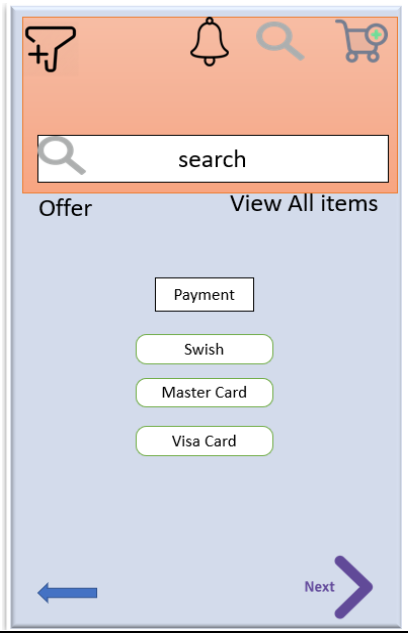
Initially, the participant is asked to perform several tasks based on the test plan for this prototype. Participants also made some comments while doing the evaluation. All the task and comments are given below in a table

Task	**Comment on the task and Feedback**
Start the System	At the starting page of the system, there was an icon representing the online supermarket. A user had a confusion if the icon is a clickable button or not? 

Select language	All the User could select the language of their choice 
Log In or Sign in to the system	One of the Users had the problem to understand which page is for logging in and which page is for sign in as the page name was not there. So, the user suggested adding a specific page name. 

Go to Home page after logging in	The user logged in and checked the home page. 
Select a product for order	The user selected a product and could change the quantity. But the system does not show the number. So, one of the user's feedback is to make the visibility of the quantity of the product.

	
Order a product for delivery	All the user could choose the delivery option and add the delivery address and choose their preferred time. 
Do the Payment	All the User was asked to do the payment according to their choice and they were able to

	do that and when payment is done it shows payment is done.  

After thinking a loud evaluation, heuristic evaluation is done by asking participants some questions according to the 2014 version of Nielsen's original heuristics.

While doing the evaluation participant gave positive feedback. They also said the system has a match with the real world as the system is designed efficiently. As the system uses the common icons used in real life, they also said visibility, consistency of the system is okay. Instead of recalling the icon system is also designed with the recognized icons. Moreover, As the system has forgotten the password option, all the participant also thinks this makes the system to recover for

error. Also, the option for Forget password is liked by all the user

One feedback from all the users is to add a rating or feedback method to the system so that the user can have more flexibility and efficiency to use the system.

Moreover, all the participants also agreed that the system has a minimalist design with a sense of style.

4.2 Evaluation outcome:

After all the feedback from all the users, several changes were made to the proposed prototype.

- According to the user feedback about the icon at the starting of the system is decided to be removed as it is giving an impression of a button.
- On the login and sign in page, a heading with the page name will be added to the system so that it makes the system easier to orient.
- As user needs to see the quantity they want to buy or add to cart, a visible option of the quantity they selected will be shown in the system to give the user more visibility and control of the system
- When a user is done with payment, they will have a button named as rating through which the user can give feedback as the system needs to be more flexible to use

5.Final Prototype:

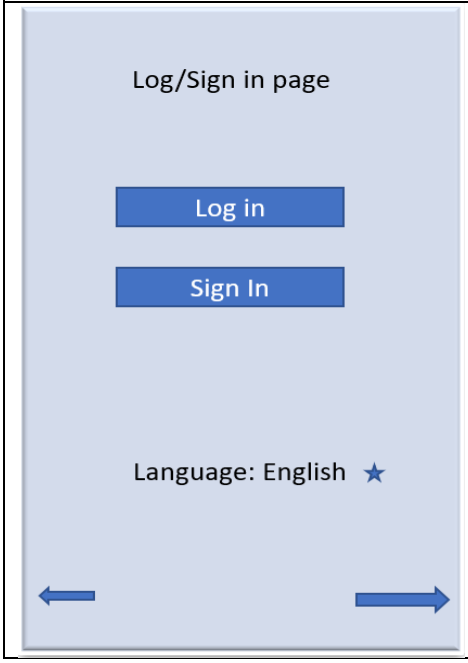
5.1 Final evaluation:

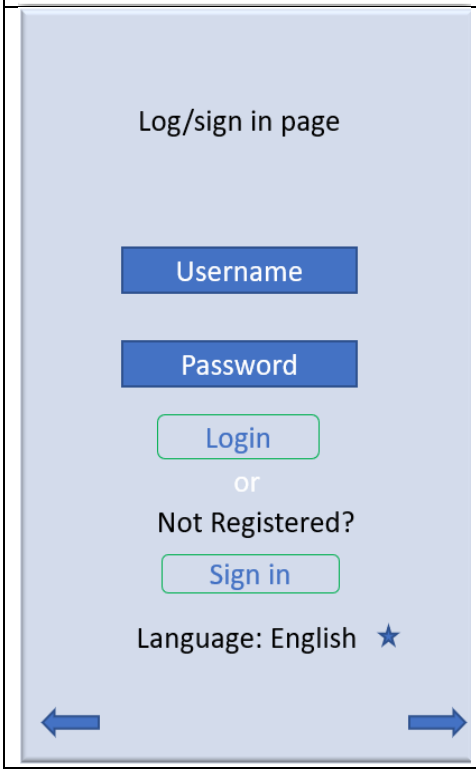
Before designing final prototype two more evaluations with some user were done. Before these final evaluations I tried to redesign the prototype according to previous evaluation outcome. I Removed the icon from starting page. All the login and sign in page is added with its own headings. So, after correcting all the feedback from previous evaluation this final evaluation is done. In this final evaluation two feedbacks are there from one user. They are:

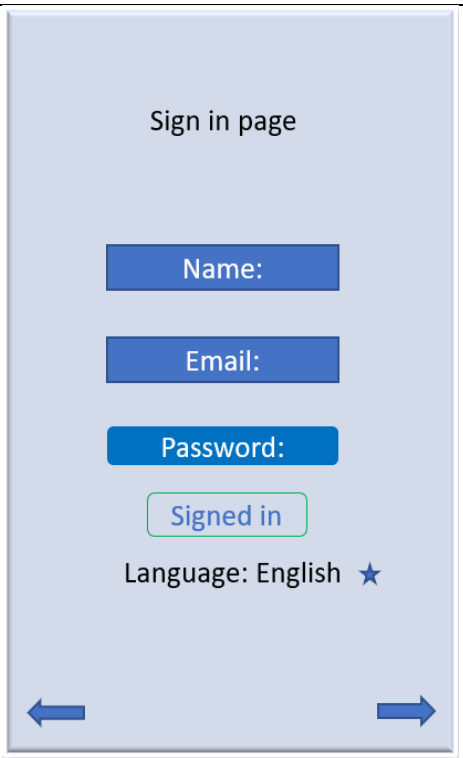
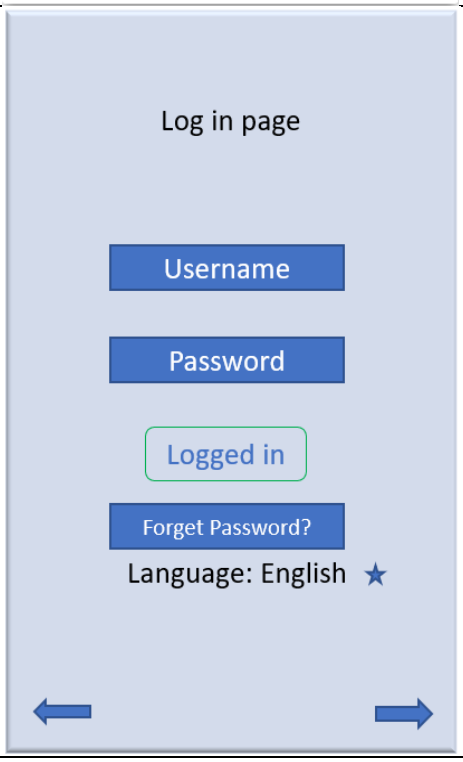
- The back button should be available to make the system more error preventive.
- After payment done it should show order confirmed message.

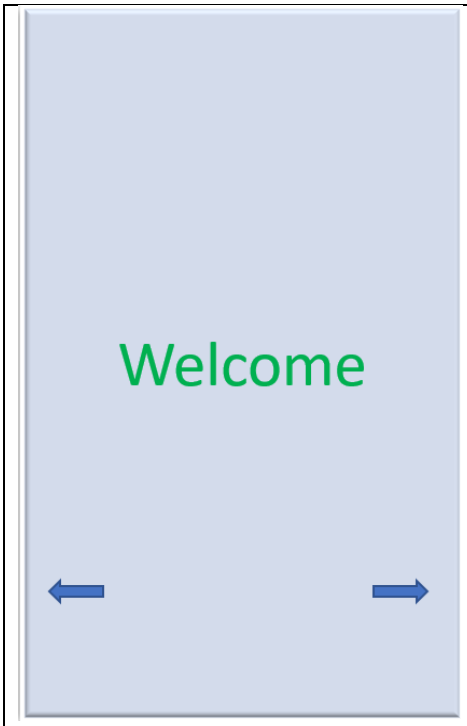
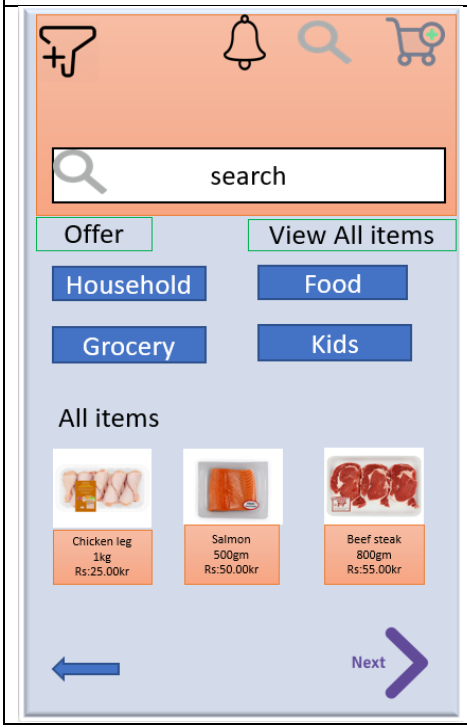
5.2 Final Design

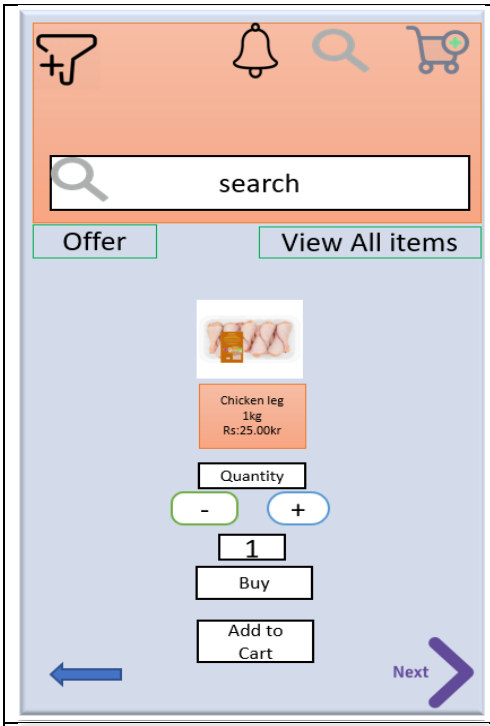
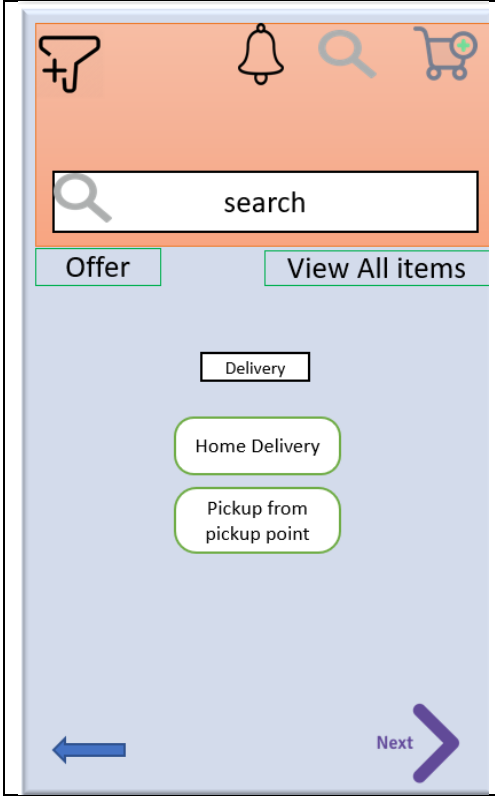
After all the evaluations a redesign of prototype is done which is given below in the table with some comments:

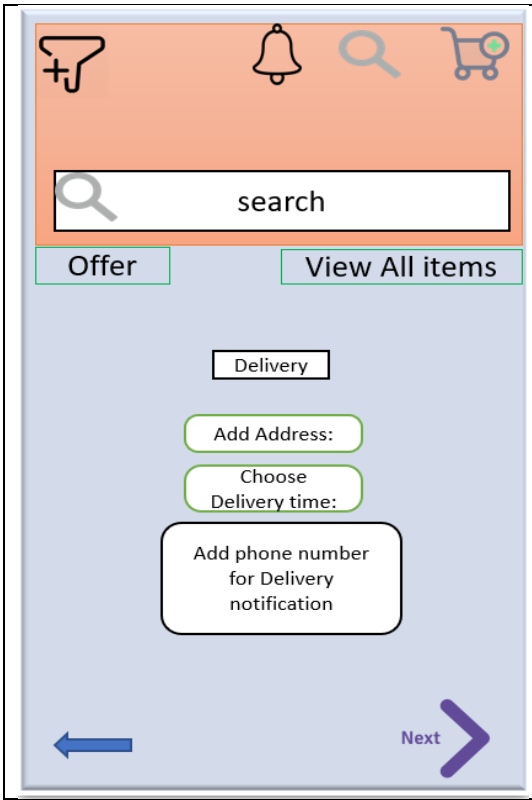
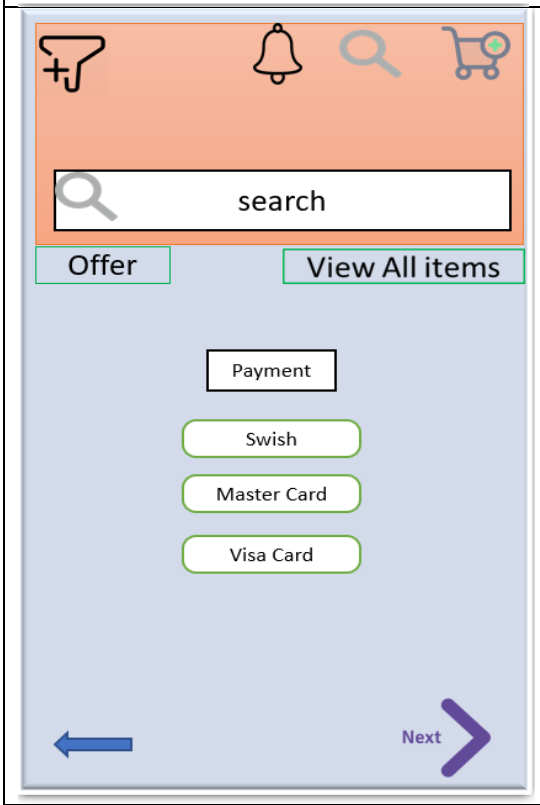
Final Design	Comments
	According to user feedback the icon from the first page is removed to keep the design simpler.
	Back arrow is added in all the pages according to user feedback

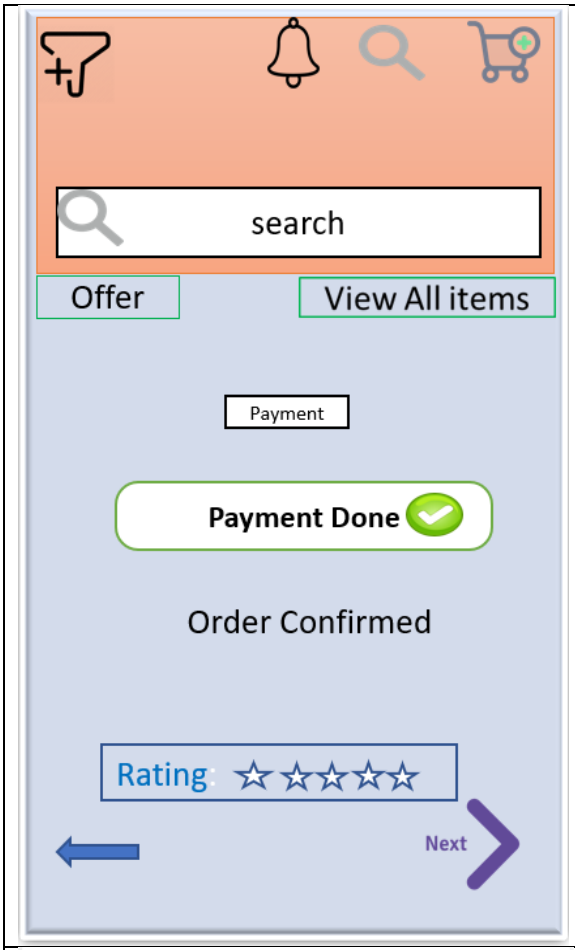
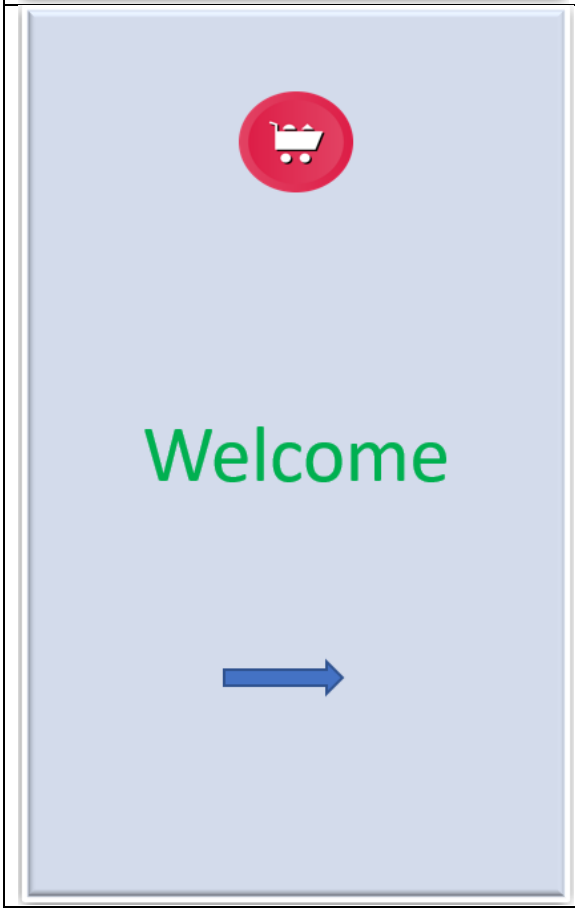
	User can select a language here
	If the user is not registered user can press the sign-in option which will take them to next page.

	Sign in page is having a name now to make it easier to use
	If the user has already an account, they can click the login option from the previous page which will redirect them to this page. This page is also named according to user feedback.

	After logging in or sign in user will get this welcome message.
	This is the home page of the app where users can search, filter, get the notification. Also, the user can check the offer items. Users can click the view all items button and find all available products.

	When users select a product, they can find a real image of the product with price and quantity. They can buy or add to cart. Also, the user can see the quantity, increase, or decrease it. The quantity option is done from the evaluation outcome.
	Users can always have the option for delivery according to their choice.

	To track the product user should give the phone number. Also, they have the option to choose a delivery time according to their necessity.
	The user has the flexibility for the payments option.

	So according to the evaluation outcome when a payment is done it shows an order confirmed message. Also, the user has a rating option where the user can rate the performance of the app.
	When payment is done if the next button is clicked it will redirect the user to the home page again.

6. Conclusion

This prototype design helped to achieve a full knowledge of how a design process should be done with various steps. Through different seminars, it was also possible to share our thoughts and views on the design process. So, combining all the knowledge, feedback, experience from the whole course period this final design of the prototype is done.

Reference:

- Benyon, D., Turner, P., & Turner, S. (2005). *Designing interactive systems: People, activities,contexts, technologies*. New York;Harlow, England;: Addison-Wesley.
- Lecture-8:Evolution method(chapter 10)
- https://www.interaction-design.org/literature/article/how-to-conduct-a-cognitive-walkthrough
- All the previous submitted report.