

main Function

- Purpose of function: The main function initializes and configures the main page of the UVSim application.
- Input: page (ft.Page) - The page object associated with the main page.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The main page of the UVSim application is initialized and configured.

route_change

- Purpose of function: Handles route changes in the application.
- Input: e (Event) - Event object representing the route change event.
- Return Value: None.
- Pre-conditions: UVSim application instance must be initialized.
- Post-conditions: Depending on the route, the appropriate view is displayed and updated.

view_pop

- Purpose of function: Pops a view from the page's views stack and navigates to the top view.
- Input: view - The view to be popped from the views stack.
- Return Value: None.
- Pre-conditions: UVSim application instance must be initialized.
- Post-conditions: The top view is displayed after removing the specified view from the views stack.

AppLayout Class

- Purpose of class: The AppLayout class represents the layout of the UVSim application, managing various UI elements and views.

home_page_view

- Purpose of function: Constructs the home page view with welcome message and options to add new simulators.
- Return Value: ft.Column - The home page view.
- Pre-conditions: None.
- Post-conditions: The home page view is constructed and returned.

set_sim_view

- Purpose of function: Sets the active view to a simulator page based on the provided file name.
- Input: file_name (str) - The name of the file associated with the simulator.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The active view is set to the simulator page corresponding to the provided file name.

set_all_sim_view

- Purpose of function: Sets the active view to the home page view and hydrates it with all available simulators.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The active view is set to the home page view with all available simulators.

page_resize

- Purpose of function: Handles resizing of the page and adjusts the active view accordingly.
- Input: e (Event) - Event triggering the resizing.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The active view is resized based on the page dimensions.

hydrate_all_sim_view

- Purpose of function: Hydrates the home page view with all available simulators.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The home page view is populated with controls representing available simulators.

file_picker_result

- Purpose of function: Handles the result of file picker selection and updates the simulators accordingly.
- Input: e (ft.FilePickerResultEvent) - Event containing the selected files.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The simulators are updated based on the selected files.

go_to_simulator

- Purpose of function: Navigates to the simulator page associated with the clicked control.
- Input: e - Event containing information about the clicked control.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The page navigates to the simulator page corresponding to the clicked control.

toggle_nav_rail

- Purpose of function: Toggles the visibility of the navigation rail sidebar.
- Input: e - Event triggering the toggle action.
- Return Value: None.
- Pre-conditions: None.

- Post-conditions: The visibility of the navigation rail sidebar is toggled.

EventHandler Class

- Purpose of class: The EventHandler class manages event handling for displaying output and getting user input.

display_output

- Purpose of function: Displays output.
- Input: Output value ("output").
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: Output is displayed using the OutputControl instance.

get_user_input

- Purpose of function: Retrieves user input.
- Input: None.
- Return Value: User input.
- Pre-conditions: None.
- Post-conditions: User input is retrieved using the InputControl instance.

FileHandler Class

- Purpose of class: The FileHandler class is responsible for managing file handling functionality within the UVSim application.

build

- Purpose of function: Builds the UI layout for the file handler.
- Return Value: ft.Column - The column containing UI elements.
- Pre-conditions: FileHandler instance must be initialized.
- Post-conditions: The UI layout for the file handler is constructed and returned.

save_load_file

- Purpose of function: Saves or loads a file depending on the current state.
- Input: e (Event) - Event triggering the function call.
- Return Value: None.
- Pre-conditions: FileHandler instance must be initialized.
- Post-conditions: If a file path is available, the file is saved and then loaded into the operation.

file_picker_result

- Purpose of function: Handles the result of file picking operation.
- Input: e (ft.FilePickerResultEvent) - Result event from file picker.
- Return Value: None.
- Pre-conditions: FileHandler instance must be initialized.
- Post-conditions: File path is retrieved and file content is displayed.

save_file_result

- Purpose of function: Handles the result of file saving operation.
- Input: e (ft.FilePickerResultEvent) - Result event from file saving.
- Return Value: None.
- Pre-conditions: FileHandler instance must be initialized.
- Post-conditions: File is saved to the specified path.

save_text

- Purpose of function: Saves text content to a file.
- Input: path (str) - Path to save the file, value (str) - Content to be saved.
- Return Value: None.
- Pre-conditions: FileHandler instance must be initialized.
- Post-conditions: Text content is saved to the specified file path.

open_file

- Purpose of function: Opens a file and reads its content.
- Input: user_file (str) - Path of the file to be opened.
- Return Value: str - Content of the file.
- Pre-conditions: FileHandler instance must be initialized.
- Post-conditions: File content is read and returned.

get_text_field_value

- Purpose of function: Retrieves the value of the text field.
- Return Value: str - Value of the text field.
- Pre-conditions: FileHandler instance must be initialized.
- Post-conditions: Value of the text field is returned.

run_program

- Purpose of function: Runs the program operation.
- Return Value: None.
- Pre-conditions: FileHandler instance must be initialized.
- Post-conditions: Program operation is executed.

stop_program

- Purpose of function: Stops the program operation.
- Return Value: None.

- Pre-conditions: FileHandler instance must be initialized.
- Post-conditions: Program operation is stopped.

InputControl Class

- Purpose of class: The InputControl class manages the input control functionality within the UVSim application.

build

- Purpose of function: Builds the UI layout for the input control.
- Return Value: None.
- Pre-conditions: InputControl instance must be initialized.
- Post-conditions: The UI layout for the input control is constructed and returned.

get_input

- Purpose of function: Retrieves user input.
- Return Value: str - User input.
- Pre-conditions: InputControl instance must be initialized.
- Post-conditions: User input is obtained and returned.

close_dlg

- Purpose of function: Closes the input dialog and updates the page.
- Return Value: None.
- Pre-conditions: InputControl instance must be initialized.
- Post-conditions: The dialog is closed, and the page is updated.

textfield_change

- Purpose of function: Handles text field changes and updates the send button state.
- Return Value: None.
- Pre-conditions: InputControl instance must be initialized.
- Post-conditions: The send button state is updated based on text field changes.

OutputControl Class

- Purpose of class: The OutputControl class represents a UI control for displaying output in the UVSim application.

display_output

- Purpose of function: Displays output on the UI.
- Input: output (str) - The output text to be displayed.

- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The output text is displayed on the UI.

Sidebar Class

- Purpose of class: The Sidebar class represents a user control for managing navigation within the UVSIM application.

build

- Purpose of function: Constructs the UI layout for the sidebar.
- Return Value: ft.Container - The constructed UI layout for the sidebar.
- Pre-conditions: None.
- Post-conditions: The UI layout for the sidebar is constructed and returned.

sync_sim_destinations

- Purpose of function: Synchronizes the simulator destinations in the sidebar.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The simulator destinations in the sidebar are synchronized.

toggle_nav_rail

- Purpose of function: Toggles the visibility of the navigation rail sidebar.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The visibility of the navigation rail sidebar is toggled.

top_nav_change

- Purpose of function: Handles changes in the top navigation rail.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The selected index of the top navigation rail is updated.

bottom_nav_change

- Purpose of function: Handles changes in the bottom navigation rail.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The selected index of the bottom navigation rail is updated.

Topbar Class

- Purpose of class: The Topbar class represents the top app bar of the UVSIM application, providing options to change themes.

build

- Purpose of function: Constructs the UI layout for the top app bar.
- Return Value: ft.AppBar - The constructed UI layout for the top app bar.
- Pre-conditions: None.
- Post-conditions: The UI layout for the top app bar is constructed and returned.

green_theme

- Purpose of function: Applies the green theme to the UVSim application.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The green theme is applied to the UVSim application.

blue_theme

- Purpose of function: Applies the blue theme to the UVSim application.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The blue theme is applied to the UVSim application.

Teal_theme

- Purpose of function: Applies the teal theme to the UVSim application.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The teal theme is applied to the UVSim application.

purple_theme

- Purpose of function: Applies the purple theme to the UVSim application.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The purple theme is applied to the UVSim application.

is_hex_color

- Purpose of function: Checks if the given string represents a valid hexadecimal color.
- Return Value: bool - True if the given string is a valid hexadecimal color, False otherwise.
- Pre-conditions: None.
- Post-conditions: The validity of the hexadecimal color string is determined.

textfield_change

- Purpose of function: Handles changes in the text fields for custom theme creation.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The state of the apply button is updated based on the text field values.

custom_theme

- Purpose of function: Allows the user to create a custom theme for the UVSim application.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The custom theme is created and applied to the UVSim application.

Operations Class

- Purpose of class: The Operations class manages the execution of operations within the UVSim application.

read_file

- Purpose of function: Reads instructions from a file and stores them in memory.
- Input: filename (str) - The name of the file to be read.
- Return Value: None.
- Pre-conditions: Operations instance must be initialized.
- Post-conditions: Instructions are read from the file and stored in memory.

set_got_input

- Purpose of function: Sets the flag indicating if input is received.
- Input: got_input (bool) - Flag indicating if input is received.
- Return Value: None.
- Pre-conditions: Operations instance must be initialized.
- Post-conditions: The flag indicating if input is received is set.

set_u_input

- Purpose of function: Sets the user input.
- Input: u_input (str) - The user input.
- Return Value: None.
- Pre-conditions: Operations instance must be initialized.
- Post-conditions: The user input is set.

get_output

- Purpose of function: Retrieves the output value.
- Return Value: str - The output value.
- Pre-conditions: Operations instance must be initialized.
- Post-conditions: The output value is retrieved.

stop_execution

- Purpose of function: Stops the program execution.
- Return Value: None.
- Pre-conditions: Operations instance must be initialized.
- Post-conditions: The program execution is stopped.

IO_op

- Purpose of function: Performs Input/Output operation.
- Input: op (int) - The operation code, address (int) - The memory address.
- Return Value: None.
- Pre-conditions: Operations instance must be initialized.
- Post-conditions: Input/Output operation is performed.

load_store_op

- Purpose of function: Performs Load/Store operation.
- Input: op (int) - The operation code, address (int) - The memory address.
- Return Value: None.
- Pre-conditions: Operations instance must be initialized.
- Post-conditions: Load/Store operation is performed.

arithmetic_op

- Purpose of function: Performs Arithmetic operation.
- Input: op (int) - The operation code, address (int) - The memory address.
- Return Value: None.
- Pre-conditions: Operations instance must be initialized.
- Post-conditions: Arithmetic operation is performed.

branch_op

- Purpose of function: Performs Branch operation.
- Input: op (int) - The operation code, address (int) - The memory address.
- Return Value: None.
- Pre-conditions: Operations instance must be initialized.
- Post-conditions: Branch operation is performed.

execute

- Purpose of function: Executes the program.
- Return Value: None.
- Pre-conditions: Operations instance must be initialized.
- Post-conditions: The program is executed.

OperationsError Class

- Purpose of class: The OperationsError class represents an error that occurs during operations within the UVSim application.

SimulatorPage Class

Purpose of class: The SimulatorPage class represents the page displaying the simulation controls and file handling for a specific simulator.

set_sim_id

- Purpose of function: Sets the identifier for the simulator.
- Input: sim_id (str) - Identifier for the simulator.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The identifier for the simulator is updated.

run_button_result

- Purpose of function: Handles the result of clicking the run button.
- Input: e (Event) - Event triggering the function call.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: The file associated with the simulator is loaded into the register, and the simulation is executed.

stop_button_result

- Purpose of function: Handles the result of clicking the stop button.
- Input: e (Event) - Event triggering the function call.
- Return Value: None.
- Pre-conditions: None.
- Post-conditions: Execution of the simulation is stopped.

buttons_layout

- Purpose of function: Constructs the layout for the simulation control buttons.
- Return Value: ft.Column - The column containing simulation control buttons.
- Pre-conditions: None.
- Post-conditions: The layout for simulation control buttons is constructed and returned.

run_button

- Purpose of function: Creates the 'Run' button for the simulator.
- Return Value: ft.ElevatedButton - The 'Run' button.
- Pre-conditions: None.
- Post-conditions: The 'Run' button is created and returned.

stop_button

- Purpose of function: Creates the 'Stop' button for the simulator.
- Return Value: ft.ElevatedButton - The 'Stop' button.
- Pre-conditions: None.
- Post-conditions: The 'Stop' button is created and returned.