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| **Method Name** | **HTTP Method** | **Mapping** | **Description** |
| getAllItems() | GET | /api/inventory/items | Retrieve a list of all inventory items. |
| getItemById(Long id) | GET | /api/inventory/items/{id} | Retrieve details of a specific inventory item by ID. |
| createItem(InventoryItem item) | POST | /api/inventory/items | Create a new inventory item. |
| updateItem(Long id, InventoryItem item) | PUT | /api/inventory/items/{id} | Update an existing inventory item by ID. |
| deleteItem(Long id) | DELETE | /api/inventory/items/{id} | Delete an inventory item by ID. |
| checkItemAvailability(Long id, int quantity) | GET | /api/inventory/items/{id}/available | Check if a specific quantity of an item is available in stock. |
| reserveInventory(Long id, int quantity) | PUT | /api/inventory/items/{id}/reserve | Reserve a certain quantity of an item for an order. |
| releaseReservedInventory(Long id, int quantity) | PUT | /api/inventory/items/{id}/release | Release previously reserved inventory. |
| deductInventoryAfterOrder(Long id, int quantity) | PUT | /api/inventory/items/{id}/deduct | Deduct inventory after an order is successfully completed. |

### Explanation of Each Method

1. \*\*Basic CRUD Operations:\*\*

- \*\*`getAllItems()`\*\*: Fetches all items in the inventory.

- \*\*`getItemById(Long id)`\*\*: Retrieves details for a specific item.

- \*\*`createItem(InventoryItem item)`\*\*: Adds a new item to the inventory.

- \*\*`updateItem(Long id, InventoryItem item)`\*\*: Modifies an existing item's details.

- \*\*`deleteItem(Long id)`\*\*: Removes an item from the inventory.

2. \*\*Order-Service Related Operations:\*\*

- \*\*`checkItemAvailability(Long id, int quantity)`\*\*: Checks if there is enough stock for a requested quantity.

- \*\*`reserveInventory(Long id, int quantity)`\*\*: Temporarily reserves the stock for a particular item when an order is placed.

- \*\*`releaseReservedInventory(Long id, int quantity)`\*\*: Frees up the reserved stock if an order is canceled or changed.

- \*\*`deductInventoryAfterOrder(Long id, int quantity)`\*\*: Permanently deducts the reserved stock after an order is successfully completed.

### Usage

This list provides a comprehensive set of endpoints to interact with the Inventory Service, making it easy to manage inventory items and ensure smooth integration with other microservices like an Order Service.