**Documentation about the Developed Module**

**Module Overview**

The **GameObject Manager** is a custom Unity Editor module that provides a comprehensive tool for managing GameObjects directly within the Unity Editor. This module is designed to streamline the process of finding, filtering, and modifying GameObjects in your project. Its key features include dynamic search, component-based filtering, bulk transform editing, and component management with full Undo support.

**Key Features**

* **Dynamic GameObject Listing:**  
  Lists all GameObjects in the project (excluding those hidden via hideFlags) in a scrollable view.
* **Search Functionality:**  
  Provides a search bar that dynamically filters the GameObject list by name (case insensitive).
* **Filtering Options:**  
  Offers toggle filters to display only GameObjects that contain specific components such as MeshRenderer, Collider, and Rigidbody.
* **Selection Handling:**  
  Users can select or deselect GameObjects from the list by clicking on toggle buttons. Selected objects are tracked for further editing.
* **Bulk Transform Editing:**  
  Allows simultaneous editing of the position, rotation, and scale of multiple selected GameObjects. The module displays “mixed” indicators if selected objects have differing values for any transform axis, and changes are applied relatively to preserve existing differences.
* **Component Management:**  
  Provides a dropdown menu interface (using GenericMenu) to add new components from a complete list of available, non-abstract, public component types, as well as to remove components (excluding Transform) from selected GameObjects.
* **Undo Support:**  
  All modifications—including changes to active states, transforms, and component additions/removals—are integrated with Unity’s Undo system. This ensures that any change can be safely reversed, enhancing the user’s workflow reliability.

**Detailed Functionality**

**Initialization and Lifecycle**

* **Window Registration:**  
  The module registers itself in the Unity Editor menu under **Tools/GameObject Manager**. Invoking this menu item opens the custom Editor Window titled "GameObject Manager".
* **OnEnable/OnDisable:**  
  Upon enabling, the module refreshes the list of GameObjects and subscribes to Unity’s update event to automatically check for any changes in the scene. When the window is disabled or closed, it unsubscribes from the update event to optimize performance.

**User Interface Components**

1. **Search Options:**
   * A search bar at the top of the window lets users input text to filter GameObjects by their names. The filtering is updated dynamically as the user types.
2. **Filtering Options:**
   * The module presents three toggle options allowing users to filter the GameObject list by specific components:
     + **Mesh Renderer**
     + **Collider**
     + **Rigidbody**
   * Only GameObjects that meet the selected filtering criteria are displayed in the list.
3. **GameObject List:**
   * The list is displayed within a scrollable area. Each entry shows:
     + The active state (indicated as “Enabled” or “Disabled”).
     + A toggle for changing the active state, with modifications recorded for Undo.
     + A button toggle to select or deselect the GameObject for further editing.
   * Both filtering (by component) and search criteria are applied to narrow down the displayed GameObjects.
4. **Transform Editor:**
   * If one or more GameObjects are selected, a transform editor section is displayed.
   * This section provides compact, side-by-side fields for editing the **Position**, **Rotation**, and **Scale** (each broken down into X, Y, and Z components).
   * Mixed values (if the selected objects do not share the same value for an axis) are indicated using Unity’s built-in mixed value display.
   * Transform changes are applied relative to the common baseline value across the selected objects, ensuring consistency while preserving unique differences.
5. **Component Editor:**
   * This section allows users to manage components on the selected GameObjects.
   * **Adding Components:**  
     A dropdown menu lists all available component types (retrieved from all loaded assemblies). Selecting a component type adds it to each selected GameObject (if not already present), with the addition recorded in the Undo system.
   * **Removing Components:**  
     A separate dropdown menu lists the components (excluding the Transform) that exist on the selected GameObjects. Selecting a component type removes it from all selected objects, again with Undo support.

**Data Refresh and Auto-Update**

* **RefreshGameObjects:**  
  This method scans for all GameObjects in the project that are not hidden (i.e., with hideFlags set to None) and updates the internal list. It also keeps track of the total count for change detection.
* **AutoRefresh:**  
  Executed periodically via Unity’s update event, this method compares the current GameObject count with the stored value. If there is a discrepancy, it refreshes the list and repaints the window to ensure the UI reflects the current state of the project.

**Undo Integration**

Every modification operation—including toggling active states, updating transforms, and adding or removing components—is recorded using Unity’s Undo system. This integration allows users to revert any changes made through the module by simply using the Undo command (e.g., Ctrl+Z).