

Education interactive game “Russian Cities” (города России)

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Background. In today’s world, the relevance of mobile platforms is growing, so it seems appropriate to develop an application for iPad rather than for PC. A survey among potential users showed interest in playing “Cities” illustrated with randomly chosen images from the Internet. Analysis of applications in the AppStore showed that there are two analogues — applications for playing “Cities”, but they don’t include illustrations of cities in them. A detailed analysis resulted in a list of shortcomings in existing applications for playing cities, which make their use less practical and less fun.

Aim. The goal of the work is to develop an iPad application for the classic game “Cities”, with the display of images of cities from the Internet.

Methods. Research methods include designing, prototyping, Internet searching, comparative analysis, and problem-oriented method. Python was chosen as the development language, as it is one of the most popular modern development languages with a large number of libraries.

Pythonista 3 was chosen as the development environment for the following reasons:

- Pythonista is used to develop iOS apps, with the development environment installed directly on the iPad, without the need for a Mac (in comparison to Xcode) [1, 2].
- Pythonista has a set of libraries and a visual UI builder for an iOS app [1].

To interact with sites on the Internet and parse the resulting html code, we use Python libraries: urllib3, BeautifulSoup.

Results. In accordance with the developed functional requirements for the initial version of the application (MVP — minimal viable product) and the compiled screen forms (Figure 1), an application for the game “Cities” was developed and debugged using the Pythonista 3 framework.

The program uses a CSV file with Russian cities for the game. The user can name any city, the program uses only large cities with population that user can choose before the game. A CSV file with Russian cities can be easily replaced with any other file of the same format (for example, European cities or all cities of the world),

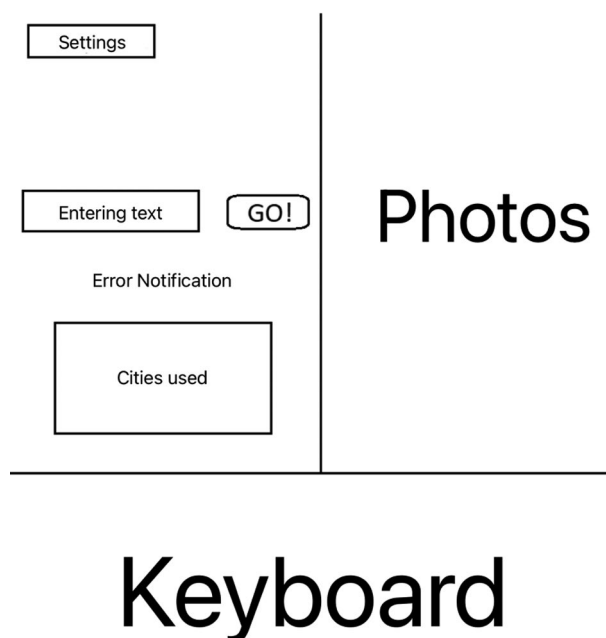


Fig. 1. Screen form

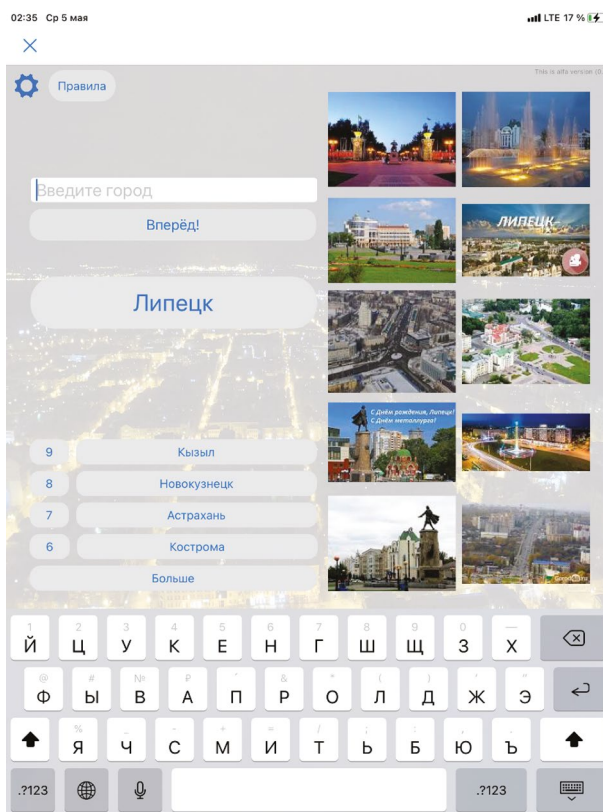


Fig. 2. Gameplay

without the need to modify the program. The program selects the city for the next move randomly from the list of cities for the required letter (for this purpose, a dictionary has been created, where the key is the first letter, and the value is a list of cities for this letter). After randomly selecting a city, the program generates the URL of a Google request to search for images of this city. From the received search result, 10 pictures are randomly selected and displayed on the screen. Figure 2 shows the gameplay.

Conclusions. In the course of the work, the following results were achieved:

- Identified a relevant topic for creating a new iPad app
- Developed functional requirements for the application and screen forms
- Created and debugged an application using the Pythonista 3 environment

Also, some ways of further development were outlined:

- Relating the probability of the program choosing a city with its population (large cities fall out more often)
- Adding a time (timer) for a user response
- A system of awarding points and extra time for correct answers, and reducing time for incorrect answers
- Ability to display not only images, but also descriptions of cities

Keywords: Python; Pythonista 3; iPad application; “Cities”.

References

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