**Requirements**

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| **Functional** | |
| **Name** | **Description** |
| Basic game logic | Dashboard generation**\*** |
| User enters values into cells |
| If desired, the user can delete values ​​from the cells |
| The result is sent for processing and processed according to the rules of the game |
| Depending on the processed result, the user is notified of success or failure |
| Difficulty levels | Dashboard size - level:  6x6 – Easy  10x10 – Normal  16x16 - Hard |
| Notes in cells | Mode in which you can enter the numbers 1-9 together into the cell. For example: |
| Dashboard cleaning | All values ​​entered by the user are deleted |
| «New game» | Clearing the dashboard + dashboard generation |
| Save points | The ability to repeatedly save the state of the dashboard for real-time use directly during a game session**\*\*** |
| The ability to open one of the saved states of the dashboard directly during the game session |
| The ability to overwrite at the user's request a certain state of the dashboard directly during the game session |
| Ranking table | From the start of a new game, a timer counts down how long the game session lasts |
| After the *successful* completion of the game, the timer time is saved in the ranking table |
| According to the number of game difficulties, there are three ranking tables |

**\*** - that is, the answer values ​​in the cells and sum values, not the form of the dashboard.

**\*\*** - game session - game from the start of the timer until the successful completion of the game, until the start of a new game or until the import of the game's own configuration**\*\*\***

**\*\*\*** - the state of the dashboard and the time of the game timer are saved

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| **Non-functional** | | | |
| **Name** | | | **Description** |
| Architecture | | | The ability to easily add new functionality and remove the old one.  Low interdependence and strong ties.  We are developing the architecture in such a way that in the future it is possible to easily replace one place of data storage (e.g., JSON files) with another (e.g., database), with the ability of dynamically changing the number of ranking tables in the event that we add game difficulty levels in the future, with the easy ability of adding new game difficulty levels. |
| User interface | Dashboard | |  |
| There are three forms of the dashboard, respectively, for the three difficulties of the game. |
| External settings dashboard view and application | | + the function of showing the correct answers - to check the correctness of the game. |
| Speed, efficiency and system load | | | * unnecessary data should not be uploaded; * there should not be a bunch of redundant intermediary classes; * fast dashboard generation; * fast uploading of data. |
| Data storage | | | * unnecessary data is not stored; * no more than 10 files either for the ranking table or for save points; * since there can be a lot of data at the same time, the cache is not needed. However, it is worth uploading the necessary data as necessary, for example: * when talking about save points. The application may show that there are ten of them in total, but they are all saved at this moment not in the program, but in files, and only when the user clicks on one of the representations of one of the save points, then only then the data of this save point is loaded into the program . Although it is possible to create a cache, for example, for the last 3 applied save points; * when we talk about the ranking table, it is more rational to upload all the data at once, because the user can go to the ranking table at any second and do it often. And here it is too much to upload data every time in one moment. |
| Technology stack | | | Visual Studio 2022, .NET 8.0, WPF |
| Hardware requirements | | Processor | Intel ® Core ™ 2 / 2 Duo / Pentium ® /  Celeron ® / Xeon™ / i3 / i5 / i7 чи AMD 6  / Turion ™ / Athlon ™ / Duron ™ /  Sempron ™ with clock frequency no  lower 1.5 GHz. |
| RAM | At least 2GB of RAM is recommended |
| Hardware architecture | — 32-bit (х86);  — 64-bit (х64). |
| Target platform | | | Windows 10 |
| Stability | | | If the system shuts down unexpectedly or the user hard closes the program, data is automatically saved. |
| Security | | | Limit the user's ability to edit saved files directly through the file explorer. |
| Usability | | | There should be data deletion protection in the program directly. For example, dialog boxes that ask for user permission. |
| Localization | | | Ukrainian and English languages |