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2CB107 Mobile App Dev

Youtube Demo: https://www.youtube.com/watch?v=gDC2q9rTV-I

GitLabs: https://git.yorkdc.net:8888/daniel.tang/mobileDev

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Principles of Design & Prototype Design

Principles of Design

For the museum app, I have gone for Schneiderman's approach in principles of design, which I have followed few points that Schneiderman have proposed for a "perfect" UI design for my app, example such as consistency I have followed in my design.

Consistency

From Schneiderman's consistency point, I have implemented simple design throughout my design and alongside using similar logo/ icon design and size will be consistence. The icons must have the same or similar colour; however, this is mainly white and black image, with similar style. For text, I will make font consistency and the size of the font.

Another consistency point to implement is the menu hierarchy, this is important to make it consistence the footer to navigate around the app without going through different page/ section of the app. And making the menu hierarchy consistent will ease the user to use the menu and alongside keeping it logical and organise the menu will benefit the user.

Another good example of consistency is making the app into a grid layout which is easy for the user to follow from a Z approach. A Z approach is a left to right reading just like reading a book which goes from the left to the right as you do with a book. It is natural for the user to follow this approach. Another point to highlight is the position of buttons is important, example return to home button should be consistent example if it returns to home button is at the bottom left it should remain at the bottom left for all section of the app to keep it consistence.

Feedback/ Handling

For handling errors the app will use Toast message to handle errors such as missing fields in the login section. The message will be informative and easy for ever user to understand what the issue or errors and feedback is. Another implementation to the app is using loading screens when signing up a new user and login in will have a spinner or a loading bar to indicate the user on is happening or expect when the process is finished.

Information

Important information such as Privacy Statement should be easy to read and understand for the user to read the statement which allow the user to manage their data and understand what can be done. With this accounted for any information such as informing the user what is going on is important, such as implementing spin wheel or a loading bar to track progression will greatly help the user to know where they are at or of the app is loading or downloading, instead of viewing a screen that tells the user nothing. Its best to inform the users.

Human-Centre Design

The people should be first when it comes to Don Norman's principles, it should be the humans first for user experience not just from the design prospectus and how it was intended by the design. Upon that it the app should be simple, understandable, and useable and the most important thing is the people who use this product.

Constraints

As each design, there must be constraint for the users such as unnecessary steps, information, and handling of the app. This follows up with consistency and information with this it allows the user to use the app with ease and without stressing the user if there was an error and there was no error message to guid the users. Not only for the app design but users should also be constraint such as limit use of certain functions like if possible, accessing the app without logging, and another constraint from the app will be certain functions will be used if it is necessary for the user such as refreshing the app and logging out.

Mapping

Mapping out the design where function goes example where icons and function box goes together and the positioning of the two are very important, making sure that the position of each individual component is logically and consistently throughout. This enable the user not to be confused or frustrated to understand something that does not need to be learn though by mistake, making the user not think about it. Example of this would be a door, everyone knows the door can go one or two ways, push and pull, a door with a flat metal slab indicates it is a push door while with the handle it is a pulling motion to open the door which makes the user instantly recognise what method to open the door without thinking which is which, this is important for any UI design.

Visibility

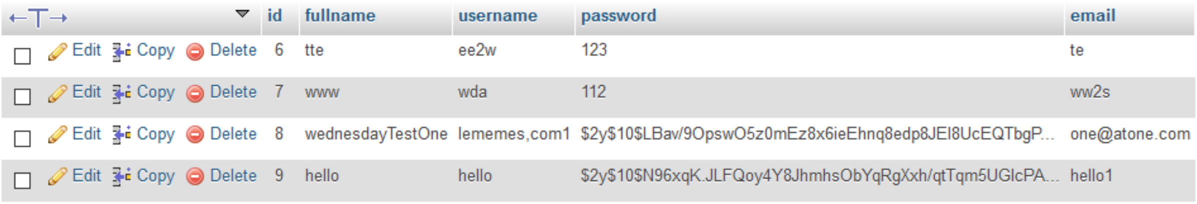
Visibility is important because you can minimise what the user can see with a simple hamburger. Example of a hamburger is a navigation bar on a website, it is important for a website to have hamburger to indicate that there is more if you click it, alongside is a standard or common knowledge that hamburger icon is used for navigation bar. Overall to make the app minimal and making it clean and reducing unwanted space on the screen.

Conclusion

Overall, all these principles from Schneiderman and Norman's approach to UI design, I have used their approach to UI design to help me to develop an app that is understandable and useable which is important in Human-centred Design. However due to time constrain, I have made the app simple, alongside whenever I switch from one activity to the recycler activity it crashed and I have not figured out why, but I have separated the app into two parts, one is the main part, and another part is the recyclerview to view the museum. I have created a recyclerview for viewing different museums because it was easier to develop, simple for the user to follow the grid pattern and lastly reduce memory,

Users Concern

There are concerns such as “how is the data is stored”, “how will it handle”, “encryption” etc, I can bring a few briefs on how certain stuff will be managed. Example on password management, the password will be hashed instead of plain text due to security reason as shown in figure 2.



←T→	id	fullname	username	password	email
□ Edit Copy Delete	6	tte	ee2w	123	te
□ Edit Copy Delete	7	www	wda	112	ww2s
□ Edit Copy Delete	8	wednesdayTestOne	lememes,com1	$2y$10$LBav/9OpswO5z0mEz8x6ieEhnq8edp8JEI8UcEQTbgP...	one@atone.com
□ Edit Copy Delete	9	hello	hello	$2y$10$N96xqK.JLFQoy4Y8JhmhsObYqRgXxh/qtTqm5UGlcPA...	hello1

Figure 2

Another concern is the company is considering deploying the app to diverse people mostly tourist across the glove, the concern is the language barriers, to combat language barrier, I could develop the app to enable the app to support multiple languages however due to the limited time it is unlikely not possible to do so.

Another concern on the rise is dealing with different Operating Systems or OS, which Android Studio is only currently supporting Android, however it does not support iOS and Windows OS, alongside if the app was developed for multiple OS the technical issues will developing the app, testing, and dealing with technical issues depending on certain OS which can or may cause conflict with each other.

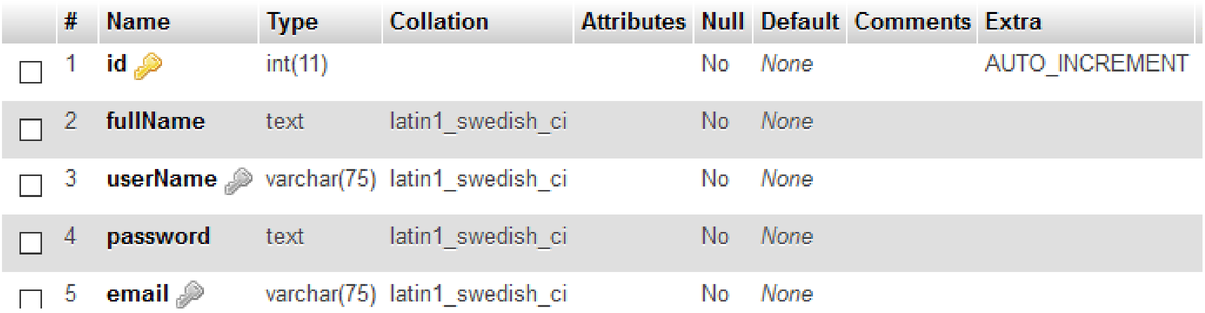
A concern is about data storage and management, alongside complying with GDPR statement which I have created a webpage for Privacy Policy Statement that will be used and comply with GDPR. This statement will contain, how we collect data, processing it and storing it alongside data protection rights for the user which is important if the user request a change or delete their data as in their right to do so with compliant with GDPR.

https://ysjcs.net/~daniel.tang/privacyPolicy.html

Design

Database Design

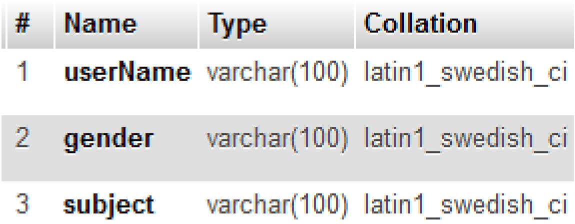
The database will be restricted and implemented on MySQL, which I will outline from the case study, I will build certain section of the database and the forms for a prototype and evaluate on the prototype. I have created a database that *stores **username, passwords, fullname*** and ***email*** to enable the app function as seen in figure one, alongside storing them in a hash state as example below. Overall to implement data from the mobile device to the database, it requires a php script to connect to the server and insert data from the app to the database and same for login.



	#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
□	1	**id**	int(11)			No	*None*		AUTO_INCREMENT
□	2	**fullName**	text	latin1_swedish_ci		No	*None*		
□	3	**userName**	varchar(75)	latin1_swedish_ci		No	*None*		
□	4	**password**	text	latin1_swedish_ci		No	*None*		
□	5	**email**	varchar(75)	latin1_swedish_ci		No	*None*		

Figure 1

Also, I have created a table for booking a museum which contains the following:



#	Name	Type	Collation
1	**userName**	varchar(100)	latin1_swedish_ci
2	**gender**	varchar(100)	latin1_swedish_ci
3	**subject**	varchar(100)	latin1_swedish_ci

Data Dictionary

Field Name: *users*	**Description**	**Type**	**Spec**	**Unique**	**Key**
ID	Unique user ID	INT	AUTO INCREMENT	YES	PK
fullname	User's full name	VARCHAR	70 VARCHAR Limit	NO	
username	User's Username	VARCHAR	70 VARCHAR Limit	YES	
password	User's password	VARCHAR	70 VARCHAR Limit	NO	
email	User's email	VARCHAR	70 VARCHAR Limit	NO	

Field Name: *bookingDB*	**Description**	**Type**	**Spec**	**Unique**	**Key**
userName	Unique user ID	VARCHAR	AUTO INCREMENT	NO	
gender	Radio button selection	VARCHAR	70 VARCHAR Limit	NO	
subject	Drop Down Selection	VARCHAR	70 VARCHAR Limit	NO	

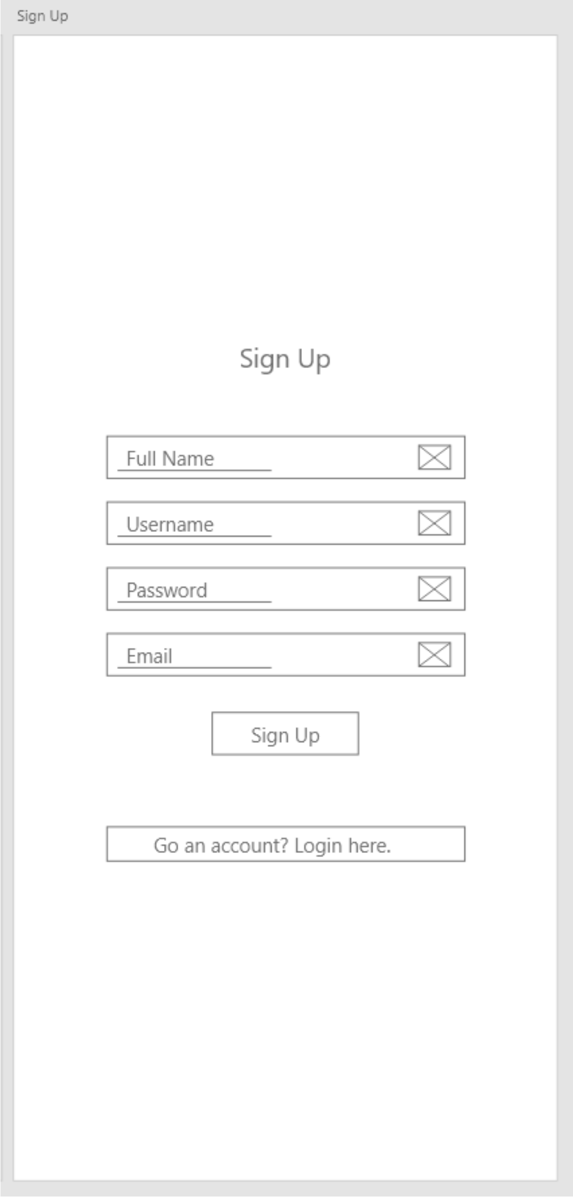
Keys

INT, Integer
VARCHAR, Variable Character Field
PK, Primary Key
FK, Foreign Key

Registration

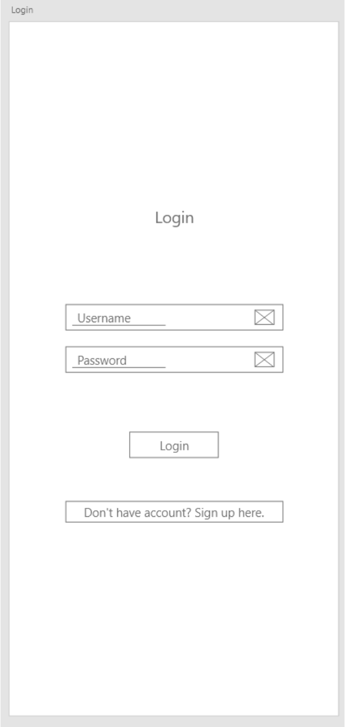
Sign Up

For Sign Up, I will include images such as a black lit image of a person to indicate username and a key lock icon to represent password as it is common for key lock to be interpreted as password. All the images will be provided by the software Android Studio. Overall making the Sign Up and Login activity minimalistic design there will not be an activity bar on these designs.



Login

The login will have similar design to the Sign up with icons to help the user. One of Schneiderman's rule is "consistency", I have kept it consistence by having the same style as for the sign up, and making it simple and basic for the user to use the login and sign-up app.



Error messages/ feedback

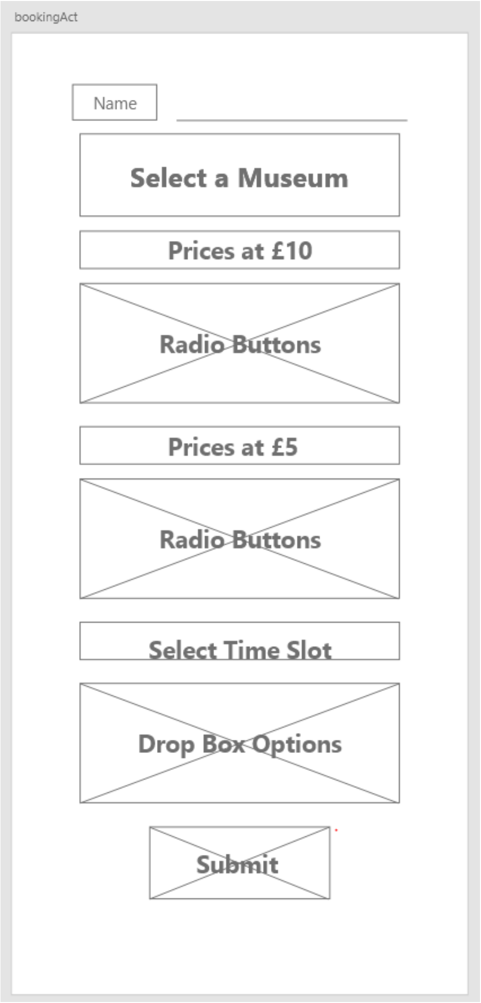
For the sign up and the login, there will be feedback from toast which enable the user to read and respond to the feedback depending on the error such as "All field must be filled" which correspond to all the fields of the sign-up example Username, full name, password, and email must be filled by the user.

Conclusion

Overall, I have chosen this design because of it simplistic design and easy to follow and understand, however with a lot of white space, it could indicate to the user that is not well polished app, however it is intended for the user to become stress free with-it simplistic and consist form. Error handling will be carried out by a simple Toast message.

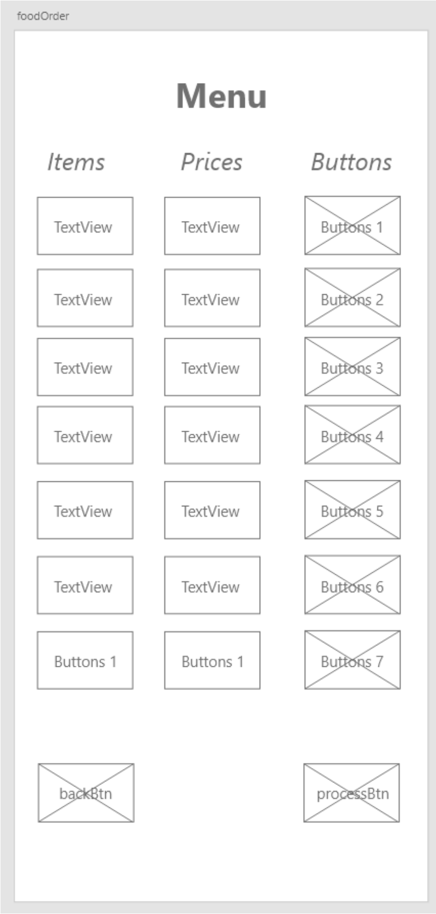
```
        Toast.makeText(getApplicationContext(), "All fields are required",
                            Toast.LENGTH_SHORT).show();
```

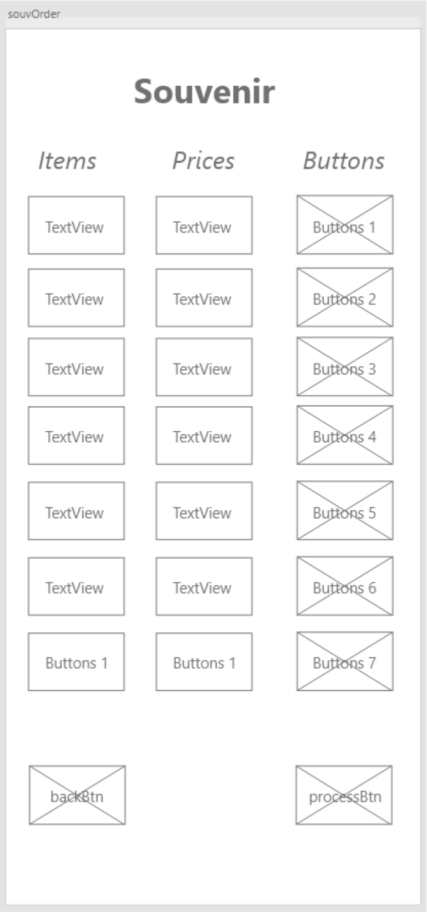
Booking


bookingAct
Name
Select a Museum
Prices at £10
Radio Buttons
Prices at £5
Radio Buttons
Select Time Slot
Drop Box Options
Submit

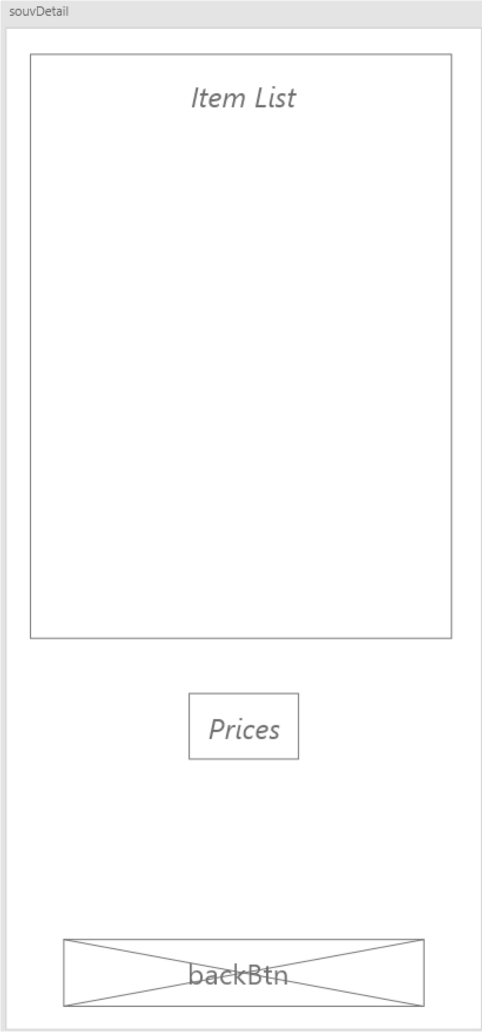
Foods and Souvenir Store

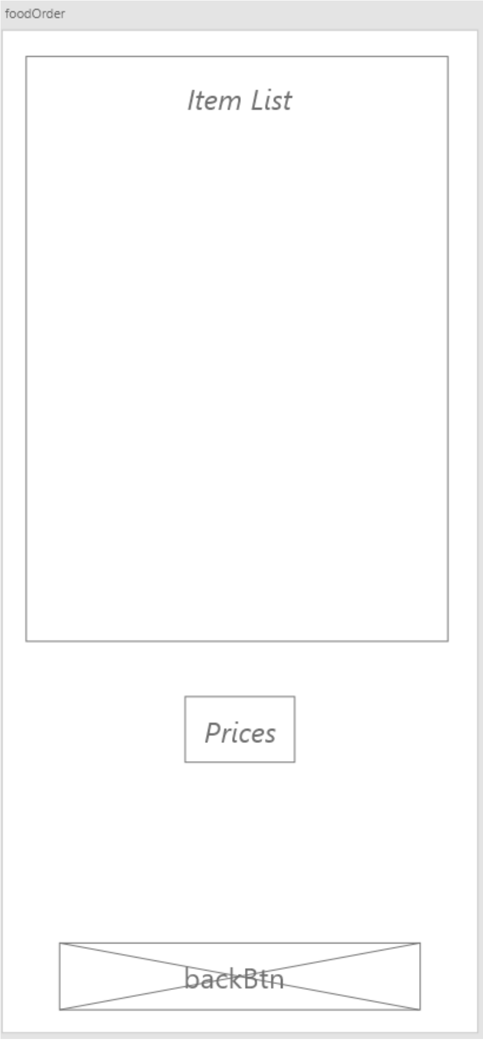
Menu



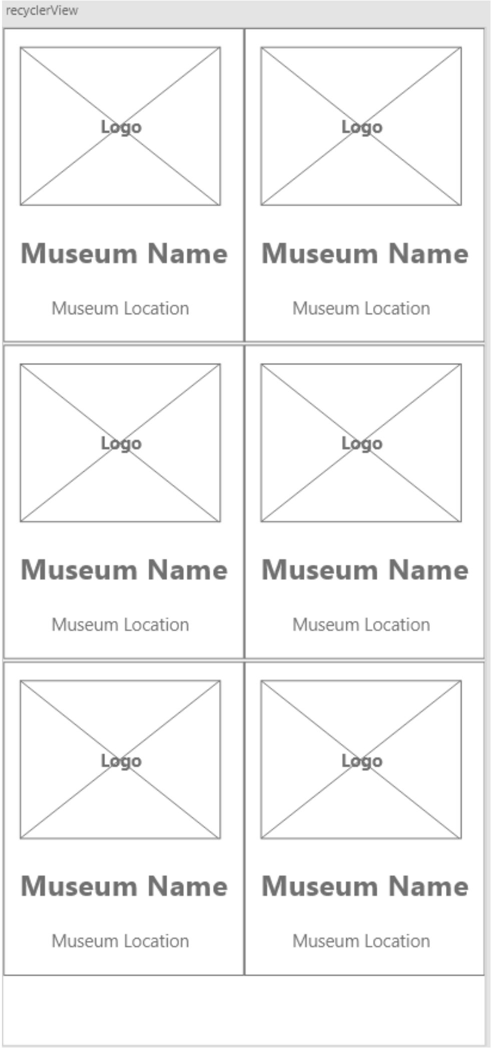


Details


souvDetail
Item List
Prices
backBtn

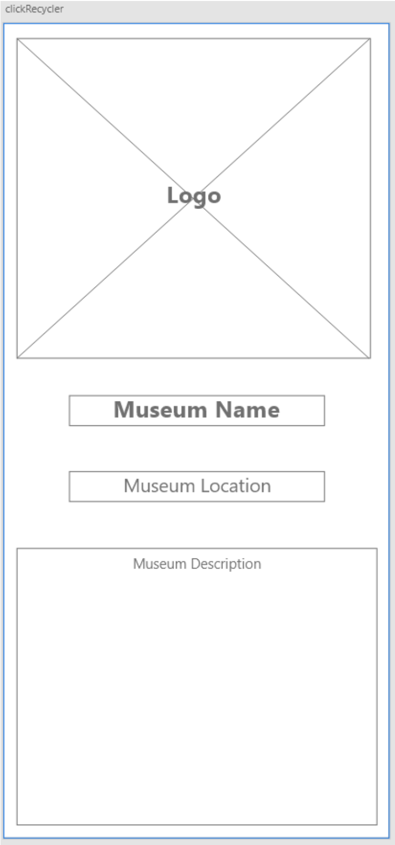

foodOrder
Item List
Prices
backBtn

Museum View



I have used RecyclerView because I want to show a lot of item to show on a screen that have limit space to add than a listView, alongside if I want to add new museums in the RecyclerView, I can add another **`ob model`** to the recyclerview. Main point of using RecyclerView is to reuse cells while scrolling. I have chosen this simple design because it's simple, it does not reveal a lot, however if the user clicks on the cards, it will reveal some more details and it will move to the detail section, if I want to expand the current data set, I can add new sets while minimizing memory usage.

ClickRecycler



I have created this design, because it has some white-space and alongside it spaced out well from different components/ functions, alongside from the RecyclerView it stays consistent on the layout.