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THE METHODOLOGY OF DEVELOPING A MOBILE APPLICATION DESIGN FOR CREATING A GENEALOGICAL TREE

Ye. M. Hrabovskyi, Yu. D. Brusiltseva

Simon Kuznets Kharkiv National University of Economics,
9a, Nauky Avenue, Kharkiv, 61001, Ukraine

The aim of the study is to develop a mobile application design to create a genealogical tree. The article focuses on the subtleties that need to be considered when designing an interface. The creation of an intuitive family tree in this paper is proposed on the basis of the online service Coggle, which is designed to develop mental maps. During the development process, the task was set to place many functions of the mobile application so that the user was comfortable and understandable to use them and there were no redundant design elements. As part of the study, the design for the mobile application of the family tree should be developed for the Android platform. The paper presents and analyzes the main criteria that should be in the program for mobile application development. The list of the basic stages which are necessary for creation of design of the mobile application for development of a genealogical tree is resulted. The article offers a general structure of the mobile application. The general features of preparation of styles of the basic colors and fonts are analyzed. A system of requirements that should be taken into account in the process of creating an interactive prototype of a mobile application of the family tree is presented. Based on the system of requirements, an interactive prototype of the mobile application was created, where the systems of transitions between pages and animation of transitions were implemented. This study also describes the settings for the created pages of the application and implemented navigation in the application with different types of transitions of such types as interactive click navigation, overlaying a new element on the page and horizontal and vertical scrolling. The practical result of the study is a list of recommendations to the designer and developer regarding the design of a mobile application for creating a family tree.

Keywords: *design, mobile application, family tree, family, features.*

Task statement. To date the current trend in modern society is taking an interest in creating a family tree. Accordingly, the development of mobile application design to create a family tree is an urgent task for a multimedia publishing house. Creating a mobile application design for the development of a family tree can be useful for collecting and storing important information about the relatives of the user of the application. The various auxiliary functions allow one to create a family tree and to add information to it (video, photo, audio, documents). Also these functions allow one to map the country and city where his relatives live, take interview with auxiliary questions, download and scan documents, take notes of important information, etc. All of these different functions

exist to simplify the time-consuming process of introducing family history and make it available to more people, especially young people, not just the older generation.

The analysis of recent researches and publications. Research on the development of mobile application design to create a family tree is devoted to the analysis of information visualization mechanisms in mobile applications [1-3], the creation of web-based tools to process the information in Internet applications [2-5], the development of mathematical models to create interfaces for multimedia publications [6-9], support for processing graphic images in multimedia applications [10–14]. However, there are no scientifically based recommendations for the development of a mobile application for creating a family tree in the specialized literature.

The aim of the article is focused on the development of a mobile application for creating a family tree.

Presentation of the main material of the research. The main goal of developing the design of a mobile app is a simple and clear interface for collecting and storing important information about the relatives of the app users, which simplifies the process of creating a family tree and collecting information about the family. Now the task is to place many functions in such a way that the user is comfortable and understandable to use them and there are no redundant design elements. The main things for users are functionality and usefulness. But if the design does not involve or even complicate the work with the application, it will be removed immediately. Therefore, it is so important to pay attention to nuances, which must be taken:

1) **simplicity of navigation.** It is important not to complicate navigation in the application with cumbersome menus, and even more its absence. The navigation unit should not cover the main field of the program. In this case the "hamburger system" or hiding the menu in the left curtain of the application can be used. The design of interfaces in mobile applications should be as thoughtful and concise as possible, so that the user can move smoothly and without hindrance to the goal. It is necessary to use icons that are intuitive to customers – those that are used in most applications. This will allow users to navigate the application quickly and efficiently.

2) **simple background.** It is necessary to make the background images solid or blurred, which makes navigation and program functions more expressive. It also reduces download time and makes user interaction more comfortable.

3) **color palettes.** Mobile application design involves a smart use of the color palette. Therefore, it is recommended to use more white space and tinted versions of the brand's colors. Colors should be placed strategically, emphasizing where readers can find the most relevant information. The method of color selection «Mood board» is used. It helps to create a color scheme of the application that will evoke the right emotions and feelings.

4) **swiping-gestures.** The design of mobile applications for Android includes conceptualizing of gestures with which users work on the service. There are several gestures and features that can be used in the app: touch, double tap, pinch, hold and drag, and touch and drag. Analysis of the user experience will help determine the most commonly used gestures in order to include them in the application.

5) **intuitive interface.** Usability design of the Android application is echoed throughout all development points. It does not matter what device someone uses, no one wants to feel that they are not smart enough to navigate it. The interface must be intuitive for all devices. It is necessary to take into account the natural action for the desired function should be taken into account. When users feel comfortable in the application, they will constantly work with it, which means that the rating will only increase.

6) **integration with social media.** Android application design should take into account that a lot of customers come from social networks. So, it is necessary to add social media buttons to the service and the ability to log in via Facebook or Google. This will even more increases the user experience and usability, as the registration will not take much time.

The creation of an intuitive family tree is based on the online service Coggle, which is designed to develop mental maps. These maps are very similar in structure and function to a tree with their connections and it is a good example that can be implemented in a family tree scheme.

Coggle is a free online application that supports collaboration on projects. You can develop convenient and beautiful mental maps in this program. The interface of the program is simple, but at the same time has many features that make the process of creating intelligence maps incredibly simple. The program supports the use of images, individual color schemes and the ability to view the history of the document. Saving the change history allows to revert to previous versions of the created map. Mind-maps created in Coggle can be exported in PNG or PDF format.

The design for the family tree mobile application should be developed for the Android platform, as Android's competitive feature is the integration with Google services – Gmail, Voice Search, Hangouts, etc. Android officially supports Chrome, which has the ability to sync tabs opened by the user in the browser or on a smartphone with a computer browser.

The main applications used to design mobile applications are Sketch, Adobe XD and Figma. Most of them are UX designers who are often under pressure from deadlines. They must provide high quality results in the strict time limits. Therefore, they have opted for these programs, which have a set of effective tools that speed up the workflow.

The main criteria that must be in the program to develop a mobile application are:

free software environment;

ability to work on Windows 7;

presence of plug-ins;

templates for interfaces;

ability to work in real time;

safe storage of created projects.

Table 1 was formed to make a decision. It has analyzed criteria for each of the programs (on a scale from 0 to 2, where 0 is the absence of this characteristic, 1 – is the presence of this characteristic, but it is poorly implemented, 2 – the characteristic is well implemented).

Table 1

Decision-making model on the choice of programs for design Interface

Criterion	Programs		
	Sketch	Adobe XD	Figma
Fast and convenient tool	2	1	2
Free use of the program	0	2	2
Transformation of images in perspective	2	1	2
Prototyping	2	2	2
Guides, grids, symbols, templates	2	2	2
Libraries, export	2	2	2
The presence of plugins	2	0	2
The presence of a mobile version for preview	0	0	2

Based on the results obtained in Table 1, one can conclude that the most effective and convenient tool is the program Figma. So it is advisable to use it to develop a mobile application for creating a family tree.

Creating a mobile application design for the development of a family tree should be carried out in the following stages:

– development of the concept of creating a mobile application design;;
– development of structure and diagram of transitions;
– creating thumbnails of the mobile application interface;
– development of the style of the mobile application interface;
– creation of a prototype of a mobile application;
– creating an interactive prototype of a mobile application.

Let one move on to the development of the concept of creating a mobile application design. The idea is to design a mobile application to create a family tree.

The goal is to design a simple and intuitive interface for collecting and storing important information about the application's relatives, which simplifies the process of creating a family tree and collecting family information. Also the goal is to attract the attention of the developed design to the younger generation, starting from 20 years.

The design of a mobile application in order to be needed by people, first of all, must be relevant. Therefore, firstly it is necessary to conduct analytics to find potential users.

Analyzing the Android platform for which the application design is developing, it turned out that this platform is used mainly by teenagers and the audience of adult users from 35 to 55 years. Most teenagers use game applications, and adult users use applications for social direction and personalization. Looking at the income of the population, it can be seen that users of the Android platform have low and medium incomes. Users work mainly in technical specialties. Thus, it can be concluded that the target audience of the mobile application for creating a family tree starts from 35 to 55 years.

Also conducting their own survey, the authors found that young people between the ages of 20 and 25 also want to create a family tree and preserve their history and do so systematically.

The main audience of the mobile application is young people of all genders aged 20 to 25 and adult people aged 35 to 55.

The user's goal is to preserve the genus and create a family tree that can be safely preserved without losing important information.

First of all, it is necessary to find out what features you need in the application. As soon as everything becomes clear, we create a user-flow – a block diagram of the mobile application.

Usually user-flow consists of three types of figures:

– rectangles – used to represent screens;
– diamonds – used for conditions (for example, pressing the login button, scrolling left, zooming);
– arrows – connect screens and conditions together.

User-flow is very useful because it gives a logical idea how the program should work and solve problems.

Here is the user-flow diagram that was created at the beginning of the work on the design of the mobile application (Fig. 1) and the general structure of the application (Fig. 2).

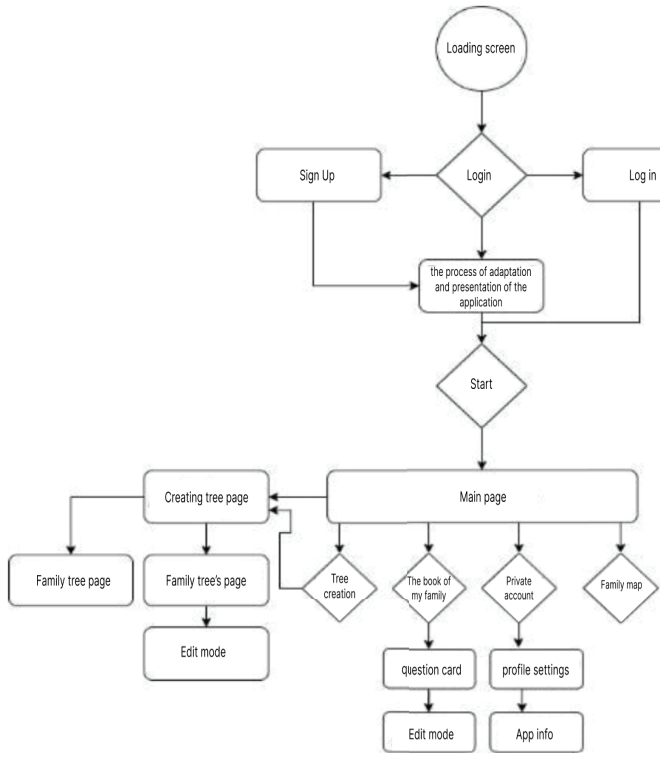

Figure 1. Diagram of transitions in the mobile application

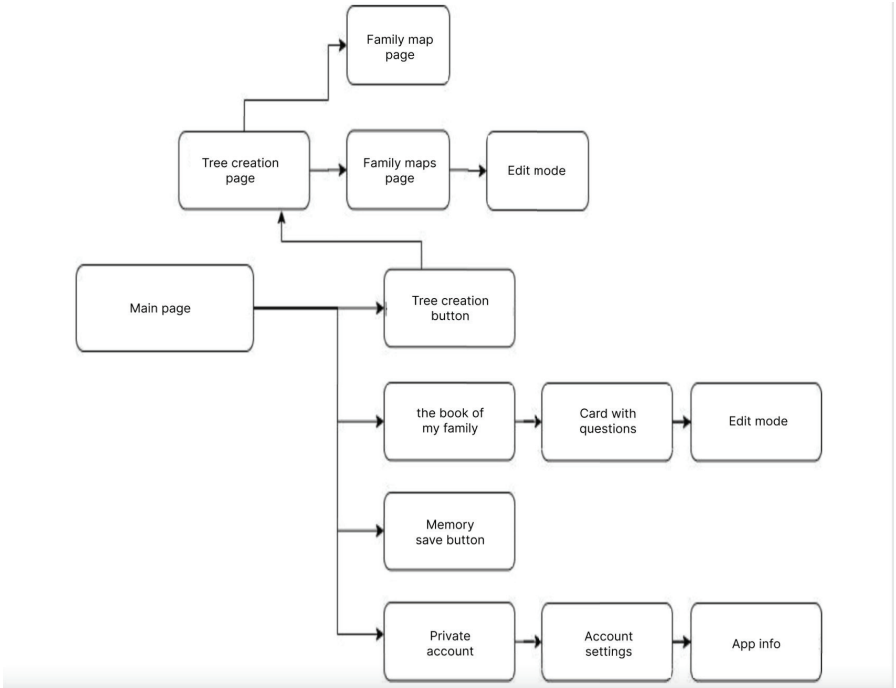

Figure 2. The general structure of the mobile application

Next, one turns to the stage of creating a layout in the software environment Figma, namely, one begins to create wireframes (Fig. 3).

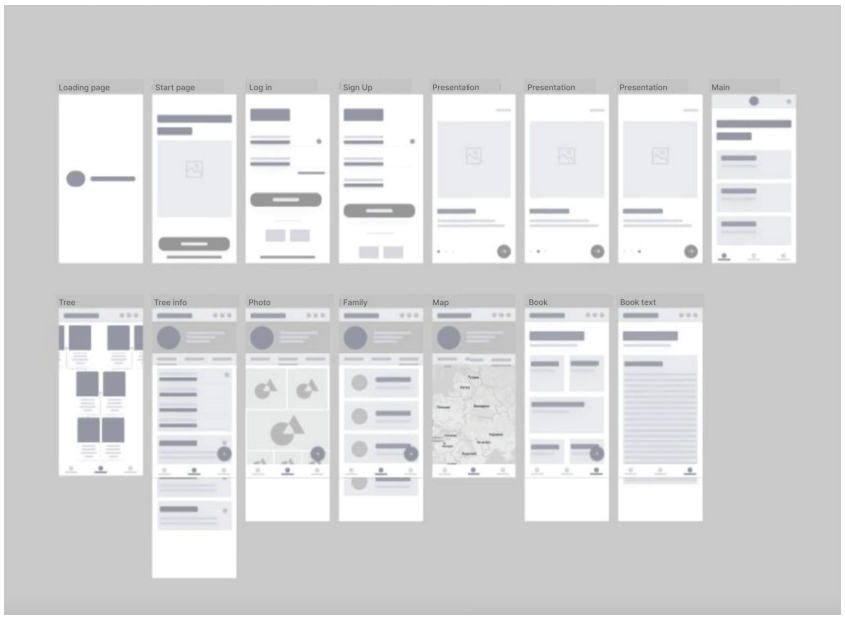

Figure 3. Frame scheme of the mobile application

The framework is typically used to place content and features on a page that takes into account user needs and user scenarios. Frame models are used in the early stages of the development process to establish the basic structure of the page before adding visual design and content.

The purpose of the framework scheme is to provide a visual understanding of the page at an early stage of the project to obtain the approval of stakeholders and the project team before the start of the creative phase. The framework can also be used to create global and secondary navigation to ensure that the terminology and structure used for the site match the expectations of users.

The framework is much easier to adapt than the conceptual design, so it is better to start designing with it. The next step was to choose a range of colors, where white was chosen for the background color, green for the accent color, and semi-shades of green were chosen for the additional colors. The Coolors service helped me find the right color [26].

Blocks are constructed in such a way that each text frame is in a figure or in a card. So, the style will be similar to a card design.

Two fonts were selected in the app, namely the font pair, where the Gilroy font was used for the headings, and the Roboto font was used for the main text.

The next step was the design of the prototype, based on the steps listed earlier.

In order to correctly design the interface for the Android platform, so that the developer does not have any further problems, it's necessary to follow the basic style of Material design.

The first step in creating a design is to prepare the styles of basic colors and fonts. This makes the process systematic and fast (Fig. 4).

Figure 4. Styles of colors and fonts

Next we start to create the first screen, the application download screen.

The main elements of this screen are the tree logo and name (Fig. 5).

Figure 5. Download screen

The next screens created are the Login and Registration screens, which were already created with the fields filled in, so that it would be better to understand how the application works (Fig. 6).

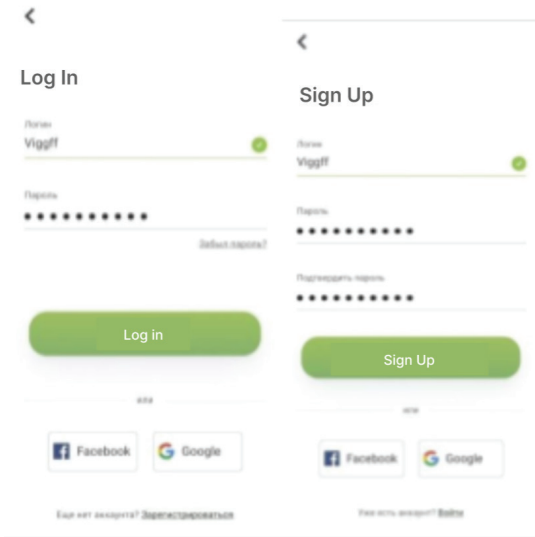

Figure 6. Login and registration screens

The next step was to create the main screen of the application, where there is an application menu with three icons, one of which leads to the creation of a tree, and the other to view the family map. Three blocks with graphic elements were also created so that the person who downloaded the application for the first time would immediately understand what is in this application and where to go.

At the design stage, it is important to follow a system of requirements to avoid confusion and to have elements with equal proportions and without errors. So in the software environment Figma has such a function as components, where repetitive elements create a single parent element, and then copy and create child elements (Fig. 7).

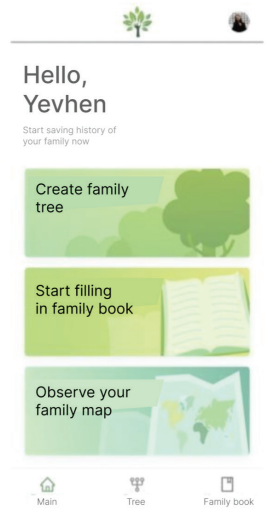

Figure 7. Main page screen

This way, copying items creates instances faster than copies. Therefore, it is possible to change the text and photo later, but the shape of the figure itself cannot be changed.

Thus, many elements are created on the basis of components, such as buttons, cards, menus, various icons, and they need to be kept in one city to avoid confusion, so we created the Design System Kit.

It is also worth creating a book of relatives, where it is possible to write about their ancestors, traditions and language in a separate folder (Fig. 8)

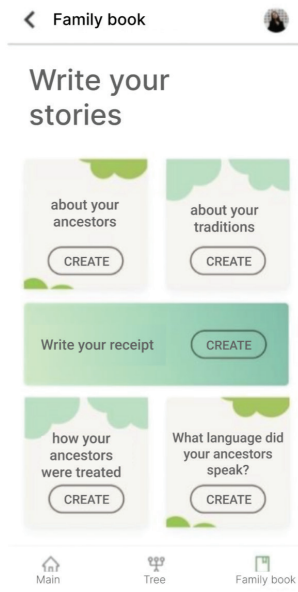

Figure 8. Family book

Thus, screens were created with a simple design, in the style of cards and with standard fonts that are system-based for the Android platform. Also, with the help of a system approach, the functions of the application have been created and carefully thought out so that the user is comfortable using the application.

The interactive prototype is an animated application without a programming stage, which is created for design clarity. This is also an important step, because at this time the functionality is laid, the convenience of user scripts when using the application is clearly assessed.

To begin with, you need to create a connection between the navigation elements of the interface (Fig. 9).

Figure 9. Transitions of navigation elements

Navigation element transitions were created in Prototype mode, in the Interactive section, Click-through navigation was selected and the path to other pages was specified. Using the Navigation function, when interacting with the element, the user goes to another screen (Fig. 10).

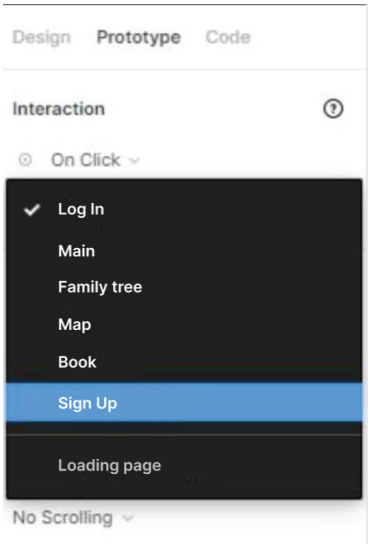

Figure 10. Transition settings

The overlay displays a new element on top of all other elements of the prototype interface. For example, one can change the photo or create a new connection with another card of a relative (Fig. 11).

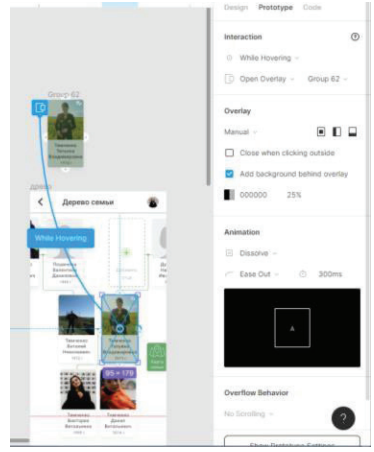

Figure 11. Transition overlay settings

There were also settings for horizontal and vertical scrolling in the “Interactive” section, for example for a tree to see its fullness, or for a map (Fig. 12).

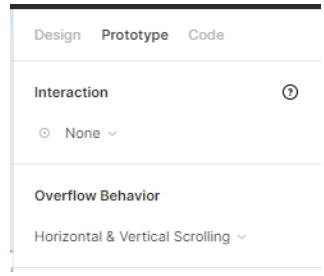

Figure 12. Scroll settings

Thus, navigation systems were created in the prototype with different types of transitions.

Conclusions. So, in the framework of this article, the concept of the family genealogical tree mobile application has been developed, where the idea and purpose of the prototype are created, the target audience is analyzed and decided with the choice of potential users who will be interested in the future application. A unified application style is developed, its color styles and font styles are considered, home and subsequent home screens are designed, a family genealogical tree is designed, and created an interactive prototype of a mobile application, which implements systems for transitions between pages and animation of transitions. The settings for the created pages of the application are also described, and the navigation in the application with various types of transitions of such types as interactive click navigation, superimposition of a new element on the page and horizontal and vertical scrolling is implemented.

The practical result of the study is a list of recommendations to the designer and developer regarding the design of a mobile application for creating a family tree.

The scientific result of the work is a method of developing a mobile application for creating a family tree.

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МЕТОДИКА РОЗРОБКИ ДИЗАЙНУ МОБІЛЬНОГО ДОДАТКА ДЛЯ СТВОРЕННЯ ГЕНЕАЛОГІЧНОГО ДЕРЕВА

Є. М. Грабовський, Ю. Д. Брусильцева

Харківський національний економічний університет імені Семена Кузнеця,
пр. Науки, 9а, Харків, 61001, Україна
maxmin903@gmail.com

Метою дослідження є розробка дизайну мобільного додатка для створення генеалогічного дерева. У статті наведено увагу на основі тонкощі, які треба враховувати при розробці дизайну інтерфейсу. У процесі розробки було поставлено завдання розмістити множину функцій мобільного додатка таким чином, щоб користувачеві було комфортно та зрозуміло користуватися і не було надлишкових елементів дизайну. Створення інтуїтивно зрозумілого генеалогічного дерева у цій праці пропонується на основі онлайн-сервісу Coggle, що призначений для розробки ментальних мап. У рамках дослідження дизайн для мобільного додатка генеалогічного дерева варто розробляти під платформу Android. У статті наведено та проаналізовані основні критерії, які повинні бути у програмі для розробки мобільного додатка. Наведено перелік основних етапів, які необхідні для створення дизайну мобільного додатка для розробки генеалогічного дерева. У статті пропонується загальна структура мобільного додатка. Проаналізовано загальні особливості підготовки стилів основних кольорів та шрифтів. Наведено систему вимог, які потрібно враховувати у процесі створення інтерактивного прототипу мобільного додатка генеалогічного дерева. На основі системи вимог було створено інтерактивний прототип мобільного додатка, де реалізовано системи переходів між сторінками та анімацію переходів. Також описані налаштування для створених сторінок додатка та реалізовано навігацію у додатку з різними видами переходів таких типів, як інтерактивну навігацію по кліку, накладення нового елемента на сторінку та горизонтальне і вертикальне прокручування. Практичним результатом дослідження є перелік рекомендацій дизайнеру та розробнику стосовно проєктування дизайну мобільного додатка для створення генеалогічного дерева.

Ключові слова: *дизайн, мобільний додаток, генеалогічне дерево, родина, функції.*

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