

1. Reverse String

Java

```
public class ReverseString {
    public static void main(String[] args) {
        String input = "retlaohS";
        char[] output = new char[input.length()];
        for(int i = input.length() - 1, j = 0; i >= 0; i--, j++) {
            output[j] = input.charAt(i);
        }
        String reversed = new String(output);
        System.out.println(reversed);
    }
}
```

2. Packing

SQL

```
SELECT user_code, count(tote_number) as num_packed
FROM order_tote_process_log
WHERE CAST(process_date as time) >= '10:00:00' AND CAST(process_date as
time) <= '10:59:59'
AND action_code = 'PACKED'
AND user_code <> 'SYS' -- optional clause
GROUP BY user_code
;
```

Expected Output from given data:

user_code	num_packed
P1	1

3. Warehouse

Python

```
def calculate_max_quantity(box_length, box_width, box_height,
product_length, product_width, product_height):
    # in python 3, // is integer division, rounds down to nearest integer
    length_constraint = box_length // product_length
    width_constraint = box_width // product_width
    height_constraint = box_height // product_height

    max_quantity = length_constraint * width_constraint * height_constraint
    return max_quantity
```

4. Logistics

Please see the q4 subdirectory of the repository. It includes a README file.

Endpoint: **POST** `/calculate-shipping-fee`

The request body is a JSON object that contains a single key-value pair. The key is "items" and the value is an array of objects. Each object in the array represents a parcel and contains the following fields:

length	Length of parcel in centimetres (float)
width	Width of parcel in centimetres (float)
height	Height of parcel in centimetres (float)
weight	Weight of parcel in kilograms (float)
temperature_condition	The temperature condition of the parcel, which can be either "Ambient" or "Chill" (string)
quantity	The number of parcels with the same dimension and weight (integer).

Sample Request parameters:

```
{
  "items": [
    {
      "length": 30.5,
      "width": 20.5,
      "height": 10.2,
      "weight": 2.4,
      "temperature_condition": "Ambient",
      "quantity": 3
    },
    {
      "length": 40.1,
      "width": 30.0,
      "height": 20.4,
      "weight": 6.1,
      "temperature_condition": "Chill",
      "quantity": 1
    }
  ]
}
```

Response body:

```
{
  "total_fee": "integer"
}
```