Design of user interfaces

Design of prototype of application for the optimalization of shopping in supermarket

2018/19 course

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Contents

1. Assigment

The huge use of mobile devices, together with the extensive and varied offer of supermarkets, motivate the final work proposal of this course. The objective is to make a prototype user interface for an application that allows optimising purchases in the supermarket. Said application must consider at least the following final functionalities:

- The possibility or not of the registration / authentication process.
- Making purchases, given a product or list of products to acquire.
- The configuration of the optimisation criterion.
- The increase in purchase prices of one or more products.
- The rise of price catalogue (s)

Each group will carry out the conceptual design of the user interface, making the delivery in the following phases:

- On the 16th of December, you will have to submit, through the virtual campus, a PDF document with the conceptual design proposal in its first version. Said proposal must be presented, behind closed doors before the teaching team, in the assigned time slot on December 17 and 18. To do this, the group will use the means and tools it deems appropriate. On the assigned date, each group has a 15-minute slot in which they must include, prepare, expose, and receive comments that the teaching team considers appropriate. The non-delivery and presentation of said first version supposes the penalty of 30% in the final grade of the course work.
- On January 13 the final delivery will be made through the virtual campus, which in addition to the PDF document of description and argumentation of the conceptual design (people, scenarios needs, and evaluations considered) of the prototype made, must include a link to a video that shows the operation of the prototype. The duration of the video should not exceed 3 minutes.

2. People

We have created four people that serves as an examples of users of our application. Each of them has different needs, different budget and possibilities of shopping (Table 2.1).

Sarah is 34 year old mother on maternity leave and takes care of two little children. She lives in suburban area with few large shops, but has the possibility to go to the city centre by car. She shops for the whole family, has plenty of time to visit more shops a day and has enough money to buy quality products. Sarah has medium technology skills, so we can expect that she can work with the application quite well and also can do online shopping. We expect that Sarah will be able to scan barcodes, list through discount flyers, save customer cards and create shopping lists.

John is 21 years old university student who lives in in a flat near city centre surrounded by many small shops and shopping centres. He only has to buy things for himself and in most cases it includes only food. He does not have enough time to travel among multiple shops, so he just needs to find the one where to go. His monthly budget is low, and John does not care what quality the food has. John has very high technology skills, so it is expected that he can use advanced filters and do online shopping. We expect that John has no time to list through discount flyers, but will be able to save customer cards and create shopping lists.

Anna is 72 pensioner who lives with her husband in small village far from the city. The village has two shops and Anna doesn't have a car to go to the city. Anna is buying food for herself and her husband and also some sweets for the visiting family. Anna has a lot of time for shopping and due to medium budget she can visit both shops to find the best price for every item. Since Anna has low technology skills, she will not be able to make online shopping, scan barcodes or use advanced filtering. She will be able to list through discount flyers, save customer cards and create shopping lists.

Lewis is a 12 year old kid, who lives with his family in suburban area with few shops on his way home from school. Lewis receives some monthly pocket money and sometimes wants to buy some sweets for himself. We expect that Lewis will only buy one thing in the shop and he does not care in which one, it just has to be around his way home from school. Lewis has high technology skills, but he cannot shop online and listing trough discount flyers, saving customer cards or making shopping lists makes no sense to him. But he is able to scan barcodes and use advanced filtering.

Person	**Sarah**	**John**	**Anna**	**Lewis**
Age	34	21	72	12
Location	Suburban area Few km from centre	Urban area Near city centre	Rural area Small village far from city	Suburban area Few km from centre
Car	Yes	No	No	No
For who shopping	4 Herself, husband 2 young children	1 Himself	2 Herself, husband	1 Himself
Normal shopping list	Food for whole family Needs for children	Food for himself If necessary, something else	Food for herself and husband Things for visiting family	Something sweet for himself when he has money
Worklife	Mother on maternity leave	University student	Pensioner	Elementary school student
Free time for shopping	2h/day	30min/day	4h/day	2h/day
Monthly budget	High 450€	Low 150€	Medium 200€	Very low 20€
Technology skills	Medium	High	Low	High
Online shopping	Yes	Yes	No	No
Scan barcode	Yes	Yes	No	Yes
Advanced filtering	No	Yes	No	Yes
Discount flyers	Yes	No	Yes	No
Card saving	Yes	Yes	Yes	No
Shopping lists	Yes	Yes	Yes	No

Table 2.1: Examples of people to use the application

3. Needs

Let's look at the needs of people we have created. The basics were written at previous chapter, this part will look at this more deeply.

Sarah, as a mother with two young children and lot of free time, needs to buy a lot of diverse things (food, supplies for children, things from drugstore, equipment for the house, etc.). She is very responsible, so she needs to write all the things down to a shopping list. Sarah also needs to buy bigger orders (new TV, fridge, etc.) from online shops. Sarah needs quality food for her family, but she also does not want to spend more money than necessary, so she needs to find the best price for exact product and mark. As Sarah does a lot of shopping, she needs a place where to store all her customer cards. Sarah also does not want to go through all the paper discount flyers and she would like to view them online.

John, as a student with little free time and low budget, needs to find shop, where he can buy all he needs at cheapest price. John needs to see the distance to each shop. John does not need exact product, he does not care about the mark, so he needs to find more general product (ketchup, pasta, etc.). If John finds something really good, he needs to find a shop that has the product at a cheapest price. To get even cheaper deals, John needs to have a discount customer cards.

Anna, as a pensioner, needs to buy food for herself and her husband. As she lives in small village with only two shops, she needs to buy all the things in there, but she has a lot of time to visit both and buy the cheaper product in each of the shops. Anna needs to see all the discount flyers to see, what could she buy for her family that will come to visit. To get better deals, Anna needs to save customer cards. Anna needs to write all the things, she want to buy, down, so she would not forget anything.

Lewis, as a young child, needs to buy some sweets when he gets pocket money from his parents. He needs to find exact product that he likes and shop that is near his way home from school. If he finds something new that he likes, he needs to scan barcode to find the cheapest price of the product.

4. Scenarios

Here is listed list of scenarios including used UI and data and functional needs, that the application will provide. Each scenario is described more detailed in following tables. Also for some scenarios we provide screenshots of application showing future UI.

First scenario is Signing up to the application (Table 4.1). User will open application on the Login page (Figure 4.1b). In there, he will have the possibility to create new account by pressing "Sign up" button. On Sign up page (Figure 4.1a) the user will fill in all necessary information for creating an account. If creation is successful, he will be redirected to the login page and asked to log in. If not, user will be notified by popup window.

Second scenario is Logging in (Table 4.2). The user will have two possibilities. First is logging in by providing login information for the app. Second is login with 3rd party account using OAuth2.0 protocol. As an example, we decided to use the most implemented login possibilities, that is Facebook and Google account. If login is successful, user is redirected to the home page. If not, user will be notified by popup window.

Third scenario is Scanning barcode (Table 4.3). On homepage user will open side menu (Figure 4.1c) and choose item "Scan barcode". He will be redirected to Scan barcode page (Figure 4.2a). To scan barcode, he will press the button with text "Scan barcode". If scanning is successful, he will see the name of product. On click of button "Buy product" he will see list of shops, where he can buy the product (Figure 4.3b). List can be sorted by distance or by price and filtered. On click of button "Add to shopping list" he will add the product to shopping list.

Fourth scenario is similar to the third one, it's called finding product (Table 4.4). On homepage user will open side menu and choose item "Find product". He will be redirected to the Find product page (Figure 4.2b). He can input partial name of product to shown textfield. Application will show results based on the name, so for example for search word "Ketchup" it will show all ketchup products sorted by distance or by price. The search can use advanced filtering, such as brand, size, price range, etc.

Fifth scenario includes searching for multiple products and creating shopping list. (Table 4.5). On homepage user will open side menu and choose item "Shopping list". On Shopping list page (Figure 4.3a) user can see products added to shopping list. Items will be added by clicking on button "Add to shopping list" on pages Find product and Scan barcode. Application will show shops, that show the best total price for included products. User can decide, how many shops is possible to include in shopping. For example, it is possible to buy everything in one shop in change of faster shopping. If user has more time,

it is possible to divide the shopping to 3 shops and find best price for the product in each of them and spend more time shopping in change of cheaper total sum.

Sixth scenario is listing through discount flyers that shops most usually post online (Table 4.6). Application will download the current flyers and show them to user. User can choose the menu item "Discount flyers" and see the list of shops with discount flyers. When clicked on item, he will see the PDF with flyer.

Seventh scenario is saving customer cards into the application (Table 4.7), so that user does not have to bring multiple cards for each shop with himself. When clicked on menu item "Customer cards", he will see the page that includes list of added customer cards. User will have the option to add card by scanning the barcode of real card or putting manually the code of the card. When clicked on saved card, he will see the digital version of card that can be scanned by cash register.

Sign up				
#	**Scenario**	**UI parts**	**Data needs**	**Functional needs**
1	Open app			
2	On login page select "Sign up"	Button with text "Sign up"		Redirect to sign-up page
3	On sign-up page fill name	Text field for name	Name	
4	On sign-up page fill email	Text field for email	Email	
5	On sign-up page fill password	Password field for password	Password	
6	On sign-up page press "Sign up"	Button with text "Sign up"		Sign up user
7a	Sign-up successful	Popup window informing user		Redirect to login page
7b	Sign-up not successful	Popup window informing user		Show popup window showing error

Table 4.1: Sign up scenario

Login				
#	**Scenario**	**UI parts**	**Data needs**	**Functional needs**
1	Open app			
2a	On login page fill email	Text field for email	Email	
3a	On login page fill password	Password field for password	Password	
4a	On login page press "Login"	Button with text "Login"		Authenticate user
2b	On login page click on "Facebook"	Button with text "Facebook"	Facebook account	Authenticate user
2c	On login page click on "Google"	Button with text"Google"	Google account	Authenticate user
5a	Authentication successful			Redirect to homepage
5b	Authentication not successful	Popup window informing user		Show popup window showing error

Table 4.2: Login scenario

Scan barcode				
#	**Scenario**	**UI parts**	**Data needs**	**Functional needs**
1	Open homepage open side menu	Button for side menu		
2	In side menu choose "Scan barcode"	Side menu		Redirect to Scan barcode page
3	On Scan barcode page press button "Scan barcode"	Button with text "Scan barcode"		Open camera
4	Point camera to barcode to take a photo		Barcode of product	Scan barcode
5a	Return to app and show scanned product	Card with info about scanned product	Info about product	Download info from product DB
6a	Click on button "Buy product"	Button with text "Buy product"		Find list of shops
7a	View list of shops with product, price and distance	List with items (Shop, price, distance, etc...)	Shops that contains product	
5b	Return to app and show popup window with error (scan not successful)	Popup window informing user		Show popup window showing error

Table 4.3: Scan barcode scenario

Find product				
#	**Scenario**	**UI parts**	**Data needs**	**Functional needs**
1	Open homepage open side menu	Button for side menu		
2	In side menu choose "Find product"	Side menu		Redirect to Find product page
3	On Find product page start typing into text input	Text input for search of product		
4	Press button "Search"	Button with "Search" text	Name of product	Search for products with given input
5a	Find desired product in list of found items	List with found items (name, mark, info, etc.)	Info about product	Download info from product DB
6a	Click on button "Buy product" next to chosen item	Button with text "Buy product"		Find list of shops
7a	View list of shops with product, price and distance	List with items (Shop, price, distance, etc...)	Shops that contains product	
5b	Show popup window with error (product not found)	Popup window informing user		Show popup window showing error

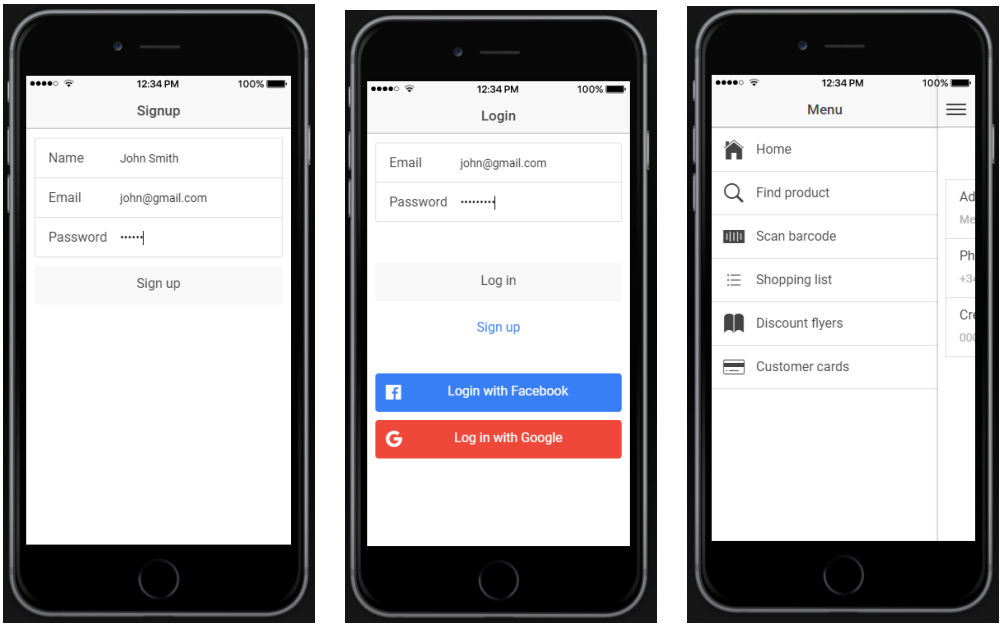
Table 4.4: Find product scenario

Shopping list				
#	**Scenario**	**UI parts**	**Data needs**	**Functional needs**
1	Follow steps 1-5 of scenario "Find product" or steps 1-5 of scenario "Scan barcode"			
2	Click on button "Add to shopping list"	Button with text "Add to shopping list"	Product	Add product to list
3	Repeat step 1-2 for more products			
4	In side menu choose item Shopping list	Side menu		Redirect to page Shopping list
5	If necessary, remove some items from list	Remove button next to item		Remove item from list
6	Set number of shops to buy in	ComboBox with selection items		Set number of shops to divide shopping list
7	Set include online shops	CheckBox to include online shops		Set include online shops
8	Click on button "Find shops"	Button with text "Find shops"		Find shops to buy items
9	Show shops where to go shopping	List of shops and total price		

Table 4.5: Shopping list scenario

Discount flyers				
#	**Scenario**	**UI parts**	**Data needs**	**Functional needs**
1	In side menu choose item Discount flyers	Side menu		Redirect to page Discount flyers
2	On page Discount flyers choose from list of shops	List of shops with discount flyers	Shops with discount flyers	
3	View flyer in PDF viewer	PDF viewer of flyer	PDF version of flyer	Show flyer in PDF
4	Swipe left or right to next/previous page	PDF viewer of flyer		Move to next/ previous page
5	Press back button to return to list	Back button		Return to list of shops

Table 4.6: Discount flyers scenario

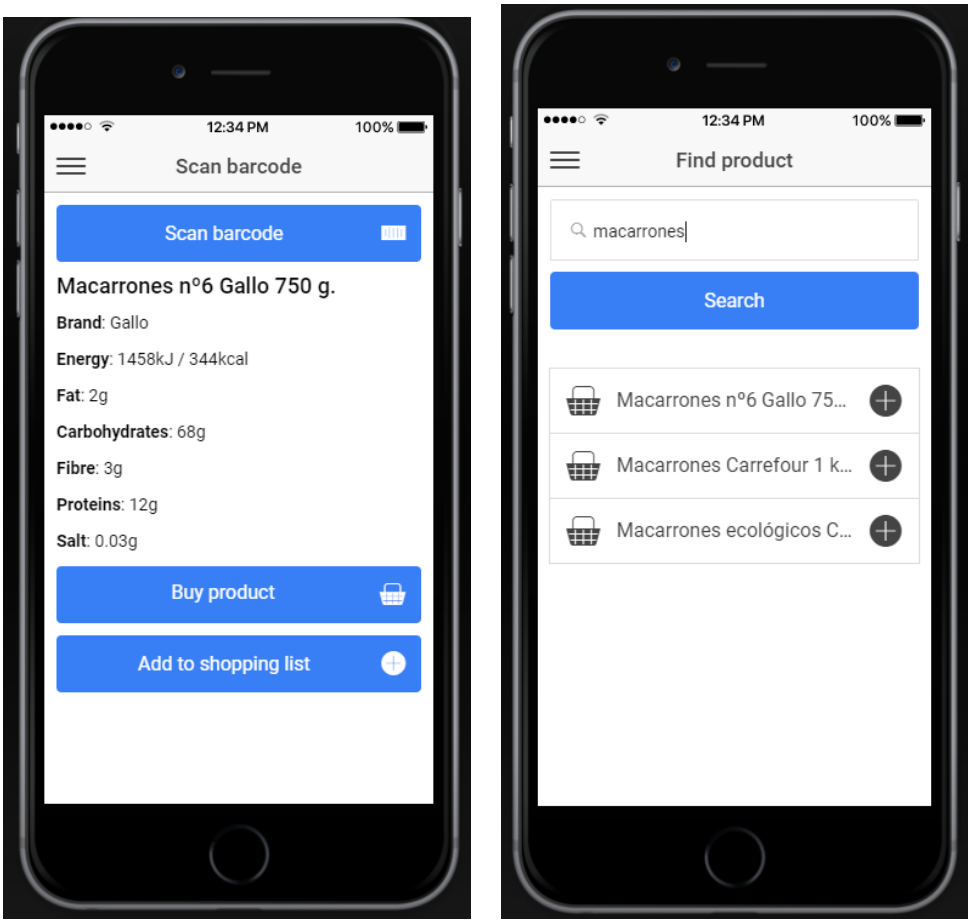


(a) Sign up (b) Login (c) Menu

Figure 4.1: Screenshots of application part1

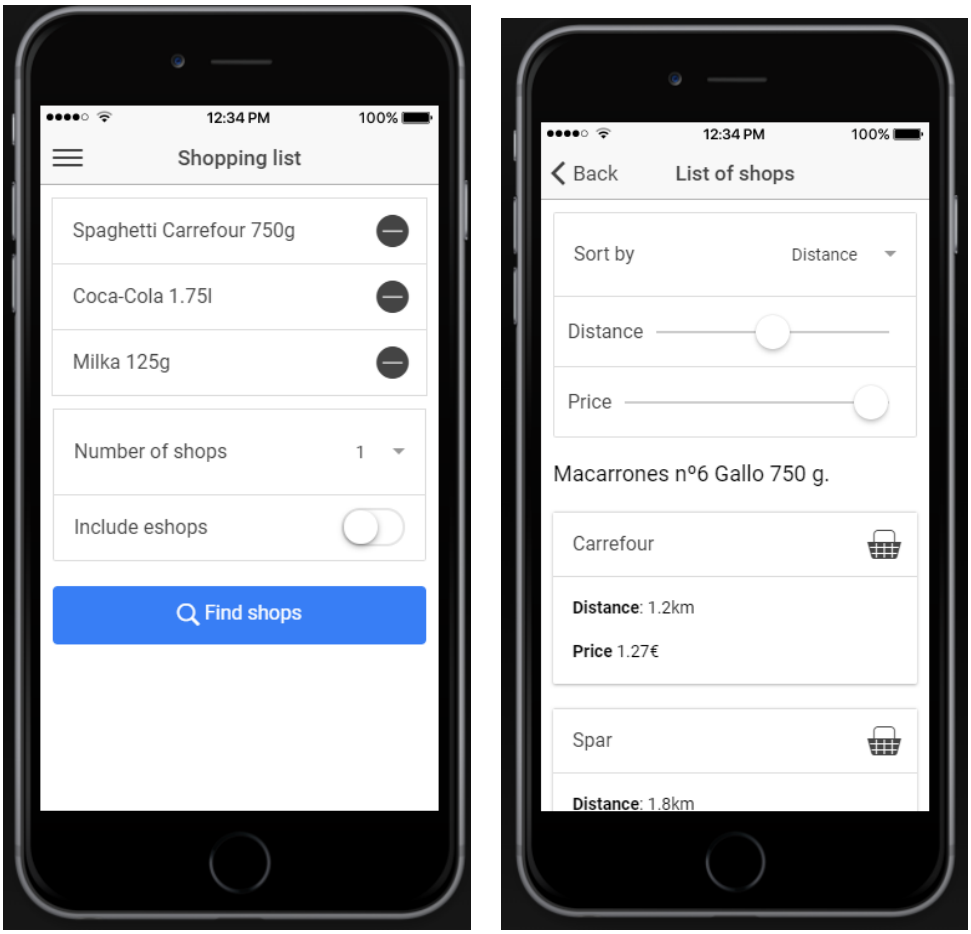
Customer cards				
#	**Scenario**	**UI parts**	**Data needs**	**Functional needs**
1	In side menu choose item Customer cards	Side menu		Redirect to page Customer cards
2	On page Customer cards press button "New card"	Button with text "New card"		Redirect to page New card
3a	On page New card press button "Scan new card"	Button with text "Scan new card"		Open camera
4a	Point camera to barcode to take a photo		Barcode of card	Scan barcode
5aa	Return to app and add scanned card to list of cards	List of saved cards		Add card to list of cards
5ab	Return to app and show popup window with error (scan not successful)	Popup window informing user		Show popup window showing error
3b	On page New card fill text input with barcode number	Text field	Barcode number of card	
4b	On page New card press button "Add card manually"	Button with text "Add card manually"		
5ba	Add card to list of cards	List of saved cards		Add card to list of cards
5ab	Show popup window with error (number not valid)	Popup window informing user		Show popup window showing error
6	Click on card to show at card register	List of saved cards		Show digital version of card

Table 4.7: Customer cards scenario



(a) Scan barcode (b) Find product

Figure 4.2: Screenshots of application part2



(a) Shopping list (b) List of shops

Figure 4.3: Screenshots of application part3