



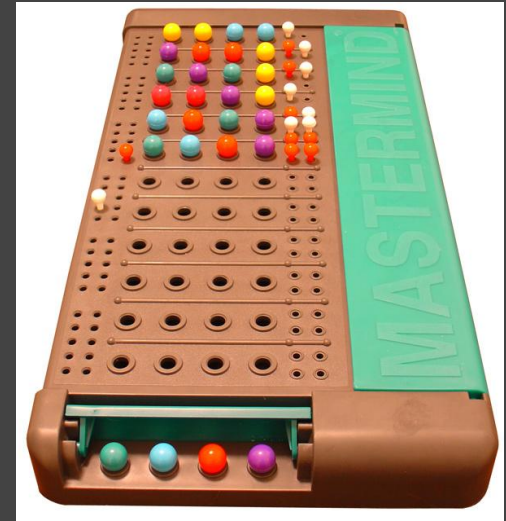
Mastermind

Group 204 - Trident

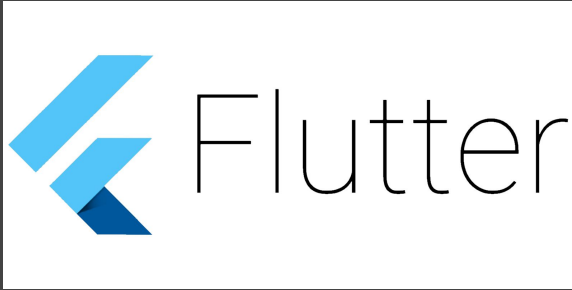
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Project Background & Purpose

- Mastermind is based off the classic 1970's board game
- Original implementation was a command line version developed in Python
- Our team wants to redevelop the game into a mobile application

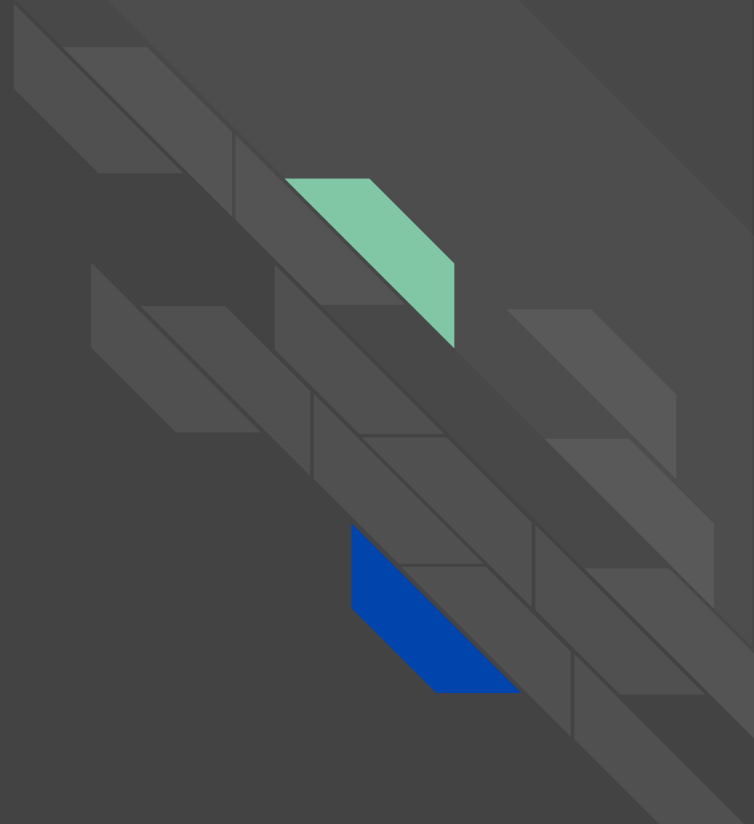


Project Scope



- Technologies Used:
 - Dart & Flutter
 - Android Studio
- Intended Consumers:
 - Children over the age of 4
 - Academia/Professional Psychologists

Demonstration





Mastermind Qualities

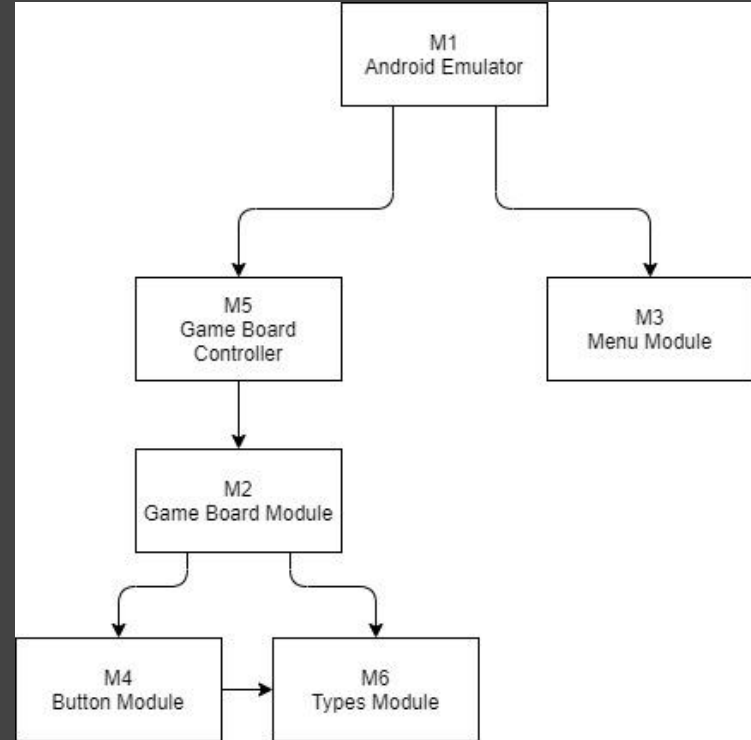
- Portability:
 - Runs on both iOS and Android devices
 - Runs on devices of varying screen size
- User-Friendliness:
 - Simple design & instructions for new users
- Maintainability:
 - Decomposition of code into modules



android 

Module Decomposition

- Hardware Hiding Modules:
 - Android Emulator
- Behaviour Hiding Modules:
 - Game Board Module
 - Menu Module
 - Button Module
 - Types Module
- Software Decision Modules:
 - Game Board Controller



Testing Methods Used



- Manual Testing:
 - Hard to write unit tests for visual features
 - Validate proper GUI functionality by hand
 - E.g. Ensuring buttons are in their proper position on the board
- Automated Testing (flutter_test):
 - Logic of the game

Difficulties With Development

- First time using Dart and Flutter
- First mobile application the team has developed
- Difficulty directly translating MIS to code
- Properly registering button presses

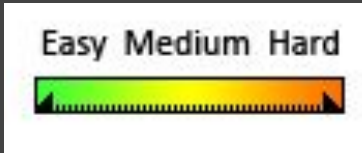
next_move(*b*):

- output: is_end_state()
- transition:
 - num_buttons, board := num_buttons + 1, board.add_button(*b*)
 - (num_buttons % 4 = 0) ⇒ validate_guess()
 - board.draw_board()
- exception: None



```
void add_button (ButtonT button){  
    buttons[currButton] = button;  
    currButton++;  
    if(currButton%4 == 0) {  
        draw_hints();  
    }  
    notifyListeners();  
}
```


Future Development Plans



- Possible additions that can be made in the future:
 - Varying levels of difficulty
 - Support for multiple languages
 - Desktop version
 - “Play a Friend” mode
 - Add a leaderboard





Thank you for listening!