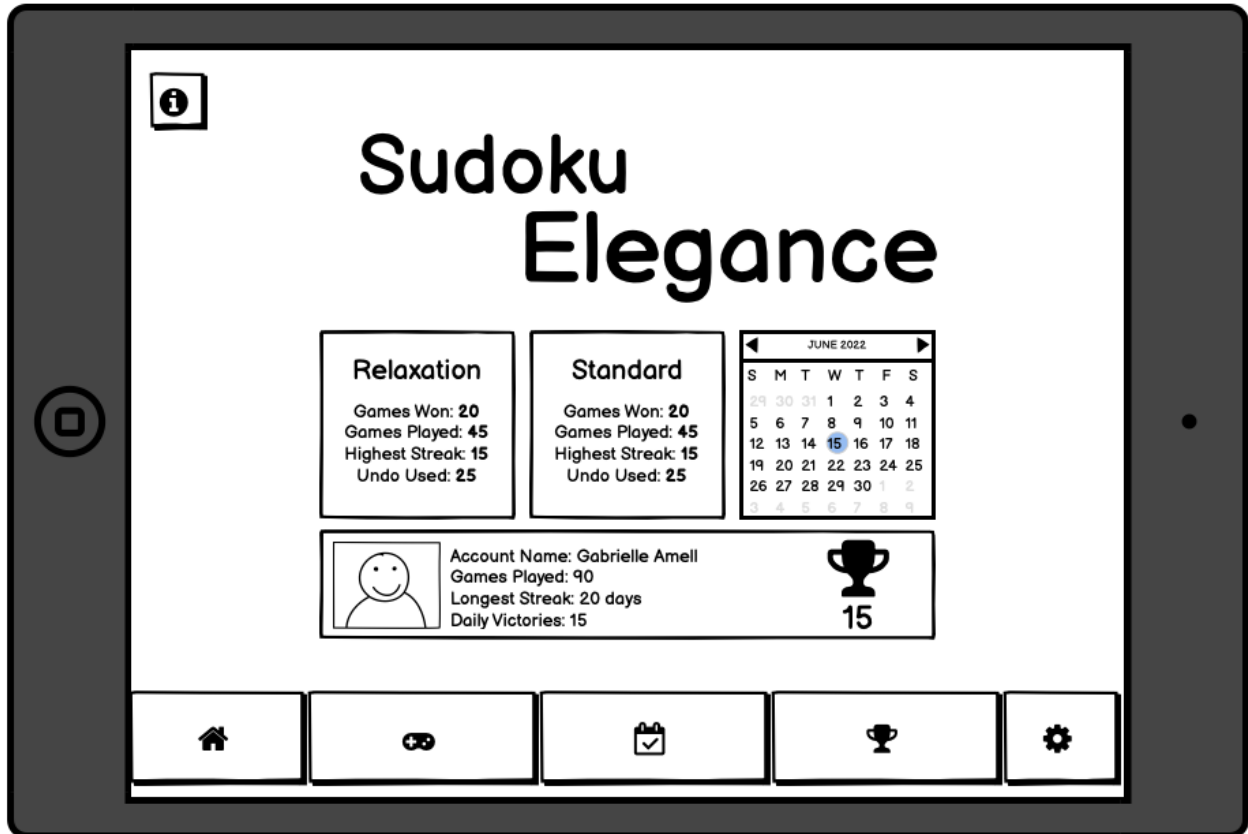


Sudoku Elegance

- An extremely polished Sudoku game for iPad Users -



1. Overview

This section covers the overall scope of the project, the design focus elements, overall details and high level monetization strategy.

1.0 Sudoku Rule Set

- Each sudoku puzzle is composed out of a 9x9 grid with blocks made out of 3x3 cells.
- Each 3x3 cell can contain 9 numbers, from 1 to 9 and each number is unique inside of the cell.
- The same number at a given cell position should not be used anywhere on the same ROW or COLUMN
- The sum of all numbers in a row, column or cell should be 45 if all cells are filled

1.1 High Level Goals

Sudoku Elegance is a sudoku game designed from the ground-up for the iPad and its accessories. The game is designed to leverage the use of an iPad or iPad Pro-like devices through the touchscreen, using the apple pencil or using the Magic Keyboard accessory.

The goal of the game is to offer a sudoku experience with a high production value fit for the iPad environment.

1.1.1 One Line Pitch

Sudoku Elegance is the sudoku game that Apple should have shipped with the iPad!

1.2 Overall Design

The game's overall design embraces a landscape iPad Orientation and allows for smooth navigation and transition between scenes. Every action the player can perform in the game requires a speedy and elegant feedback animation:

- Inputting a number that's validated properly in a field should be followed by a small feedback animation
- Correct inputs should be accompanied by a validation animation
- Completing the puzzle should reward the player with a satisfying particle effect
- Switching between menus should behave as if you're switching between apps via iPad's Multitasking or Stage Manager App.

The player should be able to play the game via

- Touchscreen
- Apple Pencil

- Tap to select field
- Draw the number or
- Tap with the pencil on the number you want
- Scratch to erase a number
- Mouse
 - Click to select a field
 - Click on a number to input it
- Keyboard
 - (navigate with arrow keys / wasd)
 - Press on a number from the top row to input it in a selected field
- Any combination of touch, pencil, keyboard and mouse/touchpad

1.3 Monetization

Sudoku Elegance is targeted towards casual gamers, puzzle game players and older people who aren't part of the mid to high level gamers. People who just purchased their first iPad are part of the prime target audience.

The game will not feature advertising or in-app purchases as part of its monetization scheme. Every part of the game's content will be completely accessible for free.

Instead the game will be used to leverage and bring new traffic towards the website BestSmartphone.Games in order to boost the blog's traffic and revenue. Optionally the game can feature a Skin Interface unlock system that uses codes to unlock additional skins. In order to obtain the codes the player will have to search for "Unlock Codes for Sudoku Elegance" which will take them to a page on BSG.

2. Gameplay

This section covers all areas related to gameplay, from different game modes to board behaviors, effects and animations, as well as control schemes and interactions.

2.1 Game Modes

The game is primarily targeted towards new and casual players and aims to offer a premium casual experience. As such the game modes made available by the game should focus on relaxation and calmness with no pressure towards the user.

The game will start up on the first run straight into the Relaxation Mode where players can experiment with the game, learn the rules and complete their first sudoku without pressure or challenge.

The secondary game mode available to the player is the Daily Challenge mode. Each day a new Sudoku Seed is generated based on the Date. Players can compete in solving the challenge but if they fail, they won't be able to access the game mode until the next day.

2.1.1 Relaxation Mode

Relaxation mode is the default gameplay mode that players can access by tapping on the Game Tab (see section 3.2 Gameplay Screen). In this game mode players have an unlimited number of undos, erases and mistakes at their discretion with no fail states.

If a player cannot find a solution to the current sudoku puzzle he will be able to generate a new one by pressing the "New" button. In this mode the following statistics are tracked (to be displayed on the home screen):

- Erase
- Undo
- New
- Number of puzzles completed
- Numbers of puzzles completed without using the Erase or Undo button
- Time to complete the puzzle since New was pressed.

2.1.2 Daily Challenge

The Daily challenge is a Once Per Day event that uses the current Date as a seed for generating a Sudoku Puzzle. The same puzzle is available for every single player of the app and by solving this puzzle the player's result is added to a global leaderboard (via iOS Game Center).

2.1.2.1 Daily Challenge Rules

- Uses the current DATE as a seed for the puzzle generation
- Players start the puzzle with a default score of 100 points (awarded upon completion)
- Players can make up to 5 mistakes. Each mistake costs the player 24 points.
- Upon making 5 mistakes the puzzle is marked as failed and the player receives 4 points that are added to his leaderboard entry.
- If the player completes the challenge he receives 100 points - (number of mistakes * 24) + 5 * (number of successive days of victory).
 - If the player won 5 days in a row, on the 6th day he will receive 100 points - 0 (mistakes) + 5 * 5 (days) 125 points!
 - If the player won 2 days in a row, on the 3rd day he will receive 100 points - 0 (mistakes) + 5 * 2 = 110 points
- Players cannot restart the daily challenge once it started
- The Undo and New buttons are disabled during the daily challenge and replaced with a Mistake Counter
- There's no time limit to complete the daily challenge.

During the daily challenge the following statistics are tracked:

- Erase
- Days played
- Puzzles Won
- Time per puzzle
- Number of puzzle completed
- Number of mistakes made in total
- Number of puzzles completed with no mistakes
- Total Points accumulated

2.2 Control and Interaction

There are 4 modes of interacting with the game and all 4 of them can be used individually or together, depending if the player has any or all required accessories.

2.2.1 Touch Screen

Using the finger the player is able to tap on all the ui elements and navigate through all the tabs. In order to select a square to input a number the player must use his finger, tap on the square to select it and then tap on a number to input it into the square.

If the number imputed is wrong (according to the sudoku rules) the device will vibrate, outputting a “Failed Haptic” feedback effect and the square will shake and receive a red hue effect for a second.

If the number selected by the player is correct (according to the sudoku rules, section 1.0) the device will vibrate, outputting a “Success Haptic” feedback effect and the square will receive a green hue effect for a second.

The player must be able to swipe between tabs (Home <-> Gameplay Screen <-> Daily Challenge Tab <-> Leaderboards <-> Settings Menu) using 3 fingers.

2.2.2 Apple Pencil

Apple pencil input should work similar to how the Touch Screen input works with a few small differences:

- By scribbling with the Apple Pencil over a field the number marked in the field would be erased (similar behavior to how scribbling over text on iPad erases the text)
- You can drag and drop a number from the right side of the screen over any empty field to “drop it” on the field
- You can draw the number itself inside of the field as you would with a normal pen and paper for sudoku.

In all other cases the Apple Pencil inputs behaves just as a finger would for navigation and tapping on UI elements.

2.2.3 Mouse Input

Mouse input is a direct, 1-to-1, implementation of the touch screen / finger input implementation and leverages Apple's mouse integration. No specific implementations are needed to be done for mouse input outside of making sure mouse permissions are enabled for the game.

2.2.4 Keyboard Input

Keyboard input allows the player to Input various numbers inside of selected fields as well as quickly toggle between tabs or offer shortcuts for commonly used gameplay buttons.

- Pressing any number from 1 to 9 will input the number inside of the selected Sudoku field.
- Pressing H will take the user to the Home Tab
- Pressing P should take the player to the Gameplay Screen
- Pressing D takes the player to the Daily Challenge Tab
- Pressing L takes the player to the Leaderboards Screen
- Pressing S takes the player to the Settings Menu.

Key combinations allow for fast triggering of gameplay functions such as:

- CMD + Z should undo/remove the last imputed number
- Delete should erase the currently selected field
- CMD + N will bring up the prompt for starting a new game
- CMD + H will give the player a HINT

3. User Interface & Navigation

This section covers the UI, UX and Navigation aspects of the game, contains wireframes and details UI changes between game modes as well as information on the Skins available in the game.

The game's User Interface has a Holistic Approach with all of the game core screen being instantly accessible from a single screen. The game itself is developed using only 2 Unity Scenes:

- Pre-Loader (or Splash Screen)
- GamePlay Scene (where the entire game takes place)

The Pre-Loader scene is used to load and deserialise any local data saved on the device (background, skin, player name, level, etc).

The GamePlay Scene is the actual scene that contains the entire game, menu and navigation elements.

Upon starting the game for the very first time the player is taken directly to the Gameplay Scene in the Gameplay Tab with the ruleset set to Relaxation. Here the player is free to explore and engage with the game itself at his own pace.

Subsequent game launches will take the player to the Home Screen.

3.0 The Navigation Tab

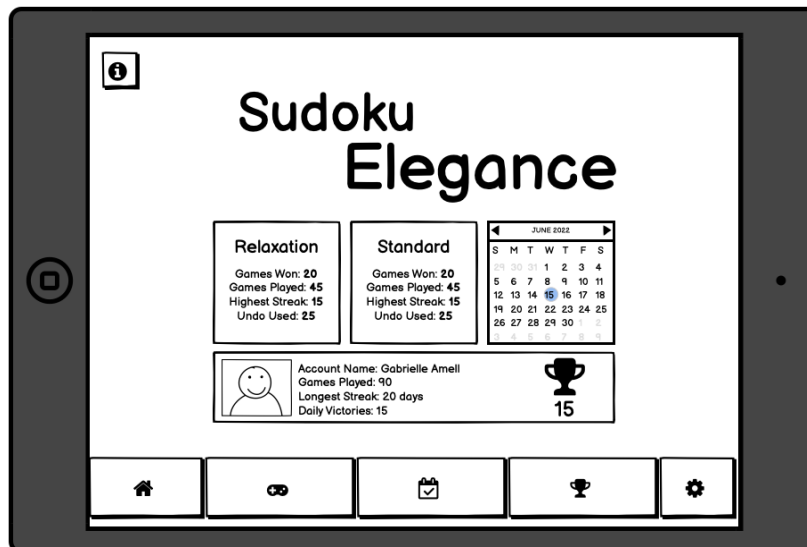
The Navigation tab is a TAB present on the lower part of the screen and contains navigation buttons to all the scenes available in the game. It's present in all screens and scenes except the Pre-Loader scene.

Buttons on the Navigation tab include:

- Home
- Gameplay
- Daily Challenge
- Leaderboards
- Settings

3.1 Home Screen

The Home Screen represents the player's report card and contains data such as the player's Game Center name (or just "You" if no game center permissions or account exists), number of games played, win rate, loose rate and Daily Challenge Win Streak.

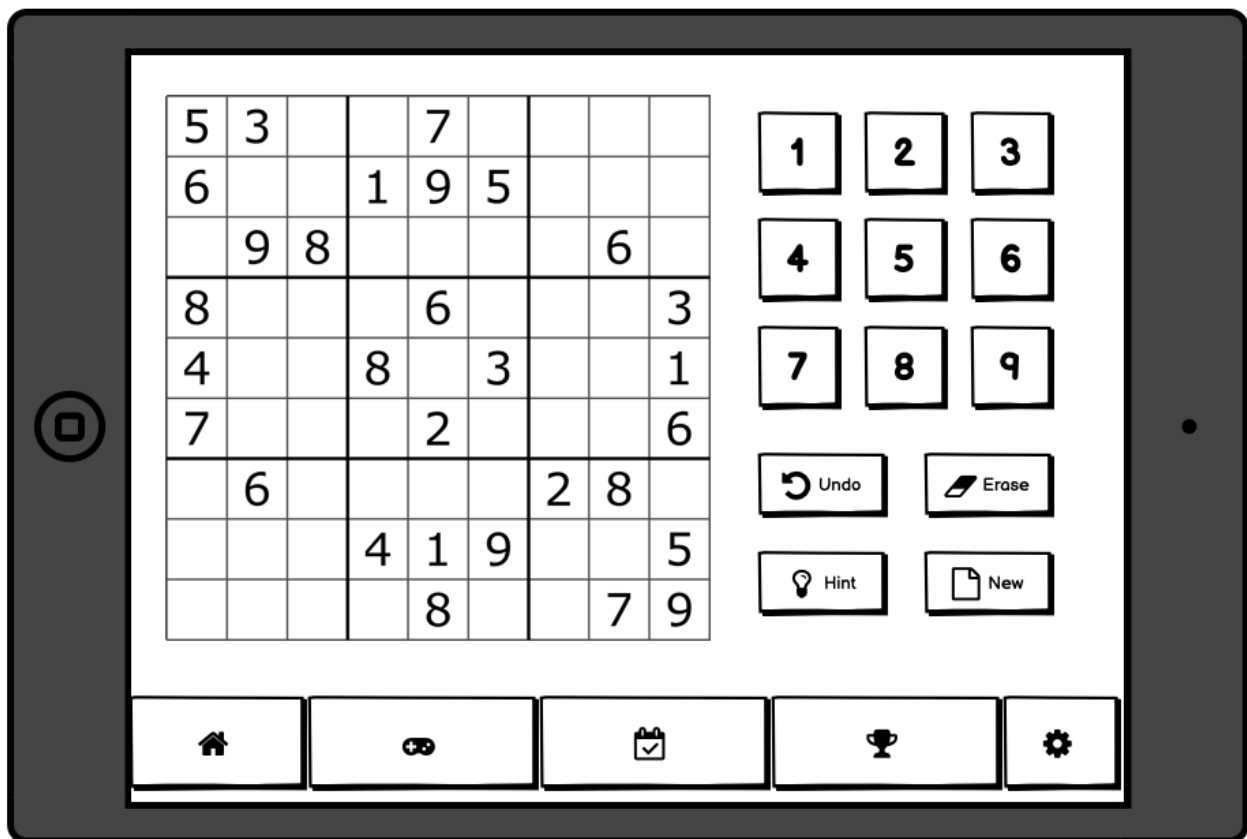


The top part of the screen contains the game's logo. Below it there are three areas:

- Relaxation area

- Contains player data on how many games are played, how many victories, how many games canceled, Undo/Erase actions used and Win Streak
- The Daily Challenge Tab (named Standard in the mockup above)
 - contains the same data as the relaxation area but only applied to the Daily Challenge mode.
- The third tab is a calendar tab showing the player's activity inside of the game - days when the player logged in).
- The User Account area displays a player Game Center avatar, the account name, the total number of games played, Daily Challenge Victories, Longest Daily Challenge Streak and, on the right side, the player's position in the Leaderboards.

3.2 Gameplay Screen



The Gameplay screen is where the player will spend most of his time interacting with the game. The screen is divided into two main areas + the navigation tab at the bottom.

The Main Area (or the sudoku area) is where the sudoku puzzle is generated. The player must select an individual cell and then tap on a number to apply that number to the cell.

When the player selects an empty cell, the entire block + row and column is highlighted so he can be visually aided in doing his checks for other numbers.

3.2.1 Relax Mode UI

During the main game mode “Relax” players have access to all game options (Undo, Hint and Erase as well as the option of starting a new game).

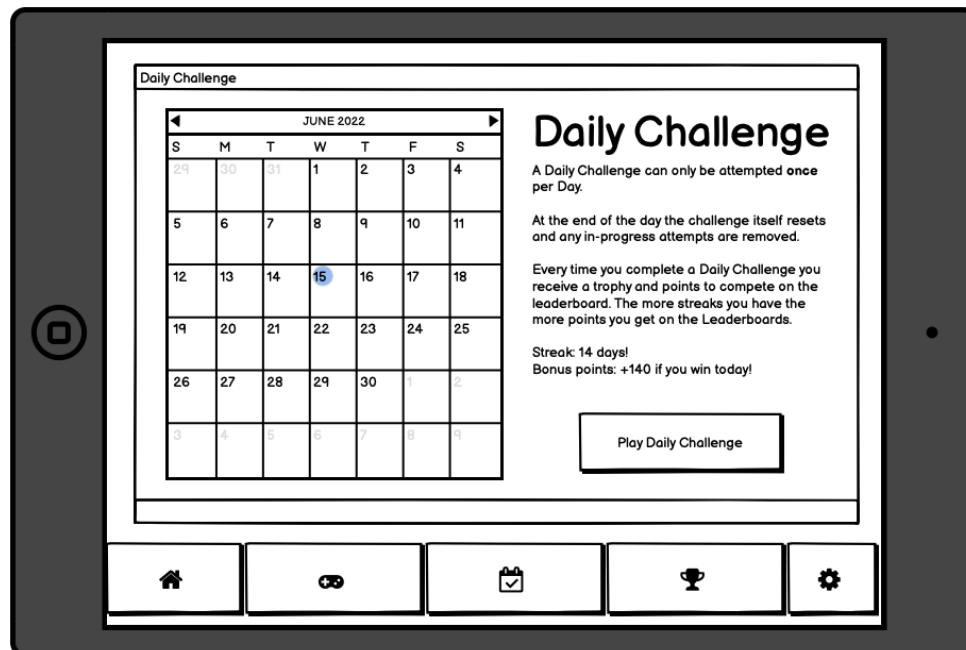
- Undo - automatically erases the last number entered
- Erase - allows you to manually erase a previous entry entered anywhere on the screen
- Hint - fills in the correct number on a cell
- New - starts a new puzzle

3.2.2 Daily Challenge UI

During the Daily Challenge game mode all game options are disabled and hidden from the player. In lieu of them statistics are displayed to the player such as:

- Mistakes: shows how many mistakes the player has done and how many he has available. Example: 3 / 5 mistakes
- Cells left: How many numbers left to fill in (20)
- Time: How many hours : minutes : seconds have passed since he started the game
- Score: How many points he has accumulated so far (see section 2.1.2 Daily Challenge).

3.3 Daily Challenge Tab



The daily challenge tab is the 3rd tab available to the player. On accessing it for the very first time during the day the player will be greeted by a Window that contains:

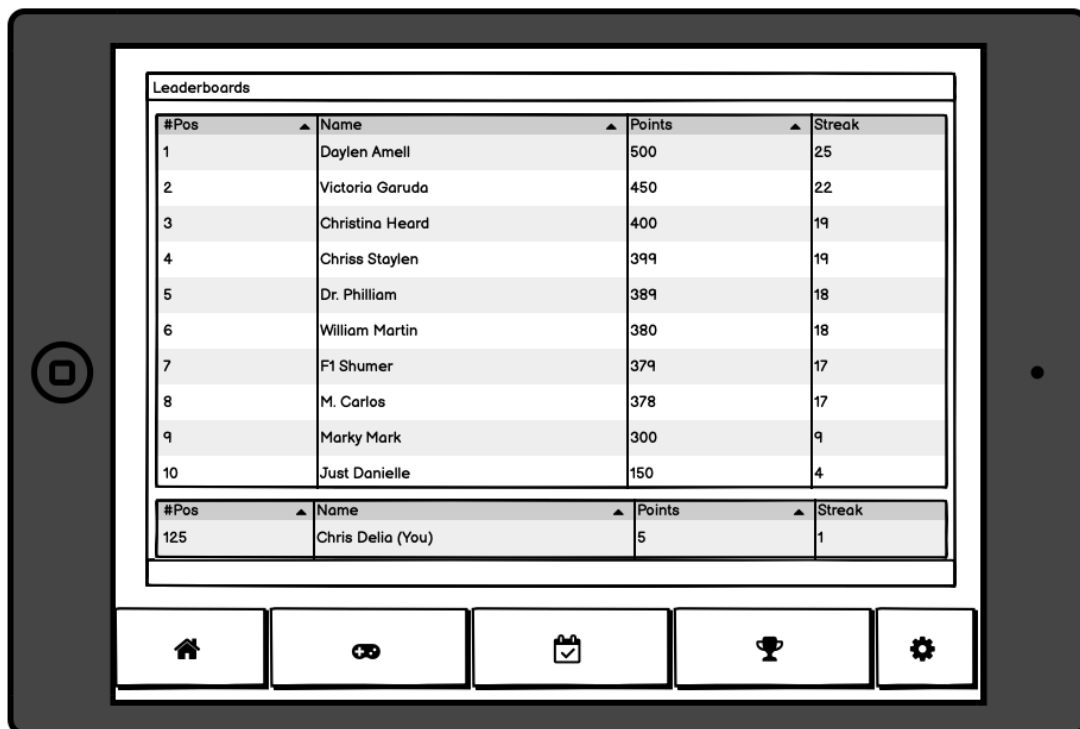
- This month's calendar
 - Every day where the player has participated in a Daily Challenge will be marked with a yellow circle

- Every day that the player has successfully completed a Daily Challenge will be marked by a green circle with a small trophy on it.
- Tapping on a day will reveal a small pop-up containing the amount of points he accumulated on that day.
- A text area with the rules for the challenge
- A call-to-action button inviting the player to take part in the Daily Challenge.
 - By pressing the call to action button the game will set the Daily Challenge flag to “True” and will take the player to the Gameplay Screen with a “Daily Challenge” ribbon appearing on the top of the screen.

Tapping on the Gameplay tab will take the player to the normal (non-daily challenge) game mode. Tapping on the Daily Challenge tab will take the player to the Daily Challenge Gameplay screen.

If the player doesn't complete the daily challenge by 11:59:59 PM his progress will be reset and he will be presented with the normal Daily Challenge interface once again.

3.4 Leaderboards



The leaderboard interface contains a list of all players that play the daily challenge. The entire list is synced with Game Center and data is pulled and submitted to Game Center.

The leaderboard section is split between two views:

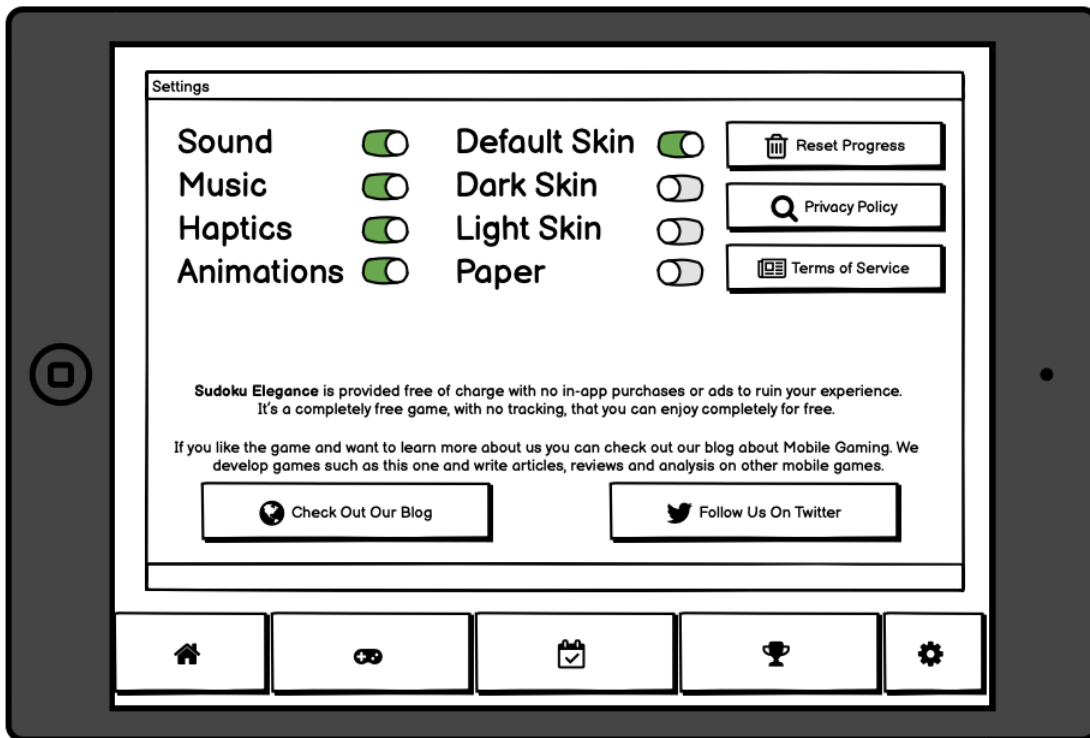
- The full scrollable list, containing all of the players data pulled from Game Center

- A single entry list that shows the player's data, his position, number of points and daily streak value (biggest streak).

Leaderboard content:

- #Position - tracks and displays the ranking of all players
- Name - game center displayed account name
- Points - how many total points the player has accumulated
- Streak - how many days in a row did the player take part in

3.5 Settings



The settings screen allows the player to toggle various game settings, reset his local progress (calendar, streaks, points, etc), change between the game skins and access the Terms of Service or read the Privacy Policy.

We're also going to feature a link to www.BestSmartphone.Games and twitter account (@[bsgreviews](https://twitter.com/bsgreviews)).

Togglable settings:

- Sound - turn the Audio Sources marked for the SFX channel on or off (volume 100% or 0%)
- Music - turn the Audio Sources marked for Music effects on or off (volume 100% or 0%)
- Haptics - enables or disables haptic vibrations that provide feedback for good, bad, erased entries, either via touch, pen or keyboard

- Animations - disables or enables background animations and effects (like cells filling with color)

3.6 Skin System

The Skin System allows the player to choose between 4 different background animations and effects to be used in the game.

In order to avoid spending too much time on making ui variations for different colors we will instead employ a simple, clean, and transparent UI similar to the iPadOS 16 Weather App UI and leverage existing animated particle backgrounds that allow the lerp of colors and switching particle graphics.

The player can toggle between skins/backgrounds in the settings menu. Skin names present in the mockup are subject to change.

Background and animations for the skin system should be minimalistic and avoid too much distraction for the player (especially older players). Animations must employ a bokeh or blur effect and make sure the intensity of the rendered particles isn't high. More subtle animations are appreciated.

4. Technology and Planning

This section covers the technology used to develop the game, and overview of the tasks, bottlenecks, implementation and required assets to build the game. It also contains an estimation of how long development should last and when the tentative release date is.

4.1 Game Center Integration

The game makes heavy use of Apple's Game Center API for the following features:

- Leaderboards - the main game center integration that keeps track of a player's score, streak and progress in the Daily Challenge
- Achievements
 - The game is going to feature 10 achievements:
 - Play your first game
 - Play your first daily challenge
 - Win a normal sudoku game
 - Win a daily challenge
 - Get to a 5 day Daily Challenge Streak
 - Get to a 10 day Daily Challenge Streak
 - Win 5 Daily Challenges in a Row
 - Use the hint button 100 times

- Reach TOP 50 in the leaderboard
 - Win 30 Daily Challenges
- Game Center Data
 - User account name
 - User avatar

For more integration information: [developer.apple.com documentation](https://developer.apple.com/documentation).

4.2 Save File Data

The save file is stored locally on the player's device and can be removed by the player through a Remove Progress inside of the Settings Menu (note that leaderboard data cannot be removed).

The most important save file variables:

- [string] Account Name: {default} You
 - It gets replaced by the Game Center account name if available
- [int] Games Played
- [int] Relaxation Games Played
- [int] Relaxation Games Won
- [int] Relaxation Undo's Used
- [int] Relaxation Erase Used
- [int] Daily Challenge Games Played
- [int] Daily Challenge Games Won
- [int] Daily Challenge Undo's Used
- [int] Daily Challenge Erase Used
- [int] Daily Challenge Mistakes
- [int] Daily Challenge Best Time (seconds, convert in game to minutes)
- [int] Skin Selected
- [int] Daily Challenge In Progress
- [string] Daily Challenge Start Date Time
- [Sudoku Data Type] Relax Game Mode Board Save State
- [Sudoku Data Type] Daily Challenge Game Mode Board Save State
- [List<DateTime>] Days Played All
- [List<Date Time>] Days Played With Victory In Daily Challenge

4.5 Development Timeline

The Development timeline is not set in stone and what is present here should be taken as orientative data not an accurate depiction of how things are going to go.

4.5.1 Pre-Production

Pre-Production Phase Start: June 18th 2022

Pre-Production Phase End: June 27th 2022
Total Man Hours: 40 hours (15 Design, 25 Programming)

[Design]

- Game Design Document
- Wireframes and Mockups
- Background Particles and Assets Mockup
- Clean UI elements creation

[Programming]

- Sudoku Engine (erase, add, select numbers)
- Pop-up system
- Background toggle system
- iOS Keyboard Implementation (unity does not support it natively)
- Barebones Game Center Implementation and Hook (send, return Game Center data)

4.5.2 Production

Production Phase Start: June 28th 2022
Production Phase End: July 24th 2022
Total Man Hours: 160 Hours (30 Design, 130 Programming)

[Design]

- Informational Content for the game (help, info, about text)
- Background Effects for the Skin System
- Economy CSV Files
- Asset Store description

[Programming]

- Sudoku Puzzle Generator
- Sudoku Solver Engine
- Working UI Navigation
- Switchable Backgrounds and Asset Import
- Leaderboard System
- Game Center synchronization
- Save System

4.5.3 Pre-Release

Pre-Release Phase: August 2nd 2022
Pre-Release Phase End: August 9th 2022 (Space Mercs Anniversary?)
Total Man Hours: 40 Hours (25 Design, 15 Programming)

[Design]

- Asset Store Screenshots

- Asset Store submission documents
- BSG Blog article with the title “How Does A Game Design Document Look like?”
- BSG Blog article
- BSG Blog article that focuses on keywords:
 - Premium Sudoku Game for iOS
 - Premium Sudoku Game for iPad
 - Premium Sudoku Game No Ads
 - Premium Sudoku Game Free
 - Sudoku Game No Ads No iAP
 - Sudoku Game Free no Ads No iAP

[Programming]

- Bug Fixing
- App Store submission issues / changes
- Testing

4.6 Budget

Total Hours: 240 hours

Cost Per Hour: \$30

Estimated Implementation Cost: $240 * 30 = \$7200$

Asset Budget: \$800

Total Estimated Budget: \$8000

4.7 LiveOPS and Possible Ports

The game can be adapted and ported to more mobile devices while retaining the free price. PC (Windows, Linux, Mac) ports can be done and release through steam for a \$4.99 with specific steam integrations (Trading Cards, Achievements, Steam Leaderboards)

4.7.1 Post Launch Update 1 - Free

- New Game Mode with the Daily Challenge Rules but multiple plays per day / non-ranked
- Monthly Challenge
 - Every month a picture built out of 16x16 tiles is revealed to the player
 - Every time the player completes the New Game Mode (Standard?) a tile is revealed
 - If the player completes all 256 games the image is added to a gallery of collectible and an achievement is unlocked with the month's name

4.7.3 iPhone & Android Phones Port - Free

- Port the game to work in Landscape for iPhone Devices
- Release with Android Tablet support for Landscape

4.7.4 PC & (Full) Mac Port - \$4.99

- Port the game to work on PC's and Macs (full Mac Support, no iPad version on M1 macs like during normal release, Linux and Windows)
- Release the game on steam with Steam Leaderboard and Steam Community Features
- ReVamp options screen to support togglable graphics, Window Mode, Low Power Mode and [Maybe] Gamepad Support

4.7.5 Steam Update 1 - Friend Challenge Mode

- Play a 1 v 1 sudoku game vs a friend with each player having the same board but not being able to see the numbers imputed by the other player (just the cell imputed on changes color).
- Separate Challenge Leaderboards