**1. Select Start and Destination Points**

- Description: Allows users to input or select their current location and desired destination within the ski area.

- Primary Actor: Skier

- Stakeholders: Skier (wants an efficient and suitable route), Ski Resort (wants guests to navigate the resort easily).

**Flow of event**

1. Select Start and Destination Points

Preconditions: None.

Main Flow:

1. Skier launches the app and navigates to the route planning feature.

2. Skier uses the map interface or GPS functionality to select their current location.

3. Skier selects their desired destination using the map interface.

4. System validates the selected locations and displays them on the map.

Postconditions: The start and destination points are established for route planning.

**Use Case Diagram**

A diagram of a vehicle

Description automatically generated

**Sequence Diagram**

**A diagram of a gps system

Description automatically generated**

**2. Specify Slope Difficulty Preference**

- Description: Enables users to filter slopes by their difficulty (blue, red, black) to match their skiing ability and comfort level.

- Primary Actor: Skier

- Stakeholders: Skier (wants routes that match their skill level.

**Flow of event**

Specify Slope Difficulty Preference

Preconditions: Skier is planning a route.

Main Flow:

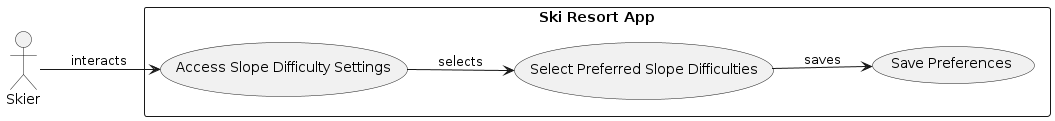
1. Skier accesses the slope difficulty preference settings within the app.

2. Skier selects their preferred slope difficulties (e.g., blue, red, black).

3. System saves these preferences for the current session or for future route planning.

Postconditions: Skier's slope difficulty preferences are recorded and will be considered in route calculations.

**Use case diagram**



**Sequence Diagram**

A diagram of a slope

Description automatically generated

3. Find Route Considering Slope Difficulty

- Description: Calculates the best route from the start to the destination point considering the specified slope difficulty preferences.

- Primary Actor: Skier

- Stakeholders: Skier (wants a safe and enjoyable route), Ski Resort (benefits from satisfied guests).

**Flow of event**

Find Route Considering Slope Difficulty

Preconditions: Start and destination points are set; slope difficulty preference is specified.

Main Flow:

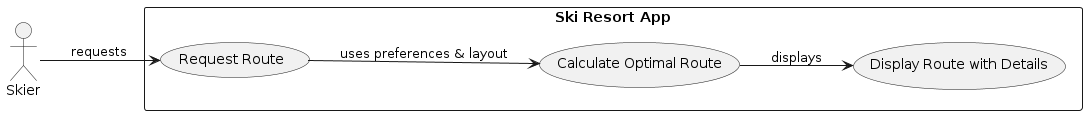
1. Skier requests to find a route.

2. System calculates the optimal route using the skier’s preferences and the ski area's layout, considering slopes and lifts.

3. System displays the route, including directions, slope types, and lift usage.

Postconditions: Skier has a clear, customized route from start to destination.

**Use case diagram**

**Sequence Diagram**

A diagram of a route

Description automatically generated

4. Include Lifts in Route Calculation

- Description: Incorporates chair-lifts/gondolas in the route for moving up or, if necessary, down the mountain.

- Primary Actor: Skier

- Stakeholders: Skier (needs to move efficiently across different elevations), Ski Resort (wants to showcase lift infrastructure).

**Flow Of Event**

Include Lifts in Route Calculation

Preconditions: Skier’s route requires elevation change.

Main Flow:

1. System identifies the need for lifts to achieve the skier's elevation change.

2. System includes the most efficient lift(s) in the route calculation.

3. System displays the route, integrating these lifts for ascent or descent as needed.

Postconditions: The route includes necessary lift usage for elevation changes.

**Use Case Diagram**

A white and black text on a white background

Description automatically generated

**Sequence Diagram**

**A diagram of a route calculation system

Description automatically generated**

5. Locate Dining Establishments

- Description: Helps users find nearby dining options based on their current location or along their route.

- Primary Actor: Skier

- Stakeholders: Skier (wants convenient dining options), Ski Resort and Dining Establishments (want to attract guests).

**Flow Of Event**

Locate Dining Establishments

Preconditions: Skier wishes to find a place to eat.

Main Flow:

1. Skier selects the option to find dining establishments within the app.

2. System displays a list of dining options, including details like location, distance, and type of A diagram of a ski resort

Description automatically generatedcuisine.

3. Skier can select an establishment to add to their route or view more details.

Postconditions: Skier knows where they can dine and how to get there.

Use case diagram

A diagram of a ski resort

Description automatically generated

Sequence Diagram

A diagram of a ski resort

Description automatically generated

6. Locate Public Restrooms

- Description: Provides users with the locations of public restrooms near their current location or along their planned route.

- Primary Actor: Skier

- Stakeholders: Skier (needs accessible facilities), Ski Resort (aims to improve guest experience).

**Flow Of Event**

Locate Public Restrooms

Preconditions: Skier needs to find a restroom.

Main Flow:

1. Skier selects the option to find public restrooms.

2. System displays the locations of nearby restrooms.

3. Skier can select a restroom to add to their route or view more details.

Postconditions: Skier knows the nearest restroom locations.

Use Case Diagram

A diagram of a ski resort

Description automatically generated

Sequence Diagram  
A diagram of a resort system

Description automatically generated

7. Adapt Route for Dining or Restroom Visit

- Description: Offers the ability to adjust the planned route to include a stop at a dining establishment or a public restroom upon request.

- Primary Actor: Skier

- Stakeholders: Skier (wants flexible routing options), Dining Establishments and Ski Resort (benefit from increased visitation).

**Flow Of Event**

Preconditions: Skier has an active route and wants to add a stop.

Main Flow:

1. Skier indicates the desire to add a dining or restroom stop to their route.

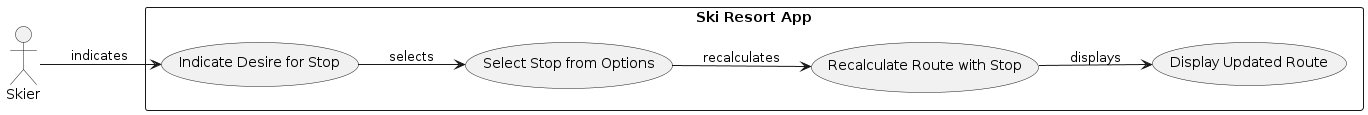
2. Skier selects the desired stop from the options provided by the system.

3. System recalculates the route to include the stop.

4. System displays the updated route with the new stop.

Postconditions: Skier's route is updated to include the desired stop.

Use case diagram:-



Sequence Diagram:-

A diagram of a program

Description automatically generated

Domain Model

1. Skier

- Attributes: ID, Name, Skill Level (e.g., Beginner, Intermediate, Expert), Location, Preferences (e.g., slope difficulty, dining preferences)

- Relationships: Uses Slopes, Uses Lifts, Visits Dining Establishments

2. Slope

- Attributes: ID, Name, Difficulty Level (e.g., Blue, Red, Black), Start Point, End Point, Length

- Relationships: Connected to Lifts, Part of a Ski Area

3. Lift

- Attributes: ID, Name, Type (e.g., Chairlift, Gondola), Capacity, Operation Mode (e.g., Up, Down, Both), Start Point, End Point

- Relationships: Connects Slopes, Part of a Ski Area

4. Dining Establishment

- Attributes: ID, Name, Type (e.g., Cafe, Restaurant), Location, Cuisine Type, Capacity

- Relationships: Located in Ski Area

5. Ski Area

- Attributes: ID, Name, Location, Total Slopes, Total Lifts

- Relationships: Contains Slopes, Contains Lifts, Contains Dining Establishments

6. Public Restroom

- Attributes: ID, Location, Capacity

- Relationships: Located in Ski Area

A diagram of a computer

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