# Swinburne Car Park System

GUI Components and Event Handling Description

1. **GUI Components Used**

| **Component** | **Description** |
| --- | --- |
| JFrame | The main application window. Contains all other components. |
| JPanel | Used to organize groups of components (title panel, slots panels, control panel, bottom panel). |
| JLabel | Displays static text: system title, status messages, and placeholder at the top. |
| JButton | Represents all parking slots (clickable), and each control/action button at the bottom (e.g., "Add Parking Spot", "Park Car", etc). |
| JOptionPane | Used for all dialogs and popups for input and output (e.g., adding slots, car details, showing errors/messages). |
| JTable | Displays all slot information in a tabular format when "Show All Parking Spots" is selected. |
| JScrollPane | Allows the JTable to be scrollable for better slot list visibility. |
| GridLayout | Arranges slot buttons and control buttons in neat rows/columns. |
| BorderLayout | Lays out main regions (NORTH, CENTER, SOUTH) in the window for panels. |
| FlowLayout | Used for flexible arrangement of slot rows. |
| GridBagLayout | Used for center alignment of visitor and staff slot rows (optional). |
| Color | Used to set different background colors for staff, visitor, and occupied slots for easy distinction. |

1. **Event Handling Functions**

| **Event Handler/Function** | **Description** |
| --- | --- |
| addSlotDialog() | Triggered by "Add Parking Spot" button. Opens dialog boxes to input slot ID and type, validates, then adds the slot to the system. |
| parkCarDialog() | Triggered by "Park Car" button. Prompts for slot ID, car registration, owner, and type. Checks if car is already parked, then parks it and shows a dialog with car information including time and duration. |
| removeCarDialog() | Triggered by "Remove Car" button. Asks for car registration number, finds and removes the car from its slot if found. |
| deleteSlotDialog() | Triggered by "Delete Spot" button. Requests slot ID, and if the slot is empty, deletes it from the system. |
| findCarDialog() | Triggered by "Find Car" button. Prompts for car registration number, searches all slots, and displays location, owner, and duration if found. |
| listSlotsDialog() | Triggered by "Show All Parking Spots" button. Displays all slot information in a JTable dialog, including status, registration, and owner, slot type, parked at and duration. |
| clearSlotsDisplay() | Triggered by "Clear Screen" button. Clears all slot buttons from the display panels. |
| refreshSlots() | Internal function called after every update to refresh the display of all parking slot buttons, updating their color and status text. |
| Slot Button (Click) | Advanced: Left-click parks or removes a car; right-click removes the slot if empty. |
| exitBtn (JButton) | Triggered by "Exit Application" button. Exits the program safely. |
| statusLabel (JLabel) | Displays status and feedback messages at the bottom of the window after each action. |