# A black screen with white text Description automatically generatedDatabase Systems 2024 Assignment 1

1. EER Diagram:
2. Assumptions:

* Assumption #1: Routes can include multiple locations.

Explanation: A route can pass through several locations, and each location can be part of multiple routes.

Model Reflection: The relationship between ROUTE and LOCATION is many-to-many, represented by the associative entity WAYPOINT to manage the route’s waypoints.

* Assumption #2: Each route must start and end at a location.

Explanation: Every route has a defined starting and ending location, which can be the same or different.

Model Reflection: The relationship between ROUTE and LOCATION is captured, with constraints ensuring each ROUTE has defined start and end locations.

* Assumption #3: A route can have multiple waypoints.

Explanation: A route can include several waypoints along its path, with each waypoint associated with a specific location and time details.

Model Reflection: The WAYPOINT entity links ROUTE and LOCATION, capturing the arrival and departure times for each waypoint.

* Assumption #4: A location can be associated with multiple points of interest.

Explanation: A single location can feature multiple points of interest (e.g., historical sites, animals, plants).

Model Reflection: The relationship between POINT OF INTEREST and LOCATION is many-to-many.

* Assumption #5: Each point of interest is of exactly one subtype.

Explanation: A point of interest must be categorized into one specific type (Animal, Plant, Store/Shop, Historical Place).

Model Reflection: The inheritance structure shows POINT OF INTEREST with subtypes: ANIMAL, PLANT, STORE/SHOP, and HISTORICAL PLACE, indicating total and disjoint inheritance.

* Assumption #6: A plan must include at least one route and one location.

Explanation: To be valid, each plan should involve at least one route and one location.

Model Reflection: The relationship between PLAN and ROUTE, and PLAN and LOCATION, is many-to-many, ensuring that each plan can include multiple routes and locations.

* Assumption #7: A person can create multiple plans, but each plan is associated with one person.

Explanation: Each person can have multiple plans, but each plan is linked to only one person.

Model Reflection: The relationship between PERSON and PLAN is one-to-many, ensuring that each plan is created by a specific person.

* Assumption #8: Waypoints are not uniquely identifiable on their own.

Explanation: Waypoints do not have their own unique identifiers but are defined through their relationships with routes and locations.

Model Reflection: WAYPOINT is represented as a non-identifying associative entity linking ROUTE and LOCATION, with attributes managing waypoint details.

* Assumption #9: Points of interest have multiple classifications for animals and plants.

Explanation: Points of interest classified as animals or plants can have multiple attributes like poisonous, venomous, or edible.

Model Reflection: The ANIMAL and PLANT subtypes have multi-valued attributes for classifications.

* Assumption #10: All points of interest must have a unique identifier.

Explanation: Each point of interest needs a unique identifier for system management.

Model Reflection: Each POINT OF INTEREST, regardless of subtype, includes a unique identifier.

* Assumption #11: Each PLAN must be created with a timestamp for the creation and last update.

Explanation: To track changes and history, each plan should have timestamps for when it was created and last updated.

Model Reflection: The PLAN entity includes attributes for creation and last updated timestamps.

* Assumption #12: Points of interest may be accessible from multiple locations.

Explanation: A point of interest can be viewed or accessed from different locations.

Model Reflection: The many-to-many relationship between POINT OF INTEREST and LOCATION accommodates multiple access points.