Problem Statements - Python Set Methods

Problem 1: Exclusive Airport Lounges

You manage a luxury airport lounge. The airport has several lounges, each with a unique set of amenities. Write a Python script to:

1. Determine the amenities available in only one lounge.
2. Find amenities that are common across all lounges.

```
lounges = {
    "Lounge_A": {"WiFi", "Comfortable Seating", "Free Drinks", "Private Rooms"},
    "Lounge_B": {"WiFi", "Comfortable Seating", "Luxury Showers", "Free Drinks"},
    "Lounge_C": {"Private Rooms", "Luxury Showers", "Free Drinks", "Spa
Services"},
}
```

Problem 2: Flight Path Optimization

You are designing a high-end flight path optimizer. Given sets of destinations for different flights, write a script to:

1. Identify the destinations that are covered by more than one flight.
2. Determine destinations that are exclusive to one flight.

```
flights = {
    "Flight_1": {"New York", "London", "Paris"},
    "Flight_2": {"London", "Paris", "Berlin"},
    "Flight_3": {"Paris", "Berlin", "Rome"},
}
```

Problem 3: Gourmet Food Menu

You manage a luxury restaurant chain with several locations, each offering a unique menu. Write a script to:

1. Find all dishes offered at exactly two locations.
2. Determine dishes offered at all locations.

```
restaurants = {
    "Restaurant_A": {"Truffle Risotto", "Foie Gras", "Lobster Bisque"},
    "Restaurant_B": {"Foie Gras", "Lobster Bisque", "Beef Wellington"},
    "Restaurant_C": {"Truffle Risotto", "Beef Wellington", "Crème Brûlée"},
}
```

Problem 4: High-End Car Features

In a premium car dealership, each car model has a unique set of features. Write a Python script to:

1. Find features that are available in all models.
2. Identify features that are exclusive to one model.

```
car_models = {
    "Model_X": {"Leather Seats", "Sunroof", "Navigation System"},
    "Model_Y": {"Leather Seats", "Sunroof", "Premium Audio System"},
    "Model_Z": {"Leather Seats", "Navigation System", "Climate Control"},
}
```

Problem 5: Luxury Hotel Amenities

You are tasked with comparing the amenities offered by luxury hotels in a city. Given sets of amenities for each hotel, write a script to:

1. Determine the amenities that are not offered by any hotel.
2. Find amenities that are offered by at least one hotel but not all.

```
hotels = {
    "Hotel_1": {"Spa", "Fitness Center", "Concierge", "Pool"},
    "Hotel_2": {"Spa", "Concierge", "Pool", "Luxury Shuttle"},
    "Hotel_3": {"Fitness Center", "Concierge", "Pool", "Rooftop Bar"},
}
```

Problem 6: Exclusive Car Models in a Fleet

You manage a fleet of luxury cars with unique models in different categories. Write a script to:

1. Find car models that are present in every category.
2. Identify models that are unique to specific categories.

```
categories = {
    "Category_A": {"Model_X", "Model_Y"},
    "Category_B": {"Model_X", "Model_Z"},
    "Category_C": {"Model_Y", "Model_Z"},
}
```

Problem 7: Elite Travel Club Members

You run an elite travel club with members who have access to various exclusive events. Write a Python script to:

1. Find members who have access to every event.
2. Identify members who have access to only one specific event.

```
members = {
    "Event_1": {"Alice", "Bob", "Carol"},
    "Event_2": {"Bob", "Carol", "David"},
    "Event_3": {"Alice", "David", "Eve"},
}
```

Problem 8: Luxury Fashion Brand Collections

You are managing inventory for a high-end fashion brand with multiple collections. Each collection has a unique set of items. Write a script to:

1. Find items that are common across all collections.
2. Determine items that are unique to specific collections.

```
collections = {
    "Collection_A": {"Dress_1", "Bag_1", "Shoes_1"},
    "Collection_B": {"Dress_1", "Bag_2", "Shoes_2"},
    "Collection_C": {"Dress_2", "Bag_1", "Shoes_1"},
}
```

Problem 9: Exclusive Art Gallery Exhibits

You are organizing exhibits for a luxury art gallery. Each exhibit showcases a unique set of artworks. Write a script to:

1. Determine artworks featured in exactly two exhibits.
2. Identify artworks that are featured in all exhibits.

```
exhibits = {
    "Exhibit_A": {"Mona Lisa", "Starry Night", "Scream"},
    "Exhibit_B": {"Scream", "Girl with a Pearl Earring", "Mona Lisa"},
    "Exhibit_C": {"Starry Night", "Girl with a Pearl Earring", "Guernica"},
}
```

Problem 10: High-End Restaurant Chains

You manage multiple high-end restaurant chains, each offering a unique menu. Write a Python script to:

1. Identify dishes that are offered at all chains.
2. Find dishes that are exclusive to a single chain.

```
chains = {
    "Chain_A": {"Truffle Risotto", "Foie Gras", "Lobster Bisque"},
    "Chain_B": {"Foie Gras", "Beef Wellington", "Crème Brûlée"},
    "Chain_C": {"Truffle Risotto", "Beef Wellington", "Crème Brûlée"},
}
```

Problem 11: Exclusive Car Rental Packages

You manage a luxury car rental service with various rental packages. Each package offers a set of car models. Write a script to:

1. Find car models available in every package.
2. Determine models that are only available in a single package.

```
packages = {
    "Package_1": {"Model_X", "Model_Y"},
    "Package_2": {"Model_Y", "Model_Z"},
    "Package_3": {"Model_X", "Model_Z"},
}
```

Problem 12: Luxury Travel Itineraries

You are organizing exclusive travel itineraries. Each itinerary includes a set of luxury destinations. Write a Python script to:

1. Identify destinations included in every itinerary.
2. Find destinations unique to specific itineraries.

```
itineraries = {
    "Itinerary_1": {"Paris", "Rome", "Barcelona"},
    "Itinerary_2": {"Rome", "London", "Barcelona"},
    "Itinerary_3": {"Paris", "London", "Berlin"},
}
```

Problem 13: Premium Vehicle Features

You are analyzing features of premium vehicles. Each vehicle has a set of features. Write a script to:

1. Determine features common to all vehicles.
2. Identify features that are unique to specific vehicles.

```
vehicles = {
    "Vehicle_A": {"Leather Seats", "Sunroof", "Navigation System"},
    "Vehicle_B": {"Leather Seats", "Premium Audio System", "Climate Control"},
    "Vehicle_C": {"Leather Seats", "Sunroof", "Climate Control"},
}
```

Problem 14: Exclusive Restaurant Reservations

You manage reservations for exclusive restaurants. Each reservation includes a set of special requests. Write a script to:

1. Find special requests that are common across all reservations.
2. Identify requests that are unique to specific reservations.

```
reservations = {
    "Reservation_1": {"Window Seat", "Special Menu", "Personal Waiter"},
    "Reservation_2": {"Special Menu", "Complimentary Wine", "Personal Waiter"},
    "Reservation_3": {"Window Seat", "Complimentary Wine", "Live Music"},
}
```

Problem 15: Luxury Yacht Fleet Inventory

You oversee a fleet of luxury yachts, each with unique features. Write a Python script to:

1. Determine features present in every yacht.
2. Identify features that are unique to specific yachts.

```
yachts = {
    "Yacht_A": {"Jacuzzi", "Helipad", "Wine Cellar"},
    "Yacht_B": {"Jacuzzi", "Spa", "Wine Cellar"},
    "Yacht_C": {"Helipad", "Spa", "Sun Deck"},
}
```

Problem 16: High-End Shopping Mall Stores

You manage a high-end shopping mall with various luxury stores. Each store offers a unique set of products. Write a script to:

1. Find products available in every store.
2. Determine products that are exclusive to certain stores.

```
stores = {
    "Store_A": {"Jewelry", "Designer Bags", "Luxury Watches"},
    "Store_B": {"Designer Bags", "Luxury Watches", "High-End Shoes"},
    "Store_C": {"Jewelry", "High-End Shoes", "Luxury Watches"},
}
```

Problem 17: Exclusive Wine Collection

You manage a collection of luxury wines, each with unique attributes. Write a script to:

1. Identify attributes present in all wines.
2. Determine attributes unique to specific wines.

```
wines = {
    "Wine_A": {"Red", "Full-bodied", "Aged"},
    "Wine_B": {"White", "Crisp", "Aged"},
    "Wine_C": {"Red", "Full-bodied", "Young"},
}
```

Problem 18: Luxury Event Guest Lists

You organize luxury events with exclusive guest lists. Each event has a unique set of guests. Write a Python script to:

1. Find guests who are invited to every event.
2. Identify guests exclusive to specific events.

```
events = {
    "Event_A": {"John", "Paul", "George"},
    "Event_B": {"Paul", "George", "Ringo"},
    "Event_C": {"John", "Ringo", "Pete"},
}
```

Problem 19: Exclusive Club Membership Perks

You manage membership perks for an exclusive club. Each membership offers a set of perks. Write a script to:

1. Determine perks available with every membership.
2. Find perks exclusive to specific memberships.

```
memberships = {
    "Membership_1": {"Free Access", "Priority Booking", "Exclusive Events"},
    "Membership_2": {"Priority Booking", "Exclusive Events", "Free Gifts"},
    "Membership_3": {"Free Access", "Free Gifts", "Exclusive Events"},
}
```

Problem 20: High-End Vacation Packages

You design luxury vacation packages, each including a set of exclusive experiences. Write a Python script to:

1. Identify experiences included in all vacation packages.
2. Find experiences that are unique to certain packages.

```
packages = {
    "Package_A": {"Luxury Safari", "Private Villa", "Gourmet Dining"},
    "Package_B": {"Private Villa", "Gourmet Dining", "Helicopter Tour"},
    "Package_C": {"Luxury Safari", "Helicopter Tour", "Gourmet Dining"},
}
```
