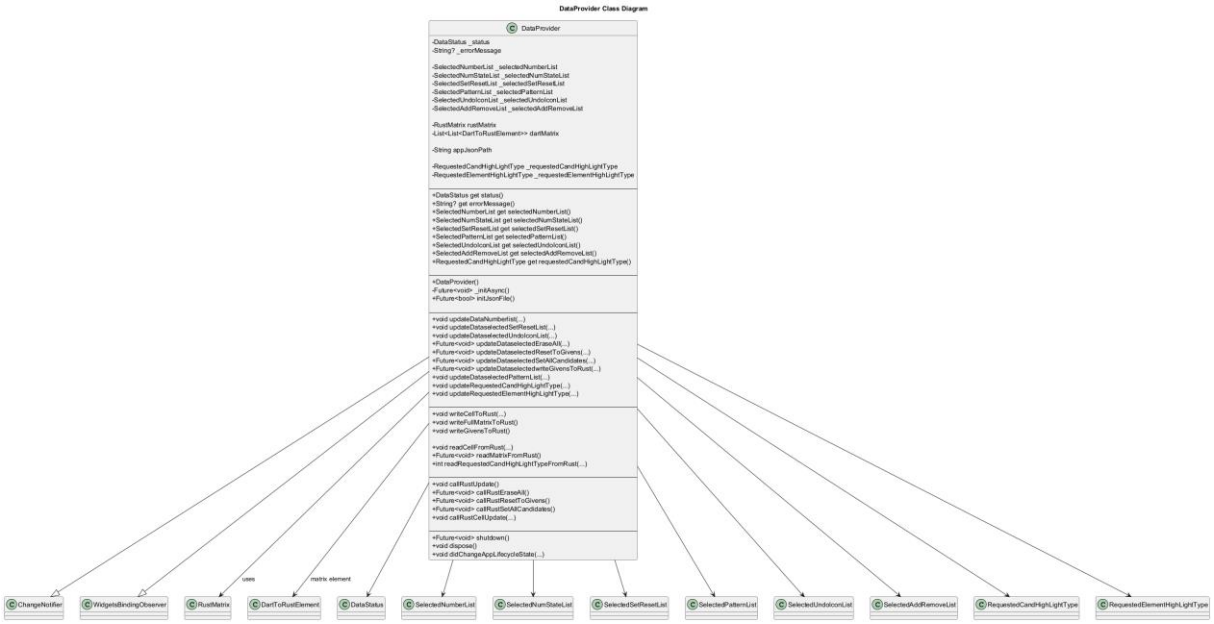
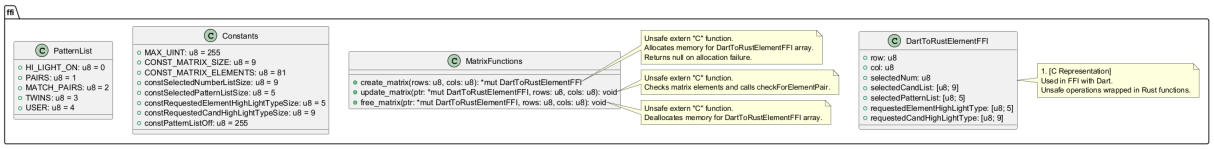
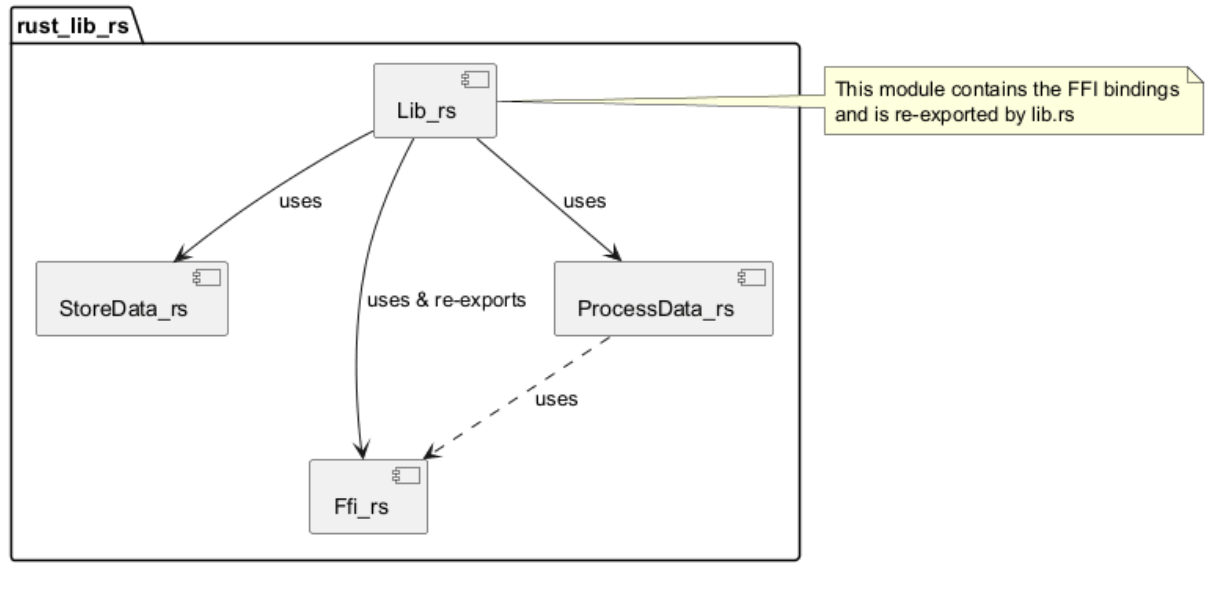
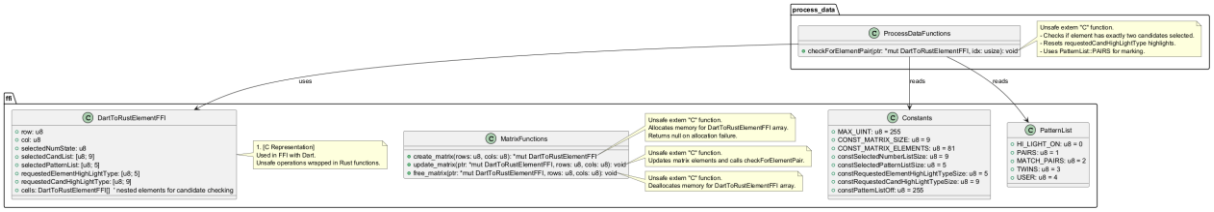
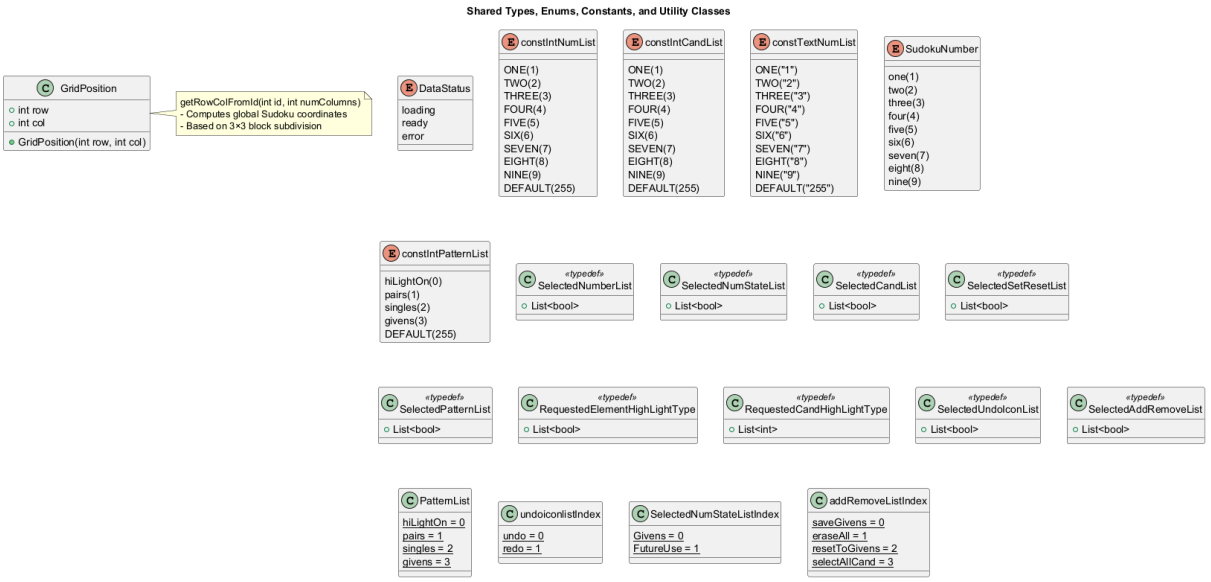

DataProvider Class Diagram
DataProvider
-DataStatus _status
-String? _errorMessage
-SelectedNumberList _selectedNumberList
-SelectedNumStateList _selectedNumStateList
-SelectedSetResetList _selectedSetResetList
-SelectedPatternList _selectedPatternList
-SelectedUndoIconList _selectedUndoIconList
-SelectedAddRemoveList _selectedAddRemoveList
-RustMatrix rustMatrix
-List<List<DartToRustElement>> dartMatrix
-String appJsonPath
-RequestedCandHighLightType _requestedCandHighLightType
-RequestedElementHighLightType _requestedElementHighLightType
+DataStatus get status()
+String? get errorMessage()
+SelectedNumberList get selectedNumberList()
+SelectedNumStateList get selectedNumStateList()
+SelectedSetResetList get selectedSetResetList()
+SelectedPatternList get selectedPatternList()
+SelectedUndoIconList get selectedUndoIconList()
+SelectedAddRemoveList get selectedAddRemoveList()
+RequestedCandHighLightType get requestedCandHighLightType()
+DataProvider()
-Future<void> _initAsync()
+Future<bool> initJsonFile()
+void updateDataNumberList(...)
+void updateDataselectedSetResetList(...)
+void updateDataselectedUndoIconList(...)
+Future<void> updateDataselectedEraseAll(...)
+Future<void> updateDataselectedResetToGivens(...)
+Future<void> updateDataselectedSetAllCandidates(...)
+Future<void> updateDataselectedwriteGivensToRust(...)
+void updateDataselectedPatternList(...)
+void updateRequestedCandHighLightType(...)
+void updateRequestedElementHighLightType(...)
+void writeCellToRust(...)
+void writeFullMatrixToRust()
+void writeGivensToRust()
+void readCellFromRust(...)
+Future<void> readMatrixFromRust()
+int readRequestedCandHighLightTypeFromRust(...)
+void callRustUpdate()
+Future<void> callRustEraseAll()
+Future<void> callRustResetToGivens()
+Future<void> callRustSetAllCandidates()
+void callRustCellUpdate(...)
+Future<void> shutdown()
+void dispose()
+void didChangeAppLifecycleState(...)
uses
matrix element
ChangeNotifier
WidgetsBindingObserver
RustMatrix
DartToRustElement
DataStatus
SelectedNumberList
SelectedNumStateList
SelectedSetResetList
SelectedPatternList
SelectedUndoIconList
SelectedAddRemoveList
RequestedCandHighLightType
RequestedElementHighLightType

Export Barrel File - Module Dependency Diagram
export.dart
shared_types.dart
help_page.dart
user_feedback.dart
rust_matrix.dart
size_config.dart
sudoku_logging.dart
data_provider.dart
app.dart
home_page.dart
add_remove_toggle.dart
app_bar_actions.dart
secure_button.dart
top_action_buttons.dart
sudoku_grid.dart
sudoku_block.dart
sudoku_element.dart
toggle_buttons.dart
number_buttons.dart
pattern_buttons.dart
set_reset_buttons.dart

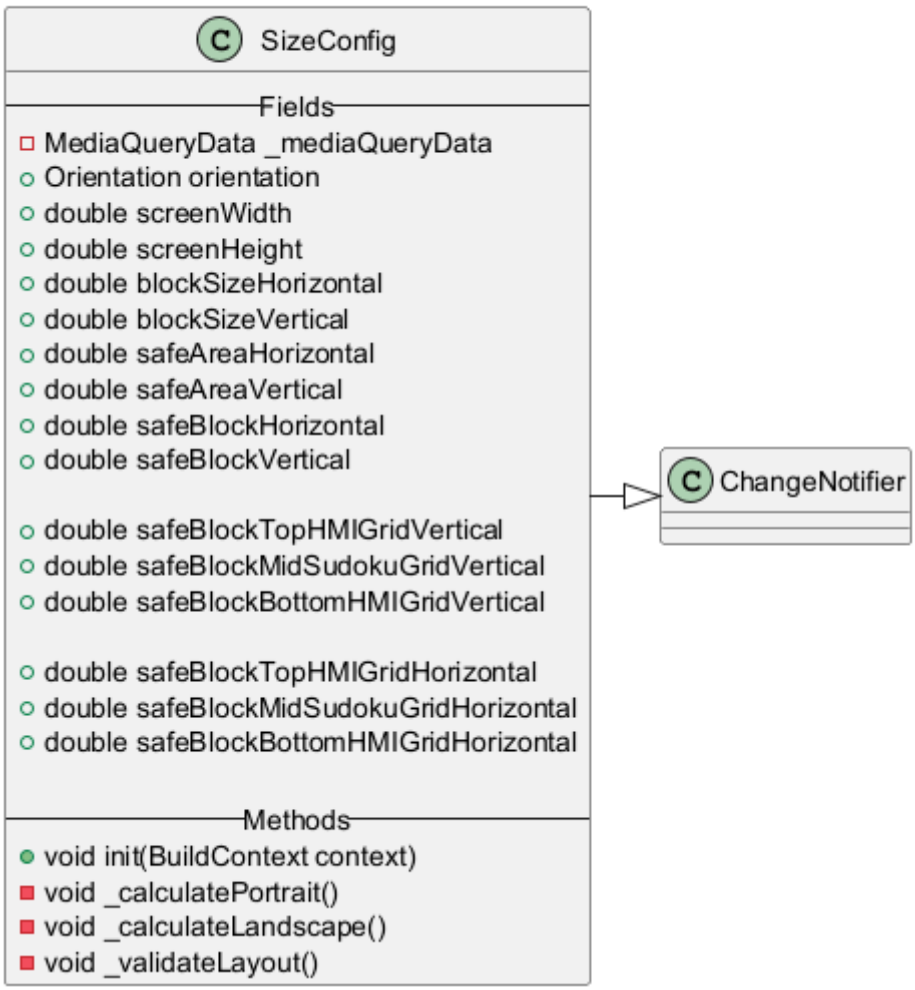

ffi
PatternList
HI_LIGHT_ON: u8 = 0
PAIRS: u8 = 1
MATCH_PAIRS: u8 = 2
TWINS: u8 = 3
USER: u8 = 4
Constants
MAX_UINT: u8 = 255
CONST_MATRIX_SIZE: u8 = 9
CONST_MATRIX_ELEMENTS: u8 = 81
constSelectedNumberListSize: u8 = 9
constSelectedPatternListSize: u8 = 5
constRequestedElementHighLightTypeSize: u8 = 5
constRequestedCandHighLightTypeSize: u8 = 9
constPattemListOff: u8 = 255
MatrixFunctions
create_matrix(rows: u8, cols: u8): *mut DartToRustElementFFI
update_matrix(ptr: *mut DartToRustElementFFI, rows: u8, cols: u8): void
free_matrix(ptr: *mut DartToRustElementFFI, rows: u8, cols: u8): void
Unsafe extern "C" function.
Allocates memory for DartToRustElementFFI array.
Returns null on allocation failure.
Unsafe extern "C" function.
Checks matrix elements and calls checkForElementPair.
Unsafe extern "C" function.
Deallocates memory for DartToRustElementFFI array.
DartToRustElementFFI
row: u8
col: u8
selectedNum: u8
selectedCandList: [u8; 9]
selectedPatternList: [u8; 5]
requestedElementHighLightType: [u8; 5]
requestedCandHighLightType: [u8; 9]
1. [C Representation]
Used in FFI with Dart.
Unsafe operations wrapped in Rust functions.

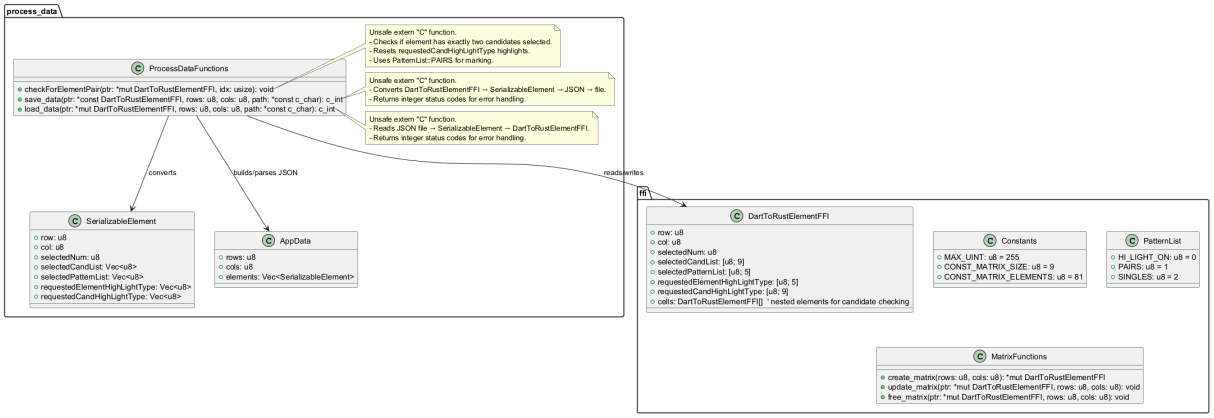

rust_lib_rs
Lib_rs
This module contains the FFI bindings
and is re-exported by lib.rs
uses
uses
StoreData_rs
uses & re-exports
ProcessData_rs
uses
Ffi_rs

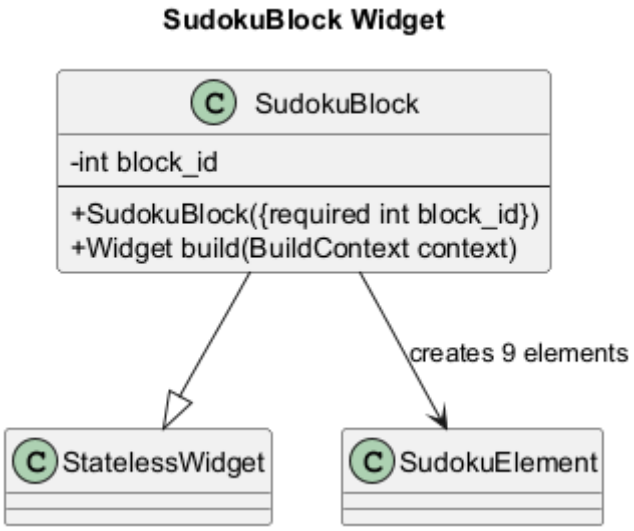

process_data
ProcessDataFunctions
checkForElementPair(ptr: *mut DartToRustElementFFI, idx: usize): void
Unsafe extern "C" function.
- Checks if element has exactly two candidates selected.
- Resets requestedCandHighLightType highlights.
- Uses PatternList.PAIRS for marking.
uses
reads
reads
ffi
DartToRustElementFFI
row: u8
col: u8
selectedNumState: u8
selectedCandList: [u8; 9]
selectedPatternList: [u8; 5]
requestedElementHighLightType: [u8; 5]
requestedCandHighLightType: [u8; 9]
cells: DartToRustElementFFI[] *nested elements for candidate checking
1. [C Representation]
Used in FFI with Dart.
Unsafe operations wrapped in Rust functions.
MatrixFunctions
create_matrix(rows: u8, cols: u8): *mut DartToRustElementFFI
update_matrix(ptr: *mut DartToRustElementFFI, rows: u8, cols: u8): void
free_matrix(ptr: *mut DartToRustElementFFI, rows: u8, cols: u8): void
Unsafe extern "C" function.
Allocates memory for DartToRustElementFFI array.
Returns null on allocation failure.
Unsafe extern "C" function.
Updates matrix elements and calls checkForElementPair.
Unsafe extern "C" function.
Deallocates memory for DartToRustElementFFI array.
Constants
MAX_UINT: u8 = 255
CONST_MATRIX_SIZE: u8 = 9
CONST_MATRIX_ELEMENTS: u8 = 81
constSelectedNumberListSize: u8 = 9
constSelectedPatternListSize: u8 = 5
constRequestedElementHighLightTypeSize: u8 = 5
constRequestedCandHighLightTypeSize: u8 = 9
constPattemListOff: u8 = 255
PatternList
HI_LIGHT_ON: u8 = 0
PAIRS: u8 = 1
MATCH_PAIRS: u8 = 2
TWINS: u8 = 3
USER: u8 = 4



SizeConfig Class Diagram




process_data
ProcessDataFunctions
checkForElementPair(ptr: *mut DartToRustElementFFI, idx: usize): void
save_data(ptr: *const DartToRustElementFFI, rows: u8, cols: u8, path: *const c_char): c_int
load_data(ptr: *mut DartToRustElementFFI, rows: u8, cols: u8, path: *const c_char): c_int
Unsafe extern "C" function.
- Checks if element has exactly two candidates selected.
- Resets requestedCandHighLightType highlights.
- Uses PatternList::PAIRS for marking.
Unsafe extern "C" function.
- Converts DartToRustElementFFI → SerializableElement → JSON → file.
- Returns integer status codes for error handling.
Unsafe extern "C" function.
- Reads JSON file → SerializableElement → DartToRustElementFFI.
- Returns integer status codes for error handling.
converts
builds/parses JSON
reads/writes
SerializableElement
row: u8
col: u8
selectedNum: u8
selectedCandList: Vec<u8>
selectedPatternList: Vec<u8>
requestedElementHighLightType: Vec<u8>
requestedCandHighLightType: Vec<u8>
AppData
rows: u8
cols: u8
elements: Vec<SerializableElement>
ffi
DartToRustElementFFI
row: u8
col: u8
selectedNum: u8
selectedCandList: [u8; 9]
selectedPatternList: [u8; 9]
requestedElementHighLightType: [u8; 5]
requestedCandHighLightType: [u8; 9]
cells: DartToRustElementFFI[] *nested elements for candidate checking
Constants
MAX_UINT: u8 = 255
CONST_MATRIX_SIZE: u8 = 9
CONST_MATRIX_ELEMENTS: u8 = 81
PatternList
HI_LIGHT_ON: u8 = 0
PAIRS: u8 = 1
SINGLES: u8 = 2
MatrixFunctions
create_matrix(rows: u8, cols: u8): *mut DartToRustElementFFI
update_matrix(ptr: *mut DartToRustElementFFI, rows: u8, cols: u8): void
free_matrix(ptr: *mut DartToRustElementFFI, rows: u8, cols: u8): void


SudokuBlock Widget
SudokuBlock
-int block_id
+SudokuBlock({required int block_id})
+Widget build(BuildContext context)
creates 9 elements
StatelessWidget
SudokuElement