

DESIGNING OF THE GAMING APPLICATION "FLAMY – UNUSUAL PUZZLE" FOR MOBILE DEVICES USING ANDROID OPERATING SYSTEM

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This paper discusses the designing of the gaming application "Flamy – Unusual Puzzle" for mobile devices using android operating system.

The application has a series of levels in which user must solve different tasks and puzzles using not only their own logic and intelligence but also the hardware and physical capabilities of the device.

The application's main functionality identification. Main menu displays on screen when you start the application. This menu provides following features:

- start the game;
- rate the game;
- exit the game.

If the user starts the game then current player's level opens on the screen. Level provides number of lives and points information. In addition, the user can get access to the menu of tips and bonuses or return to the main menu. When the user completes level, he gets access to the next one. There also should be implementation of the level successful completion congratulations and a brief description of the correct solution. In case of an incorrect solution – one "life" is taken. If zero "lives" remains then a dialog box opens providing the following choices:

- go back by five levels;
- view advertisements to restore "lives".

When choosing the first option the current level is reduced by five, the second – all lives are restored and the current level remains the same. In case of successful completion of the entire game, congratulations screen should be implemented.

The choice of the menu item "Rate the game" gives to the user opportunity to rate the game. Then on the next screen user can set a rating from one to five; if the score is from one to three then the user can write feedback to the developer about the game, otherwise, write a review on Google Play. User receives additional points in gratitude regardless of his decision after rating the application.

If the user chooses to exit the game, the application should be closed.

Use cases. The use case diagram is the initial model with which the modeling process begins in UML. It describes the functional purpose of the system in the most general way from the point of view of all users and stakeholders.

When creating use-case diagrams, two types of entities need to be distinguished – actors and precedents. An actor is a set of logically related roles that interacts with precedents. A precedent is a description of a set of consecutive events including system-performed variants which leads to the observed by an actor result [2].

For a puzzle game, you can create only one actor – a player. The main requirements for the developed application are displayed using the diagram of use (fig. 1).

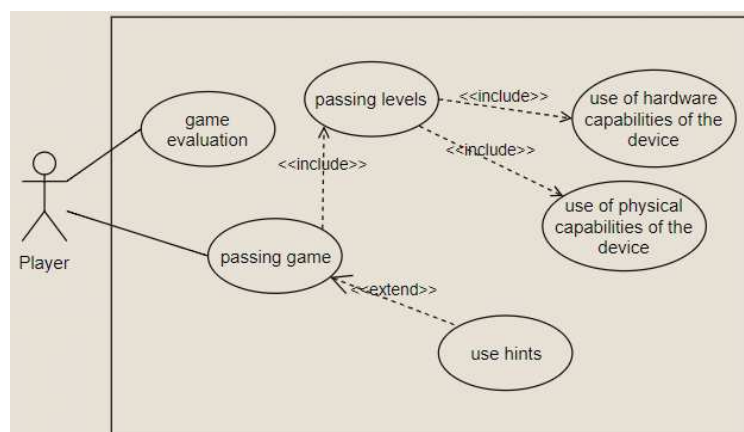


Figure 1. – Use case diagram

The player can interact with the program in various ways: to pass and rate the game. He can use the tips, hardware and physical capabilities of his mobile device to pass the game.

UI development. An important part in application designing takes the development of the user interface. The user interface is a kind of communication channel through which the user and his mobile device interact. Therefore, the efficiency of working with the application depends on the quality of user interface design.

An important task is to develop a graphical user interface. The game application is developed for mobile devices running the Android OS, so it will be built according to the Material Design specification.

A graphical user interface (GUI) is a type of on-screen representation, in which the user has access to all visible on-screen objects (interface elements) and directly can manipulates them. Most often, GUI elements are implemented on the basis of metaphors and display their purpose and properties, which facilitates the understanding and mastering of programs by unprepared users.

The graphical user interface is a form of user interface that allows users to interact with electronic devices through graphical icons and visual indicators such as secondary notation, instead of text-based user interfaces, typed command labels or text navigation. [1].

Any Android application is a collection of Activities and their interaction with each other. Activities are screens that are created using XML markup.

We will develop a friendly graphical interface that will help the player navigate through the application for convenient user experience of the game. The main activities are the main menu, a screen with a level and a menu of tips (fig. 2).



Figure 2. – Main menu prototype

As can be seen from Figure 2, the main screen should have the following:

- large logo with the name of the game in the center;
- three large buttons arranged vertically one behind the other under the logo with the name of the game.

The logo is static and non-clickable.

When you press the conditional button to go to the game application should open the screen with the level (fig. 3).

Now, based on the layout provided in Figure 3, we will develop the concept of a graphical user interface. As can be seen from the figure above, there is information about the current number of "lives", number of player points and button that do return to the main menu. Main area of the level consists of the current task, its condition and button to go to the prompts and bonuses menu. Below main area is the advertising space. An advertising banner will be displayed there if there is connection to the Internet. Otherwise there is a monochromatic empty area.

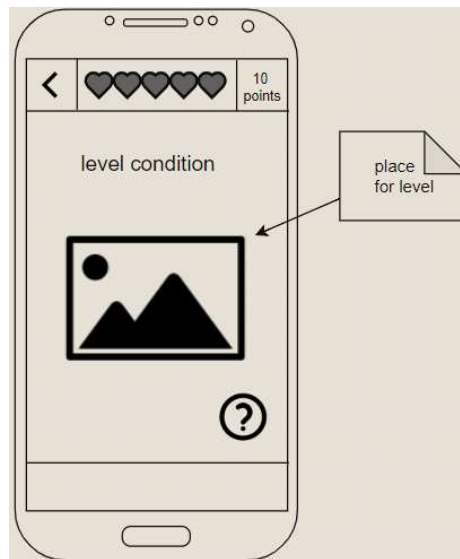


Figure 3. – Screen prototype for game levels

When you click on the conditional button for going to the menu of tips and bonuses, a menu of dialog box opens (fig. 4).



Figure 4. – Prototype menu hints and bonuses

Based on the layout shown in Figure 4, we will develop the concept of a graphical user interface. The menu of tips and bonuses is a dialog box consisting of the "Menu" label and four buttons located one under another:

- "Hint -10";
- "Skip -30";
- "Video advertising +10";
- "Close".

Clicking on the "Hint -10" button displays a small dialog box with the text of the hint and the "X" button for closing and also subtracts ten points from the player's current account. "Skip-30" button allows the player to skip the current level and move on to the next, with thirty points deducted from the player's current account. If

a player clicks on the "Video advertising 30" button, the video with advertisement is played on the screen. After viewing this video, the player gets plus thirty points to his current account points. Clicking on the "Close" button close the dialog box and return player to current level.

Conclusion. In this article the basic functionality was identified, diagram of use cases was created and user interface was developed for the "Flamy - Unusual Puzzle" game application.

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