

REPORT

Topic: «GAME 2048»

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**Introduction**

The internship is a lesson that takes place after a 1-year textbook course. Learning experience shows how to apply what a student has learned in 1 year, what can be done with his knowledge and what is important for the future. We also learn additional lessons in practice. Learning experience is very important for every student. Because you gain experience and improve your knowledge by creating a project. We create projects in educational practice. Project - game creation. That is, make a copy of any game or make it even more beautiful. We were divided into groups, and each group selected the games they liked.

Can write a game in any language. The main thing is to understand and create on your own.

First of all, you need to find out about the game. It is necessary to find out information about the game and in what language it is written. Then you need to determine what parts are needed to make the game. Then you need to analyze and determine who will make which part. It is better to use a block diagram to write the code of the game. Because with the block diagram you can determine what code to write next. Or you can create it quickly by separating the sections in the block diagram. After writing the code of the game, it is necessary to defend it in front of students. To do this, make an abstract and slide presentation. In the abstract you indicate how you created the game, in what language you wrote, what literature you used. And in the presentation you show about the process of creating the game. Then work from the bottom of the list eliminating issues that aren't worth the fight. It is very important because you have to show the teacher how the practice went. That way the teacher will evaluate you.

**Game information**

****2048 is a browser game written by 19-year-old Italian developer Gabriele Cirulli in the JavaScript programming language.[1]

(Figure 1. - Game 2048)

**History of creation**

It's not exactly comparable, but like many other discoveries and inventions in the field of computer software, 2048 was not developed with the goal of creating a successful commercial project. Its author, a young Italian programmer and web developer Gabriele Cirulli, decided to spend the weekend usefully and try his hand at writing programs in JavaScript. As a basis, he took the idea of ​​​​several other digital puzzles (in particular, Threes and 1024). By the end of the weekend, namely March 9, 2014, G. Cirulli shared a link to his creation, which he uploaded to Github, with friends via Twitter. Then something happened that could only happen in the information age - in less than a week in 2048, more than 4 million people played. The 19-year-old developer was amazed by the success of the game, but did not intend to make money from it. In an interview, he honestly said that the idea of ​​​​the application was not original, he only made a modification. Despite this, 2048 was far ahead of similar games released earlier in popularity, and after it became possible to download versions for Android and iOS, 2 months after the first release, the whole world started talking about it, without exaggeration. Not the last role here, of course, was played by the fact that the application was distributed for free. Even publications such as The Times, The Wall Street Journal, and Business Insider came out with positive reviews of this computer game.

In addition to the original version of 2048, over time, a lot of additions and even varieties of the game have appeared, because it is distributed with open source. So, in many versions, leaderboards appeared, the controls were adapted for touch screens. Several modifications were released, where instead of the standard tiles with numbers, figures from Tetris, images of Doctor Who characters, etc. were used. Even separate website builders have been created, where anyone can use anything as a tile. So, students of one university created a version with photos of their teachers, where a tile with a face value of “2” corresponded to a photo of a methodologist, and “2048” corresponded to a photo of a faculty dean.

In addition, the 2048 game code is also used for educational purposes to teach programming.[2]

**Game description**

The playing field for 2048 is a 4 × 4 square (many Russian users immediately noticed this in common with another game “tag”, which has long been popular with us), on which there are two tiles in the starting position (sometimes tiles, from the English “tile” - tiles) are already open. They can be arranged as you like, the options for the initial arrangement are “2” and “2”, “2” and “4”, “4” and “4” (least of all). "Knuckles" can be moved to one of the four sides (if the location does not interfere with this), while when two tiles of the same denomination collide with each other, they become one tile, the value of which is doubled. In one move, a tile can be stacked in different places on the playing field, but only increase its face value once. In other words, if “2”, “2” and “4” are located in a row, then only “2” and “2” can be combined into “4” per move, and the resulting “4” with a block of the same value can only be combined during next move.[3]

### **Rules of the game**

### In each round, a tile of denomination "2" (with a probability of 90%) or "4" (with a probability of 10%) appears.[1]

### (Figure 2. - Rules of the game)

### By pressing the arrow, the player can throw off all the tiles of the playing field in one of 4 directions. If, when dropped, two tiles of the same denomination “bump” one onto the other, then they turn into one, the denomination of which is equal to the sum of the connected tiles. After each move, a new tile with a value of "2" or "4" appears on the free section of the field. If, when the button is pressed, the location of the tiles or their value does not change, then the move is not made.

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### (Figure 3. - Addition of numbers)

### If there are more than two tiles of the same denomination in one line or in one column, then when dropped, they begin to connect from the side they were directed to. For example, tiles (4, 4, 4) in the same row will turn into (8, 4) after moving to the left, and into (4, 8) after moving to the right. This processing of ambiguity allows you to more accurately form the strategy of the game.

(Figure 4. - Addition of numbers in one line)

### **Изображение выглядит как стол Автоматически созданное описание**For each connection, game points are increased by the face value of the resulting tile.

### (Figure 5. - Game record)

### **Изображение выглядит как текст, электроника Автоматически созданное описание**The game ends in defeat if after the next move it is impossible to take an action.

### (Figure 6. - End of the game)

**Records**

A tile with a value of "2048" means that you won, but the game can continue after that. The maximum possible block value is 131,072 (or 217). In addition, many players, following the call of human nature inherent in the thirst for achievement, compete in scoring the highest number of points. The maximum score that can be scored is 3,932,100, but this is an ideal case, and so - each new "4" reduces this amount by 4. There are many videos and screenshots on the Internet with record scores imprinted on them. But it is difficult to say whether a script for automatically passing the game was used to achieve them.

**The game we created**

We have made a copy of the game 2048. I'm not mistaken in saying that the game is not inferior to the original. It is obvious that only one or two corrections will be equal to the original. How did we make the game?

The game is written in Python. Although we learned C ++ for half a year, we wrote with Python. Because when we were looking for information about the game, there was more information with Python than with C ++. When we learned that most of the information we needed was written in Python, we began to study it. We watched a lot of videos about how the game was made. We searched Google for game formats and structures. We also took a Python course at Stepik. And we received a certificate from that site. Once we got the information we needed, we started making the game. Before we started creating the game, we created a scheme. Let's put the parts in order, who will make which part. We created the game in 4 days using an Internet browser.

Изображение выглядит как текст, табличка

Автоматически созданное описание

(Figure 7. – Logic matrix)

**Изображение выглядит как текст, внешний, черный, табличка

Автоматически созданное описание**

(Figure 8. - Logic of motion)

**Изображение выглядит как текст

Автоматически созданное описание**

(Figure 8. - Tile colors)**Изображение выглядит как текст, экран, черный, снимок экрана

Автоматически созданное описание**

(Figure 9. - Buttons that move the tile)

**Conclusion**

In conclusion, the game 2048 can be played by anyone, from a small child to an adult. It is really exciting, and at the same time it is perfect not only to pass the time in line or public transport, but also to do it for your own benefit. 2048 perfectly develops logical thinking, strategic planning skills and spatial imagination. Today, many children play a lot of phone and computer games. If you increase the number of such games, the thinking ability will be very good. It is also necessary to make such games modern and interesting. Whatever game we play, it's better to play games that are useful to us!

**References used**

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