
VIDZEMES UNIVERSITY OF APPLIED SCIENCES

FACULTY OF ENGINEERING

INTRODUCTION TO MOBILE TECHNOLOGIES

GROUP 05

# GROUP PROJECT

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## Document Changelog

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## Introduction

**Goal.** Come up with an application, plan the core functionality, design a working prototype, and develop the application.

The group has decided to create an application showcasing places to visit in Minsk, the capital city of Belarus. This idea has been chosen because of the current political situation and the overall impression about the country. The goal of the application is to present information about handpicked places in Minsk in a way that's easy to understand and interact with. The group has created a working prototype that showcases the overall design and planned functionality. Group members have set up their development environments and created the application.

# 1 Working with idea

Group members have had a week to each come up with 1-2 ideas for a mobile application.

## 1.1 Generation of the idea

The group members presented their ideas of applications that would solve different kinds of problems - from planning trips to reducing anxiety. Since all the members in the group are Belarusians, Maryia's idea about a hand-crafted tour guide of Minsk has been supported the most.

The app's idea is based around the current global perception of Belarus - as it is extremely negative, there is a need for showcasing the positive aspects of the country, especially, its capital, to foreigners, tourists and even locals. Differing from a traditional travel application's formula, the group's solution would provide a simple and easy-to-use interface, designed to help the user accomplish the desired task with the least amount of actions required. The provided information has been sourced by Maryia personally, ensuring the accuracy of provided information, while also adding a touch of personal Belarusian experience of it's capital Minsk.

## 1.2 Adapting idea to the field of interest

Since the application's main idea is showcasing handpicked places in Minsk, it was extremely important to decide which places would be included in the application. After a discussion, the team members decided to showcase the places they appreciate the most, and that encompass their idea of Minsk and its touristic places.

## 1.3 Choosing a development environment

The application is going to be written in JavaScript, using the React Native framework, as it allows creating hybrid applications that can run on mainstream mobile platforms - Android and iOS - as well as most web browsers, allowing the app to be run on any device.

For the development of the application, the Expo platform will be used, as it allows testing the code inside a web browser, on physical mobile devices or in an emulator, with changes in the code instantly reflected. And by utilising Expo Snack, an online development environment, the code can be easily shared within the team, allowing for a faster and more flexible workflow.

Atom was decided to be used as the code editor of choice because of its high customizability, allowing for a more flexible workflow, as well as modern features, including integration with Git and GitHub.

### 1.4 Changing idea through the process

The team has faced issues while developing the application, which has made the members reconsider the idea. Maryia has developed a database with great places to visit in Minsk, however, it ended up not getting used because of the cumbersome process of connecting it to the application. Instead, it was decided that the information would be included into the application itself.

This approach has limited us in terms of how many places we could include, which meant that the focus of the application itself has had to shift. We have transitioned from creating a full-fledged tour guide to a more Belarusian-experince inspired app, showcasing our favourite places that we think are worthy of visiting. Overall, we have achieved a similar result, though, at a smaller scale.

### 1.5 Economical Consideration

The goal of the application is not to make money. It is to showcase information about Minsk and it's places to visit with small tips from authors on what to see and what's better to try. The app is free and intended to be used as a source of information by tourists and Belarusians.

This is why the application doesn't include any monetisation. Maintaining the application doesn't require any efforts from the developers, and there are no costs attached to its creation as well.

Age group of the users is young people in the range of 15-30 years, students, any gender is applicable.

## 2 Work with Visuals

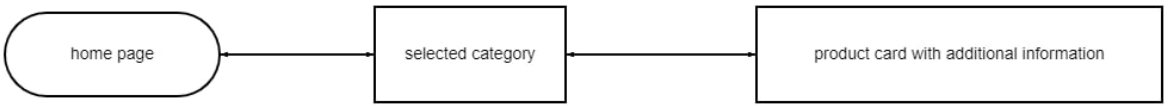
The team has created the visual design of the application by creating the user flow map and utilising design principles based on perception, i.e. colour, shape choices for different elements.

### 2.1 Making visuals for the Application

While working on the application, the group needed the most efficient way to present the idea, and the application itself. After long consideration of different styles and fonts, colours grey and white were chosen as they are perceived as neutral and are the default for the majority of applications. We have decided to use text, photos and icons as the main way of presenting information, as it is the most intuitive.

### 2.2 Sketch

To create a sketch of the interface, the group had to understand the exact way that the application's main functionality - discoverability of places to visit - would work. This is why a user flow map, presented below, was made.




**1.1.image.** *Application flow map*

The user starts on the home page. There, they can select between several categories of places they would like to visit. By tapping on one of the categories, a new screen opens, presenting various options to the user. If a place seems interesting, it can be selected, so that additional information, such as the address and price range, is shown.

With the user flow understood, sketches of the interface were made (Attachment 1).

### 2.3 Wireframe

Firstly, a mobile device frame has been set. We settled on the iPhone X, as it has a medium-size screen. It acted as a restriction, keeping us from putting too many elements on the screen, while letting us create a design that looked like a real application.

Secondly, we concentrated on the contents of the app, deciding its presentation and position. We have introduced a hierarchy of elements by utilising different sizing of said elements.

Thirdly, we took into account that, when a user encounters familiar elements in the interface, they might use their previous experience to interact with the application. This is exactly why some elements, for example, the back arrow, have been implemented from design templates.

### 2.4 Creating Mock-Up

At first, we turned all the elements we were planning on using more than once, into components. This way, we could change just the master component, with it automatically updating on every screen it was present, instead of us having to change every screen manually.

Considering the influence of colours on human perception, the main colour choices were blue, which gives the feeling of calmness, stability, and reliability, and white, which is primary for all web/app pages.

The style of the application is made simple and modern as it would be readable for any user group, easily understandable, and fast to operate throughout the application.

Screenshots of the prototype are attached to the documentation (Attachment 2).

# 3 Creating Application

The team has created the screens that the user would view and interact with in the application. To simplify the development, it was decided that every screen of the application would have the same base formula as the home page - a picture at the top, and buttons/text/other elements at the bottom.

## 3.1 First steps in the Application

Since all of the group members have already set up their development environments, it was very easy to start the development of the application.

By using the knowledge gained from lectures and practical assignments, the team has created the base Home Screen  layout, which was later used for other screens. This layout was then adapted to the needs of the screen.

## 3.2 Creating a Home Screen

The Home Screen (Attachment 3) contains a View with a picture of Minsk at the top, and a menu with 4 category buttons at the bottom. These buttons navigate the user to the corresponding screens - food, shops, museum, hotel.

### 3.2.1 Creating a Navigation Stack

To create different screens and navigate between them, we needed to create a navigator. For this, we have used the react-navigation package, as it is feature-rich and effective.

### 3.2.2 Creating Buttons

Buttons are the main way that the user navigates the application. For the Home Screen, a row of Views containing the TouchableOpacity components was used, resulting in 4 buttons that adapt to the size of the screen. Each button contains the name of the category that it will navigate the user to.

The category screens contain multiple Button components, each responsible for navigating to the corresponding screen with information about a place. It was planned to use the same buttons that were used on the Main Page, by creating the button as a separate component, however, the plans haven’t been achieved because each category screen has a different amount of buttons, which would require changing the layout.

### 3.3 Place screen

Each page has the same layout. It contains Image, Text, Map components, which were changed on each page, adding the information about the corresponding place. This approach of including the information right into the screen lets the team efficiently change the information if that needs to be done.

### 3.4 Adding Geolocation

While adding the MapView elements to Place screens, we have faced some difficulties. Since the MapView is not supported for the Web, it has been hidden, and now it is only visible on mobile devices. Web users can still see other available information about a place.

We have also wanted to add MapMarkers, which would show the exact location of a place. However, adding those into the code resulted in blank pages displaying on Web, even though the map was hidden. It was decided that the markers would be left out. We have instead used Delta coordinates to zoom the map into the location of the place. This way, the marker functionality is partially regained. (Attachment 4).

### 3.5 Pushing the project on GitHub

The team has used GitKraken to collaborate on the Group work. The workflow was streamlined by eliminating the need for every member to create an Expo project of their own. Firstly, Denis has created a local repository, and in it, initialised an Expo project. The empty project was then committed and pushed to a remote repository, available on GitHub. The application is also available on Gogle Drive. Maryia and Lidziya have pulled the project to their machines, developed, committed and pushed the application when there were any changes added. This workflow has immensely simplified collaboration between group members.

## Conclusion

The work brought a lot of challenges for each member of our team. By facing a lot of difficulties we learnt many lessons as well as had seen perks and cons of working as a team.

The biggest challenge was working with JavaScript, as none of us have never worked with it before. However, as a team, we managed to learn and write working code, by solving problems together.

We, Maryia, Lidziya and Denis are extremely happy to be ready to present our first application made by accomplishing many tasks and overcoming problems by ourselves, and as a result, having our first mobile application, which can be launched on Web and on any mobile platform.

## References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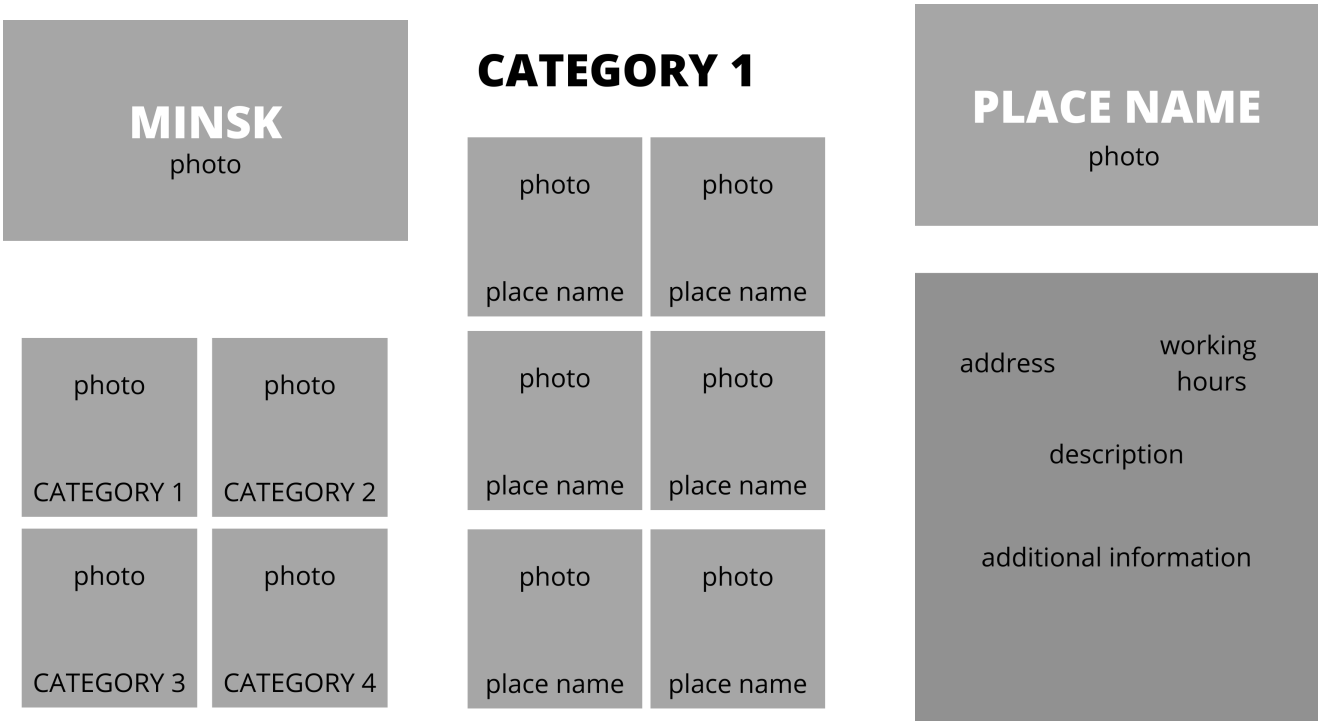
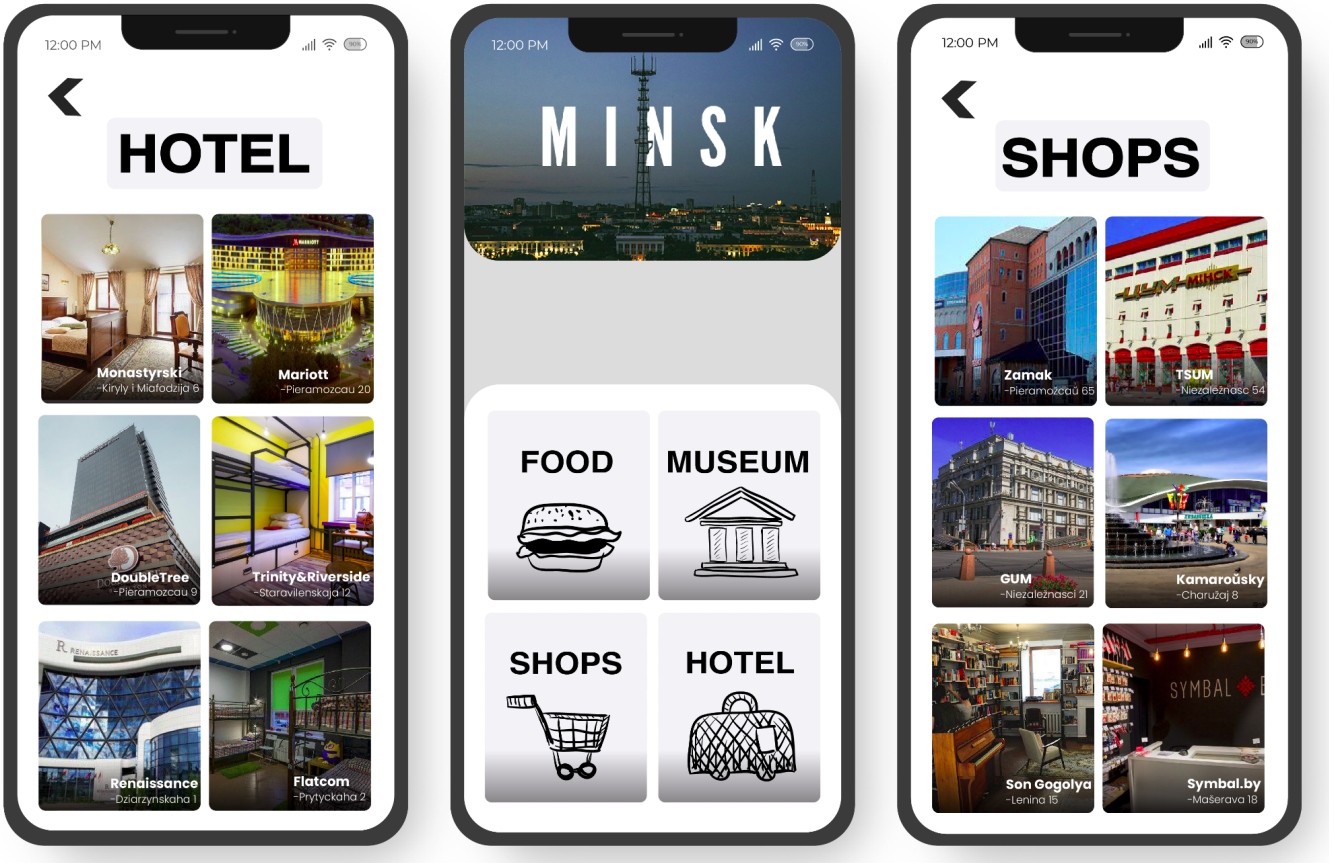
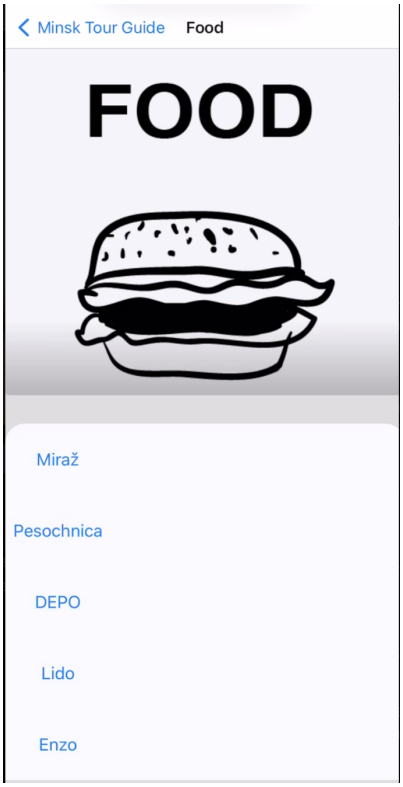
**Attachment 1. Sketches of the application**



**Attachment 2. Screenshots of the application prototype**



**Attachment 3. Screenshot from application Food Screen**



**Attachment 4. Screenshots from application (Home Screen and Place Screen)**