

# Sudoku Project Viva CheatSheet

## Project Overview

Flutter Sudoku Game – Material 3 UI, Easy/Medium/Hard levels, 9x9 grid, Undo, Dark/Light theme, Responsive UI, Splash → Menu → Difficulty → Game → Settings.

## Folder-wise Summary

- lib/main.dart → App entry point, runApp(), MultiProvider, theme, routing.
- lib/providers/game\_provider.dart → Sudoku logic, grid, validation, undo/reset, difficulty setup.
- lib/providers/theme\_provider.dart → Theme & color schemes, Light/Dark toggle.
- lib/screens/splash\_screen.dart → 5s splash, navigates to menu.
- lib/screens/main\_menu\_screen.dart → Menu with “Play” & “Settings”.
- lib/screens/difficulties\_screen.dart → Easy/Medium/Hard select → game init.
- lib/screens/game\_screen.dart → Main gameplay: grid, number pad, undo/reset.
- lib/screens/settings\_screen.dart → Theme change UI.
- lib/widgets/sudoku\_grid.dart → Draws 9x9 grid, highlights, conflicts.
- lib/widgets/number\_pad.dart → 1–9 buttons, clear, undo actions.
- pubspec.yaml → Dependencies (provider, flutter), assets.

## 100 Viva Questions (Highlights)

- What is the project? → Flutter Sudoku Game with Material 3.
- How grid represented? → 9x9 list of lists (List<>).
- How Undo works? → Stack keeps move history; pop to revert.
- How Theme changes? → Provider updates ThemeData; UI rebuilds.
- What happens when puzzle solved? → Grid full & valid rows/cols/boxes.
- Which file for difficulty? → game\_provider.dart.
- Which file for settings? → settings\_screen.dart.
- Entry point? → main.dart.
- Splash timing change? → splash\_screen.dart, adjust Future.delayed().
- Add new difficulty? → difficulties\_screen.dart + game\_provider.dart.

## Common Code Modification Questions

1. Add “Redo” → game\_provider.dart (reverse of Undo stack).
2. Block invalid input → modify validation in game\_provider.dart.
3. Add Expert difficulty → new case in game\_provider.dart + button in difficulties\_screen.dart.
4. Add timer → game\_screen.dart with Timer.periodic().
5. Add theme persistence → theme\_provider.dart + SharedPreferences.
6. Change border color → sudoku\_grid.dart decoration.
7. Add About screen → main\_menu\_screen.dart → Navigator push.
8. Add sound toggle → settings\_screen.dart + new provider.
9. Keyboard input → game\_screen.dart → RawKeyboardListener.
10. Change Splash duration → splash\_screen.dart.

## Quick One-liner Answers

- App entry → lib/main.dart.
- Game logic → lib/providers/game\_provider.dart.
- Theme mode → lib/providers/theme\_provider.dart.
- Main gameplay → lib/screens/game\_screen.dart.
- Grid render → lib/widgets/sudoku\_grid.dart.
- Input pad → lib/widgets/number\_pad.dart.
- Dependencies → pubspec.yaml.

## Bonus Tips

- Folder architecture: providers = state, screens = pages, widgets = UI.
- Flow: Splash → Menu → Difficulty → Game → Settings.
- Prepare 2–3 custom improvements to mention confidently (e.g., Undo stack, highlight logic, responsive layout).