Upgraded Car Park Availability API

API Description: The Upgraded Carpark Availability API provides real-time information about parking lot availability. It allows users to retrieve data about available parking lots near their location based on the carpark number, date, and time.

Example Base URL: https://api.data.gov.sg/v1/transport/lot-finder

Endpoints:

1. Retrieve Car Park Availability near user location:
    - Description: Retrieve car parks with empty lots near user's input location.
    - Endpoint: GET /carparks/{x_user_coord}/{y_user_coord}
    - Parameters:
        a. x_user_coord (required, float): x-coordinate of user's input location
        b. y_user_coord (required, float): y-coordinate of user's input location
    - Response:
        a. carpark_avail_data (array): An array of car park availability data.
            i. carpark_number (string): The unique identifier of the car park.
            ii. address (string): The address of the car park
            iii. update_datetime (string): The date and time of the availability information.
            iv. x_coord (float): The x-coordinate of the carpark location.
            v. y_coord (float): The y-coordinate of the carpark location.
            vi. lot_type (string): The type of parking lot.
            vii. lots_available (integer): The number of available parking lots.

Additional APIs required

1. Car Park Availability API
2. HDB Carpark Information API
3. Google Maps Geolocation API

Car Park Availability API

API Description: The Upgraded Carpark Availability API provides real-time information about parking lot availability. It allows users to retrieve data about available parking lots based on the carpark number, date, and time.

Example Base URL: https://api.data.gov.sg/v1/transport/carpark-availability

Endpoints:

1. Retrieve Car Park Availability:
    - Description: Retrieves the availability of parking lots for a specific carpark number and datetime.
    - Endpoint: GET /carparks/{carpark_number}

- Parameters:
    a. carpark_number (required, string): The unique identifier of the car park.
- Response:
    a. carpark_avail_data (array): An array of car park availability data.
        i. carpark_number (string): The unique identifier of the car park.
        ii. update_datetime (string): The date and time of the availability information.
        iii. lot_type (string): The type of parking lot.
        iv. lots_available (integer): The number of available parking lots.
        v. total_lots (integer): The total number of parking lots.

HDB Carpark Information API

API Description: The HDB Carpark Information API provides up-to-date information about specific details of each HDB carpark in SIngapore

Example Base URL: https://api.data.gov.sg/v1/transport/carpark-details

Endpoints:

1. Retrieve Car Park Information:
    - Description: Retrieves detailed information about a specific car park
    - Endpoint: GET /carparks/{carpark_number}
    - Parameters:
        a. carpark_number (required, string): The unique identifier of the car park.
    - Response:
        a. carpark_info_data (array): An array of carpark information data.
            i. carpark_number (string): The unique identifier of the car park.
            ii. address (string): The address of the car park.
            iii. x_coord (float): The x-coordinate of the carpark location.
            iv. y_coord (float): The y-coordinate of the carpark location.
            v. car_park_type (string): The type of car park.
            vi. type_of_parking_system (string): The type of parking system.
            vii. short_term_parking (string): The availability of short-term parking.
            viii. free_parking (string): The availability of free parking.
            ix. night_parking (string): The availability of night parking.
            x. car_park_decks (integer): The number of car park decks.
            xi. gantry_height (float): The height of the car park gantry.
            xii. car_park_basement (string): Indicates if the car park has a basement.

Google Maps Geolocation API

API Description: The Google Maps Geolocation API provides information about the desired/current location of the user.

URL: https://developers.google.com/maps/documentation/javascript/geolocation

Description: Using the google maps API, we can determine the user’s current location or desired destination in terms of longitude and latitude (x, y) to find the nearest car park with empty lots.