MARKS

CO2: / 50

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Faculty of Computing

Universiti Malaysia Pahang

BCI2023 Database Systems

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Group No : GROUP 10

Lab Section: 02G

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Project Title: GOOD MANAGEMENT SYSTEM IN PORT DURING PANDEMIC

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PART 1 – CONCEPTUAL AND LOGICAL DATABASE DESIGN

INTRODUCTION OF PROJECT DOMAIN (BACKGROUND)

In 2019, more than 11 billion tonnes of commodities were moved by water. This accounted for more than 80% of worldwide trade, and seaborne cargo transport is likely to grow in the coming years. Economic connectivity and growth are facilitated by ports, particularly for island countries. That is how things are transported to and from the rest of the globe at a low cost, and goods that are not available in the country are made available to its citizens and enterprises. The Coronavirus disease (COVID-19) sparked a global health and economic disaster that has far-reaching consequences for maritime travel and trade. Ports, shipping, and supply lines have all been disrupted as a result of the pandemic's restrictions.This is why we need to create a project management system that can handle portability. The title for this project is Good Management System in Port During Pandemic. This project is intended to manage the administrative procedures associated with a vessel's arrival and departure, as well as to monitor traffic flow inside the port basin.

This project is completely funded, and the system is being built on a budget that is reasonable. The Port Management System is designed to handle administrative operations associated with a vessel's arrival and departure. This system gave customers real-time updates on vessel arrivals and departures, port operations management, cargo and logistics information, gate operations, and more. Users must follow all of the system's instructions in order to obtain the services.

The specifics of this project concern how the data is stored and managed by the Port Management System's database system. The database will include all of the information and data related to the port's business rules and management. Who is participating in this business and their attributes, as well as any tasks included in this system, are examples of data and information that can be recorded in the system. The entity or object that can be found in this system are contractor, cargo, company, agent, stevedores, and ship.

In a nutshell, this system is critical for planning and controlling all port operations. It assists the stevedores in making quick decisions by using the appropriate knowledge and introducing appropriate solutions to problems that may arise during his job in the harbor. It also aids in the prediction of potential difficulties in order to avoid them. The system will also assist port agents in improving their performance, productivity, and efficiency, as well as resolving problems at the port. This results in higher customer satisfaction, lower costs, and shorter vessel wait times.

SCOPE OF THE PROJECT

The System

The Port Management Management System was created to oversee the flow of traffic inside the port basin and to manage the administrative procedures associated with a vessel's arrival and departure. The system also stored all the information about agents at the port, type of the freight and vehicle.

The User

- Port
    - Manages and records all information concerning freight at the port, as well as freight history, including departure and arrival freight.

- Target
    - Delivering freight to the port and receiving freight from the port

- Agent
    - They will be in charge of managing the target, assigning them to specific freight and sending requests to the port to notify them of freight arrivals.

COMPARISON BETWEEN TWO DATABASE

Before Cargo on Ship	After Cargo on Ship
Destination I Destination I Session ● Destination I time ● Destination I date ● Destination I distance ● Destination I fee Destination II Destination II Session ● Destination II time ● Destination II date ● Destination II distance ● Destination II fee	Ship Ship Registration ● Ship company ● Ship type ● Ship license ● Ship arrival destination ● Ship arrival time Port Port management ● Port arrival location ● Port arrival name ● Port rules ● Port size
Company Company id ● Company name ● Company member ● Company salary ● Company loss ● Company profit ● Company type ● Company fee ● Company tax Agent Agent id ● Agent name ● Agent telNo ● Agent email ● Agent physical ● Agent type ● Agent language ● Agent document ● Agent bill	Company Company id ● Company name ● Company member ● Company profit ● Company type ● Company fee ● Company tax Port Agent Port Agent id ● Port Agent arrival name ● Port Agent arrival telNo ● Port Agent arrival email ● Port Agent company ● Port Agent arrival place ● Port Agent fee ● Port Agent document
Company Company id ● Company name	Agent Agent id ● Agent arrival name

<table>
<tr>
<td>

Company member
Company salary
Company loss
Company profit
Company type
Company fee
Company tax

Company
<u>Company id</u>

Company name
Company member
Company profit
Company type
Company fee
Company tax

</td>
<td>

Agent arrival telNo
Agent arrival email
Agent physical
Agent type
Agent language
Agent document
Agent bill

Stevedores
<u>Stevedores id</u>

Stevedores arrival name
Stevedores company
Stevedores arrival boat
Stevedores license
Stevedores permit

Stevedores fee
</td>
</tr>
<tr>
<td>
Company
<u>Company id</u>

Company name
Company member
Company profit
Company type
Company fee
Company tax

Agent
<u>Agent id</u>

Agent name
Agent telNo
Agent email
Agent physical
Agent type
Agent language
Agent document
Agent bill

</td>
<td>
Agent
<u>Agent id</u>

Agent arrival name
Agent arrival telNo
Agent arrival email
Agent physical
Agent type
Agent language
Agent document
Agent bill

Company
<u>Company id</u>

Company name
Company member
Company profit
Company type
Company fee
Company tax

</td>
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<tr>
<td>
Agent
<u>Agent id</u>

Agent name
Agent telNo
Agent email
Agent physical

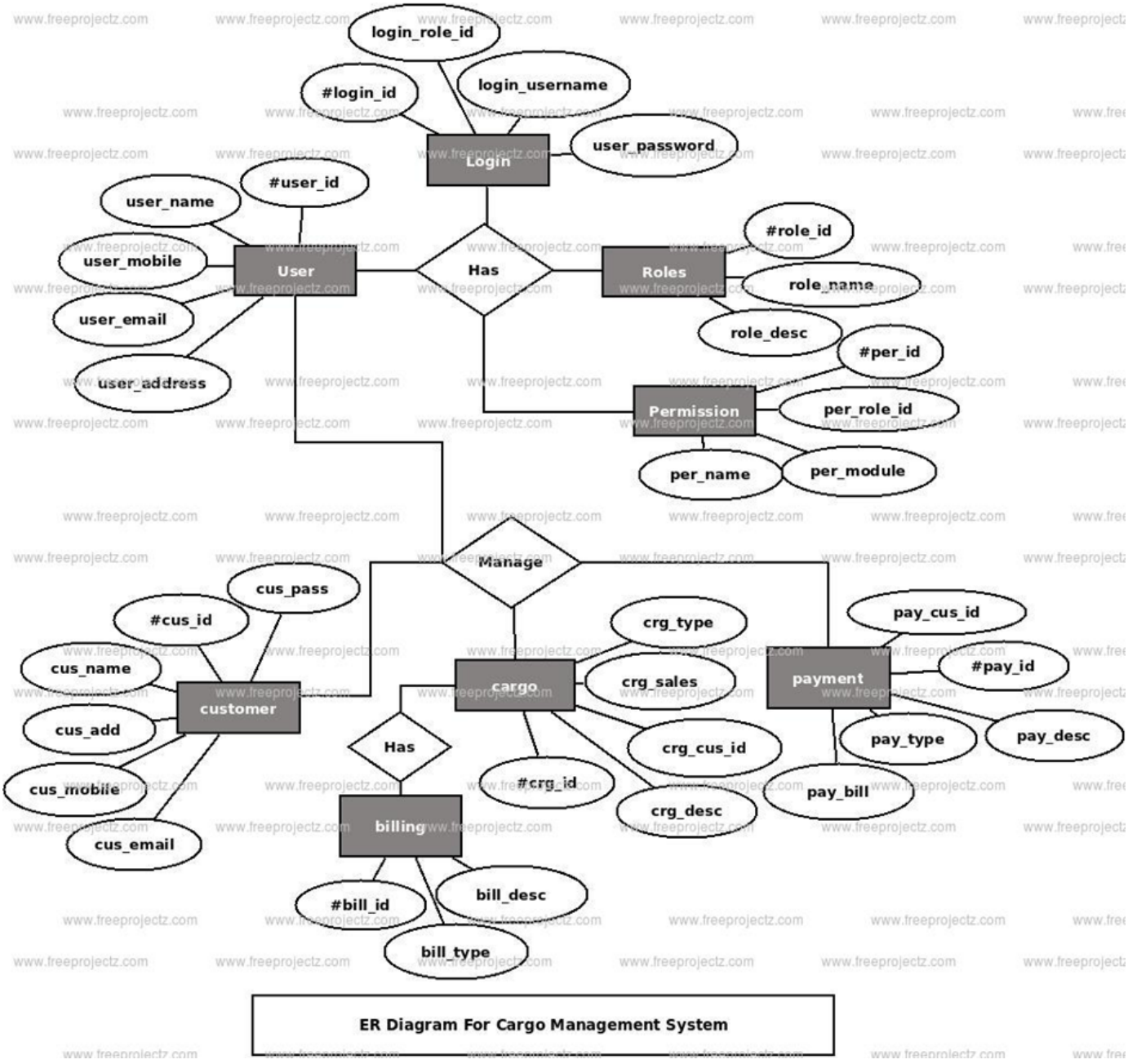
</td>
<td></td>
</tr>
</table>

• Agent type • Agent language • Agent document • Agent bill Driver <u>Driver id</u> • Driver name • Driver company • Driver license • Driver vehicle • Driver fee	
Contractor <u>Contractor id</u> • Contractor company • Contractor name • Contractor license • Contractor permit • Contractor fee Port Agent <u>Port Agent id</u> • Port Agent name • Port Agent telNo • Port Agent email • Port Agent company • Port Agent place • Port Agent fee • Port Agent document	
Port Agent <u>Port Agent id</u> • Port Agent name • Port Agent telNo • Port Agent email • Port Agent company • Port Agent place • Port Agent fee • Port Agent document Stevedores <u>Stevedores id</u>	

• Stevedores name • Stevedores company • Stevedores boat • Stevedores license • Stevedores permit • Stevedores fee	
Stevedores <u>Stevedores id</u> • Stevedores name • Stevedores company • Stevedores boat • Stevedores license • Stevedores permit • Stevedores fee Ship <u>Ship Registration</u> • Ship company • Ship type • Ship license • Ship depart destination • Ship depart time	

CASE STUDY

Case Study 1



This is the example of a cargo management system, representing the relation between cargo, billing, customer, payment, permission, user, roles, and login. It used structure data and to define the relationship between structured data groups of cargo management system functionalities.

The main entities of the cargo management system are customer, cargo, transaction, billing, enquiry and payment. Basically, users have to login to their account, register to a specific role and gain permission to

access a particular database function. After the user gains permission, users can manage their cargo detail, billing information, payment, and customize the customer detail.The case study 1 is picturing the basic process and the flow of the cargo management system.

Case Study 2

PORT MANAGEMENT INFORMATION SYSTEM

I-Port Port Management Information System (PMIS) has been designed to manage the administrative procedures related to the arrival and departure of a vessel, and to supervise the flow of traffic within the port basin.

It is a web based application accessible to the whole port community operators (i.e. Harbour Master, Coast Guard, Maritime Agents, Pilots, Tugboats, Port Facilities) via internet or intranet.

I-PORT PMIS is compliant with international standards and regulations including:

- ISPS Code
- IMO regulations
- UNECE standards
- European regulations

I-PORT PMIS is a stand-alone platform that can be integrated with the Vessel Traffic Management System (VTMS) and/or the Port Community System (PCS), introducing the ability to manage a country's ports from one, centralized installation.

I-PORT PMIS is data provider for Safe Sea Net, the vessel traffic monitoring system of the European waters. It provides an interface to other internal or external applications based on standard Web Services technologies that enables the exchange of information and documents in XML format over HTTP protocol.

MANAGEMENT OF DOCUMENTS AND VOYAGE INFORMATION

All information relating to a single voyage that a vessel has carried out, is carrying out or it is expected to carry out, with detailed information on ship movements and data such as cargo, passengers, crew, port of departure, port of destination, ETA, ETD, etc.

MANAGEMENT OF VESSELS INFORMATION

Main data of vessels will be stored and retrieved from the vessels database.

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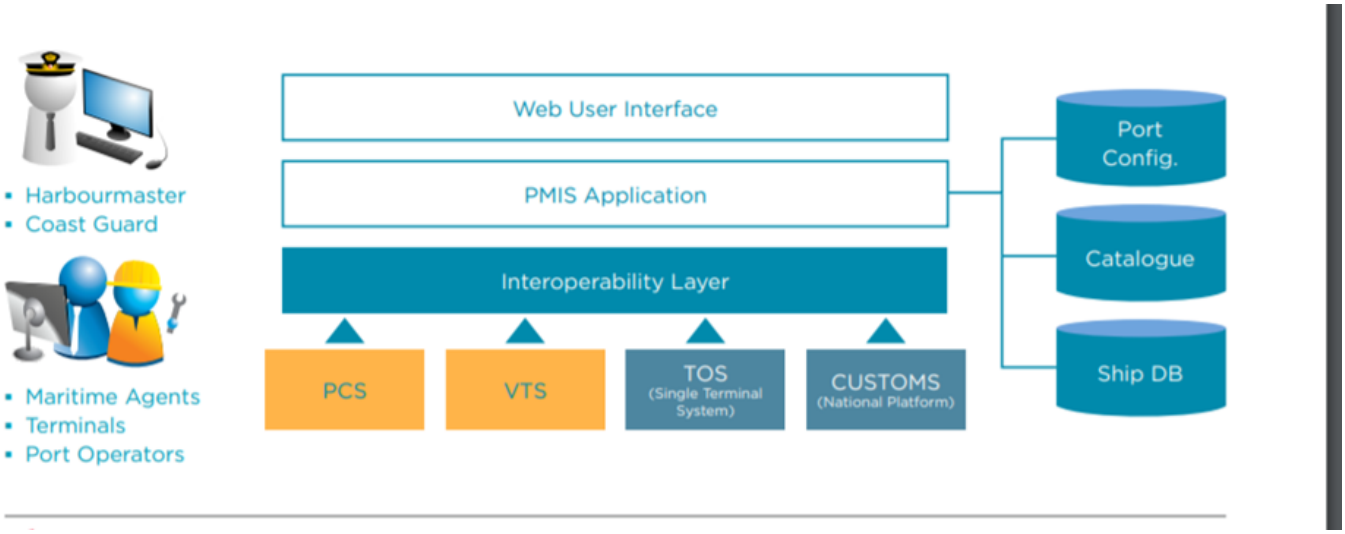


For the second case study, to make an easier and efficient port management system, we will use I-Port management system where I-Port Port Management Information System (PMIS) has been designed to manage the administrative procedures related to the arrival and departure of a vessel, and to supervise the flow of traffic within the port basin. It is a web based application accessible to the whole port community operators (i.e. Maritime Agents, Tugboats, Port Facilities,) via internet or intranet. All information relating to a single voyage that a vessel has carried out, is carrying out or it is expected to carry out, with detailed information on ship movements and data such as cargo, crew, port of departure, port of destination. The platform can manage a number of documents relating to all aspects of a ships call, starting from the ship's arrival in the port up to its departure

BUSINESS RULE AND RELATIONSHIP

In daily operation of the port, it of course involves the flow of containers or freights. According to the ISO 6346, each freight is uniquely identified with a code. The code contains 3 alphabets as owner code, 1 alphabet as category , 6 serial numbers and the last digit is the check digit. The check digit is to ensure the key in code is correct. Additional information and checking scheme links are given in the references. The checking scheme is implemented using python. Each freight got its types, max carried weight and dimensions.

There must be someone sending the freights to the port, and loading the freights from the port. This someone is called “target” in the database implementation. The target can be a naval captain of the freight ship, a freight carrier driver, or a freight carrier rail driver.

As the logistic industry grows bigger, agents arise who manage these targets(workers), assign them to carry specific freight. Therefore, the agents will send requests to the port to notify the port to receive freights from a(many) target, and unload freights to a(many) target. The request can be inbound, outbound or a mix of both. The request also may specify the origin of the freight.

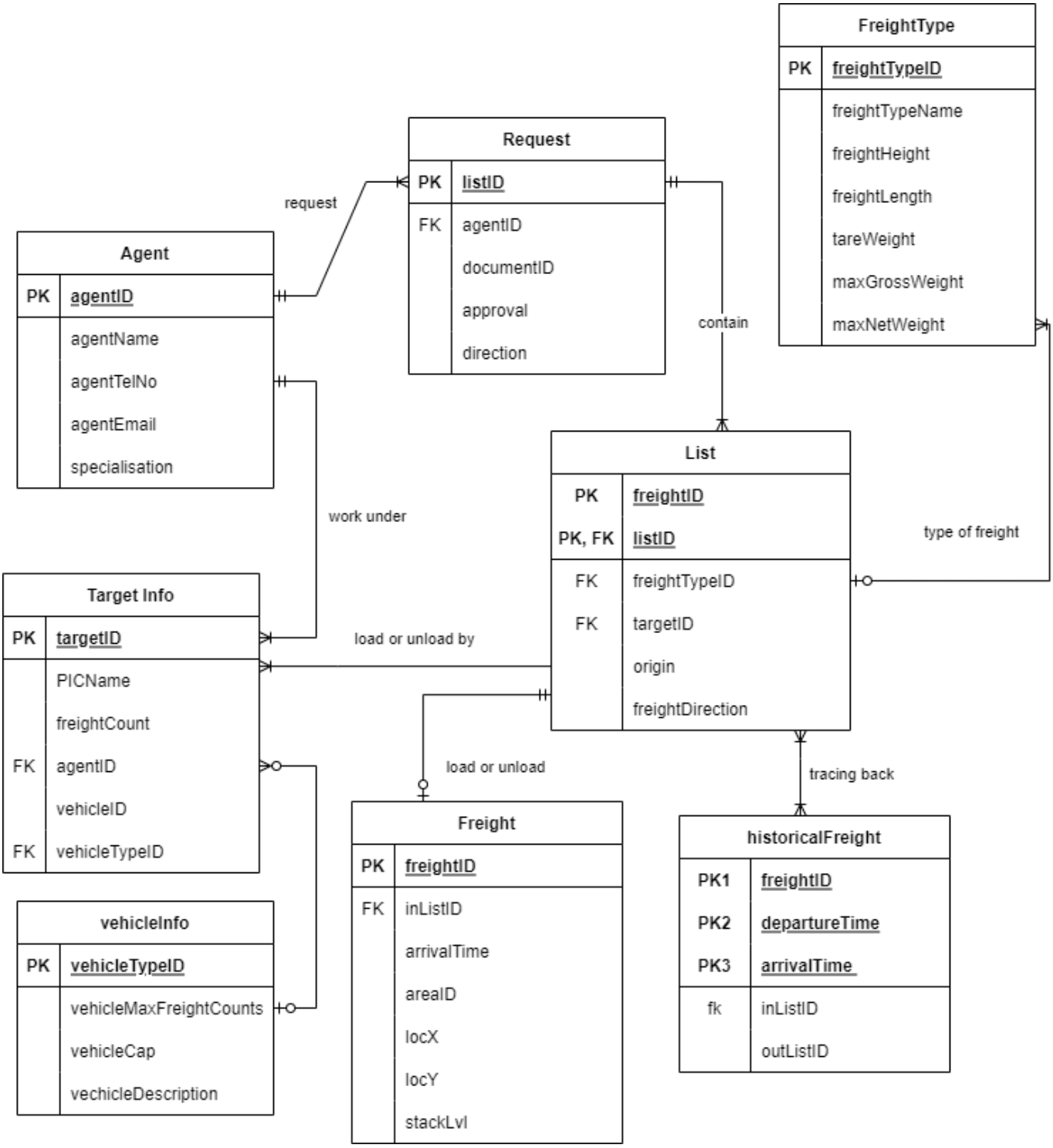
By common sense, the freights must be available in the port when requested to be unloaded. Similarly, not two same freights exist in the port unless on a different timeline.

When the port receives the freights, then the port also records the freight code, the location of these freights, and the arrival time. When unloading the freights, the departure time is also recorded.

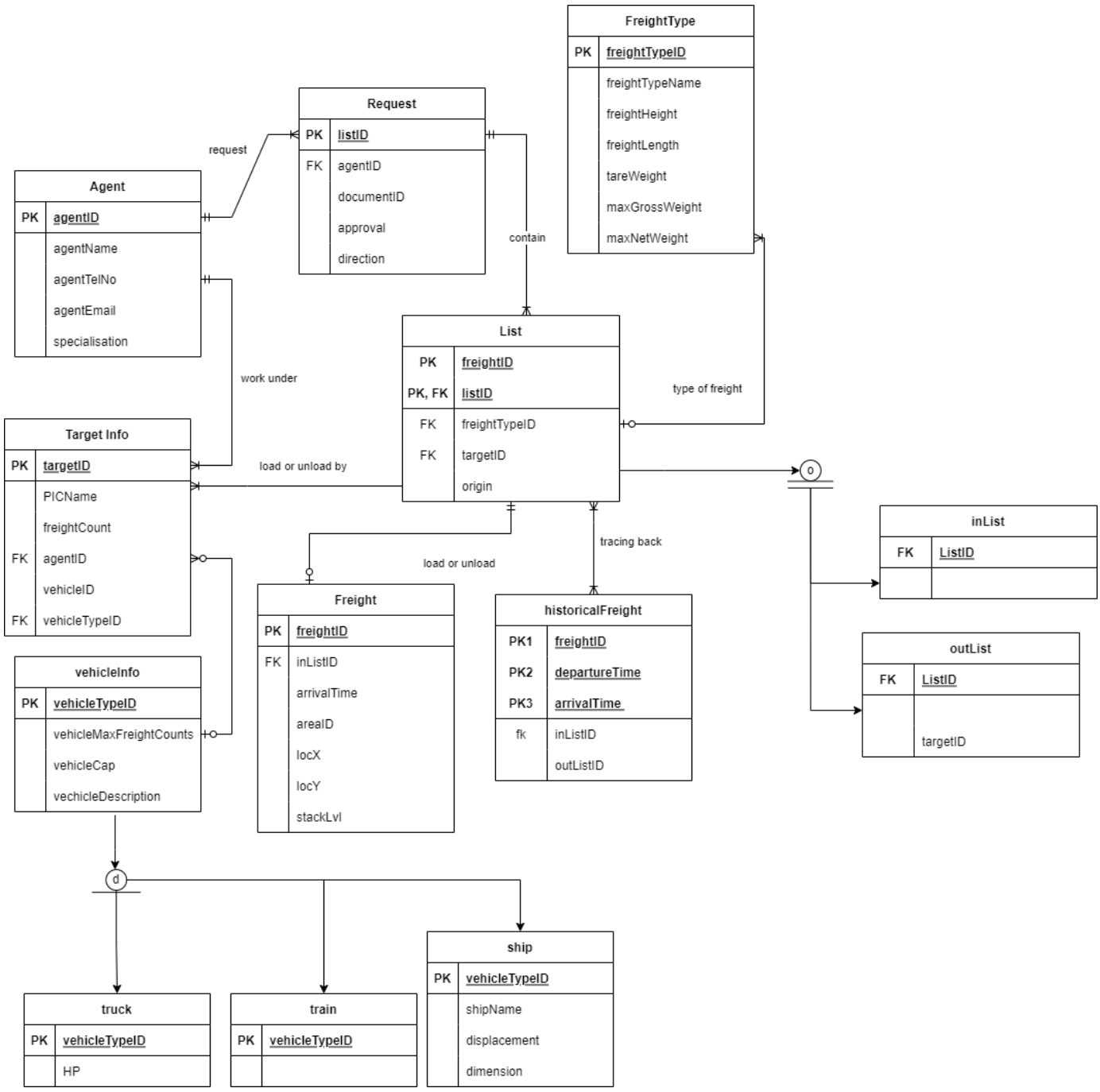
Lastly, the port also wishes to keep the history of freights.

Freight detail	**Freight (ID, freightType, weight, dimension, goodType, originID, arrivalTime)**
Location of freight	**Position (freightID, area, rackNo, axis-x, axis-y)**
Load and unload freight	**originInfo (originID, PICName, contact)**
	agent (ID, name, telNo, email)
	targetInfo (ID, name, agent.ID, vehicle.ID, vehicle.supertype, vehicle.typeID)
Vehicle Info	**truck (vehicle.typeID, capacity)**
	train (vehicle.typeID, capacity, maxFreightCount)
	ship (vehicle.typeID, capacity)
Contain of list	**requestList (refNo, freightID, agent.ID , target.ID, direction)**
Tracing freight	**historicalFreight (ID, freightType, weight, dimension, goodType, originID, refNo, arrivalTime, endTime)**

ER DIAGRAM


FreightType
PK
freightTypeID
freightTypeName
freightHeight
freightLength
tareWeight
maxGrossWeight
maxNetWeight
Request
PK
listID
FK
agentID
documentID
approval
direction
request
contain
Agent
PK
agentID
agentName
agentTelNo
agentEmail
specialisation
List
PK
freightID
PK, FK
listID
FK
freightTypeID
FK
targetID
origin
freightDirection
work under
type of freight
Target Info
PK
targetID
PICName
freightCount
FK
agentID
vehicleID
FK
vehicleTypeID
load or unload by
load or unload
tracing back
Freight
PK
freightID
FK
inListID
arrivalTime
areaID
locX
locY
stackLvl
historicalFreight
PK1
freightID
PK2
departureTime
PK3
arrivalTime
fk
inListID
outListID
vehicleInfo
PK
vehicleTypeID
vehicleMaxFreightCounts
vehicleCap
vechicleDescription

EER DIAGRAM


FreightType
PK freightTypeID
freightTypeName
freightHeight
freightLength
tareWeight
maxGrossWeight
maxNetWeight
Request
PK listID
FK agentID
documentID
approval
direction
request
Agent
PK agentID
agentName
agentTelNo
agentEmail
specialisation
contain
List
PK freightID
PK, FK listID
FK freightTypeID
FK targetID
origin
work under
type of freight
Target Info
PK targetID
PICName
freightCount
FK agentID
vehicleID
FK vehicleTypeID
load or unload by
load or unload
tracing back
o
inList
FK ListID
outList
FK ListID
targetID
Freight
PK freightID
FK inListID
arrivalTime
areaID
locX
locY
stackLvl
historicalFreight
PK1 freightID
PK2 departureTime
PK3 arrivalTime
fk inListID
outListID
vehicleInfo
PK vehicleTypeID
vehicleMaxFreightCounts
vehicleCap
vechicleDescription
d
truck
PK vehicleTypeID
HP
train
PK vehicleTypeID
ship
PK vehicleTypeID
shipName
displacement
dimension

PART 2 – LOGICAL DATABASE DESIGN

Note: https://github.com/taimoon/database-project
You can download the related python files, sql files, and run them on your MYSQL databases. Note that the sql files containing the word "extra" are not demonstrated in this report as it contains records more than a few hundred. However, you may run the sql files using source command for better demonstration because it is to simulate the enormous flow of data in daily operation of the port.

SQL COMMAND

Note that the readers need to change the path accordingly.

- CREATE DATABASE AND TABLE

```
CREATE DATABASE portManagementDB;
USE portManagementDB;

CREATE TABLE agent(
        agentID                 VARCHAR(3) PRIMARY KEY NOT NULL,
        agentName               VARCHAR(125) NOT NULL,
        agentEmail              VARCHAR(50) NOT NULL,
        specialisation  VARCHAR(100) NOT NULL
);
CREATE TABLE request(
        listID                  INT PRIMARY KEY AUTO_INCREMENT,
        agentID                 VARCHAR(3),
        FOREIGN KEY(agentID) REFERENCES agent(agentID),
        documentID              VARCHAR(20) NOT NULL,
        approval                BOOLEAN NOT NULL,
        direction               VARCHAR(5) NOT NULL
);
CREATE TABLE freightType(
        freightTypeID   VARCHAR(4) PRIMARY KEY,
        freightTypeName VARCHAR(50) NOT NULL,
        freightHeight   FLOAT,
        freightLength   FLOAT,
        tareWeight              FLOAT,
        maxGrossWeight          FlOAT,
        maxNetWeight  FLOAT
);
CREATE TABLE list(
        listID                  INT NOT NULL,
        freightID               VARCHAR(11) NOT NULL,
        FOREIGN KEY(listID) REFERENCES request(listID),
        PRIMARY KEY(listID, freightID),
        freightTypeID           VARCHAR(4) NOT NULL,
        targetID                VARCHAR(20) NOT NULL,
        freightDirection        BOOLEAN NOT NULL,
        origin                  VARCHAR(16)
```

```
);

CREATE TABLE freight(
        freightID               VARCHAR(11) NOT NULL,
        inListID                INT NOT NULL,
        arrivalTime             TIMESTAMP NOT NULL,
        areaID                  VARCHAR(2),
        locX                    INT,
        locY                    INT,
        stackLvl                INT
);
CREATE TABLE historicalFreight(
        freightID               VARCHAR(11) NOT NULL,
        arrivalTime             TIMESTAMP NOT NULL,
        departureTime   TIMESTAMP NOT NULL,
        inListID                INT NOT NULL,
        outListID               INT NOT NULL
);
CREATE TABLE vehicleInfo(
        vehicleTypeID                   INT PRIMARY KEY AUTO_INCREMENT,
        vehicleName                             VARCHAR(20) NOT NULL,
        vehicleMaxFreightCounts         INT,
        vehicleCap                              FLOAT,
        vehicleDescription              VARCHAR(100)
);
CREATE TABLE targetInfo(
        targetID                INT PRIMARY KEY,
        agentID                 VARCHAR(3),
        FOREIGN KEY(agentID) REFERENCES agent(agentID),
        PICName                         VARCHAR(50),
        vehicleID               VARCHAR(20) UNIQUE,
        vehicleTypeID   INT,
        FOREIGN KEY(vehicleTypeID) REFERENCES vehicleInfo(vehicleTypeID)
);
```

```
mysql> SHOW TABLES;
+-------------------------------+
| Tables_in_portmanagementdb    |
+-------------------------------+
| agent                         |
| freight                       |
| freighttype                   |
| historicalfreight             |
| list                          |
| request                       |
| targetinfo                    |
| vehicleinfo                   |
+-------------------------------+
8 rows in set (0.02 sec)
```

- INSERT DATA

INSERT DATA AGENT

```
INSERT INTO agent(agentID, agentName, agentEmail, specialisation)
        VALUES
        ("GSK", "Gensokyo The Speedy", "gensokyo@gmail.com", "Fantasy Travel Logistic"),
        ("CMS", "Commonwealth of Man", "commonwealthOfMan@stellaris.milkyway.earth", "FTL Instellar Logistic"),
   ("AIS", "Albanian Int Shipping Agency", "arbagent@arbaship.com", "Shipping Agency"),
   ("MAC", "Mory And Cie", "support@ruzave.com", "Freight Forwading"),
   ("PAB", "Promar Agencies Belgium", "ghent@promar-agencies.be", "Ship Spares Handling"),
   ("PGF", "Pasir Gudang Forwarding", "sales@pgship.com.my", "Shipment Pre-Alert"),
   ("HTS", "Harrisons Trading Sabah", "general@harrisons.com.my", "Fast Moving Consumer Goods"),
   ("CSB", "China Shipping Beijing", "info@ewtl.com", "Cargo Insurance");
```

INSERT DATA VEHICLE INFO

```
INSERT INTO vehicleInfo(vehicleName, vehicleMaxFreightCounts, vehicleCap, vehicleDescription)
        VALUES
   ("Glorious Ark Ship", 1000, 50000, "Cutting edge technology made space ship with FTL technology. Able to carry vital goods"),
        ("Magic Broom", 10, 10000, "the fruit of hardship of an oridnary human"),
   ("Escalade Chevy", 7, 45000, "Specialty trailer. Carry various of liquid"),
        ("Chevrolet Roro", 12, 50000, "Specialty trailer. Carry various of liquid"),
   ("Volvo Appen", 10, 45000, "Fantainer trailer. Mechanically ventillation system"),
        ("Freuhauf", 13, 40000, "Fantainer trailer. Mechanically ventillation system"),
   ("Hyundai Translead", 12, 50000, "Specialty trailer. Carry various of liquid"),
   ("Kentucky Trailer", 10, 48000, "Fantainer trailer. Mechanically ventillation system"),
        ("Freuhauf", 13, 40000, "Fantainer trailer. Carry dangerous liquid");
```

INSERT DATA TARGET INFO

```
INSERT INTO targetInfo(targetID, PICName, agentID, vehicleID, vehicleTypeID)
        VALUES
        (1000,  "Marisa Kirisame", "GSK", "RSD105998", 1),
        (1050, "Captain Ukewon Vulcan", "CMS",  "SUN388997", 2),
   (1450,  "Oliver Haaland", "AIS", "JKF234467", 1),
        (2435, "Erling Salah", "MAC",  "FUG776455", 2),
   (3221,  "Ahmad De Bruyne", "PAB", "BJK334241", 2),
        (7709, "Lionel Kante", "PGF",  "KSU777231", 1),
   (8801,  "Jacob Frye", "HTS", "KKB787890", 2),
        (1136, "Saka Smith Rowe", "CSB",  "SOK889077", 2);
```

INSERT DATA FREIGHT TYPE

```
INSERT INTO freightType(freightTypeID, freightTypeName, freightHeight, freightLength, tareWeight, maxGrossWeight, maxNetWeight)
        VALUES
        ("20G0", "General Purpose Container", 2438, 3048, 2080, 30500, 28300),
   ("22G1", "General Purpose Container", 2086, 3007, 2250, 30480, 28300),
```

("20H0", "Insulated Container", 2591, 3048, 2275, 32311, 29635),
("20P1", "Flat (Fixed Ends)", 2438, 3048, 3172, 31788, 28341),
("20T5", "Tank Container", 2896, 12192, 3033, 30626, 29954),
("22B0", "Bulk Container", 2438, 6096, 3462, 30768, 29912),
("22H0", "Insulated Container", 2896, 7315, 3489, 32858, 30886),
("22U6", "Hardtop Container", 3421, 2444,3899,32884,29385),
("22U1", "Open Top Container)", 2677, 4590, 3172, 31788, 28341),
("22V0", "Ventilated Container", 2378, 2112, 3033, 33423,29954);

INSERT DATA REQUEST

```
INSERT INTO request(agentID, documentID, approval, direction)
        VALUES
        ("CMS", "MY10059", TRUE, "IN"),
        ("GSK", "MY10060", TRUE, "INOUT");
```

INSERT DATA LIST

```
INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin)
        VALUES
        (1, "GSKU3053054", 1000,"20G0", TRUE, "Gensokyo"),
        (1, "CMSU7773080", 1000,"20G0", TRUE, "Lunarian"),
        (2, "CMSU7773078", 1000,"20G0", TRUE, "the Mars"),
        (2, "GSKU3053078", 1000,"20G0", FALSE, "Gensokyo");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl)
        VALUES
        (1, "GSKU3053054", now(), 'A', 0,1,2),
        (1, "CMSU7773080", now(), 'A', 0,1,3),
        (2, "CMSU7773078", now(), 'B', 0,1,3);

INSERT INTO historicalFreight(freightID, departureTime, arrivalTime,inListID, outListID)
        VALUES ("CMSU7773080", now(),
        (SELECT arrivalTime FROM freight WHERE freightID="CMSU7773080"),
        (SELECT inListID FROM freight WHERE freightID="CMSU7773080"), "2");

DELETE FROM freight WHERE freightID = "CMSU7773078";

INSERT INTO request(agentID, documentID, approval, direction) VALUES ("HTS", "F5DA587E04", TRUE,
"IN");
```

INSERT DATA LIST

```
INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3",
"HTSU5376715", "22U6","1450", True, "South Korean");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3",
"HTSU7073493", "20P1","1450", True, "Europe");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3",
"HTSU3759870", "22V0","1050", True, "Indonesian");
```

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3", "HTSU9862459", "20P1","3221", True, "Brazil");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3", "HTSU7937482", "22V0","3221", True, "Europe");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3", "HTSU8391349", "20G0","2435", True, "Malaysia");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3", "HTSU1374870", "22U6","1050", True, "Japan");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3", "HTSU2833926", "20T5","3221", True, "France");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3", "HTSU4336298", "20H0","7709", True, "Brazil");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3", "HTSU6532411", "20H0","3221", True, "South Korean");

INSERT DATA FREIGHT

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3", "HTSU5376715", now(), "D","27", "51", "4");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3", "HTSU7073493", now(), "D","1", "20", "0");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3", "HTSU3759870", now(), "A","94", "54", "5");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3", "HTSU9862459", now(), "B","26", "75", "3");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3", "HTSU7937482", now(), "C","77", "60", "10");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3", "HTSU8391349", now(), "B","42", "45", "0");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3", "HTSU1374870", now(), "B","66", "42", "7");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3", "HTSU2833926", now(), "A","91", "16", "3");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3", "HTSU4336298", now(), "B","87", "38", "7");

```
INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3",
"HTSU6532411", now(), "C","15", "57", "8");

#inlist
INSERT INTO request(agentID, documentID, approval, direction) VALUES ("HTS", "F5DA587E04", TRUE,
"IN");
INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3",
"HTSU5376715", "22U6","1450", True, "South Korean");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3",
"HTSU7073493", "20P1","1450", True, "Europe");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3",
"HTSU3759870", "22V0","1050", True, "Indonesian");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3",
"HTSU9862459", "20P1","3221", True, "Brazil");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3",
"HTSU7937482", "22V0","3221", True, "Europe");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3",
"HTSU8391349", "20G0","2435", True, "Malaysia");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3",
"HTSU1374870", "22U6","1050", True, "Japan");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3",
"HTSU2833926", "20T5","3221", True, "France");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3",
"HTSU4336298", "20H0","7709", True, "Brazil");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("3",
"HTSU6532411", "20H0","3221", True, "South Korean");
```

INSERT DATA FREIGHT

```
INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3",
"HTSU5376715", now(), "D","27", "51", "4");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3",
"HTSU7073493", now(), "D","1", "20", "0");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3",
"HTSU3759870", now(), "A","94", "54", "5");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3",
"HTSU9862459", now(), "B","26", "75", "3");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3",
"HTSU7937482", now(), "C","77", "60", "10");
```

```
INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3",
"HTSU8391349", now(), "B","42", "45", "0");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3",
"HTSU1374870", now(), "B","66", "42", "7");
INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3",
"HTSU2833926", now(), "A","91", "16", "3");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3",
"HTSU4336298", now(), "B","87", "38", "7");

INSERT INTO freight(inListID, freightID, arrivalTime, areaID,locX, locY, stackLvl) VALUES ("3",
"HTSU6532411", now(), "C","15", "57", "8");

#outlist
INSERT INTO request(agentID, documentID, approval, direction) VALUES ("MAC", "3C5B40A6E3", TRUE,
"OUT");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("4",
"HTSU2833926", "20H0","1050", False, "United Kingdom");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("4",
"HTSU8391349", "22G1","8801", False, "German");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("4",
"CMSU7773080", "22G1","1450", False, "France");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("4",
"HTSU7073493", "20G0","1450", False, "United Kingdom");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("4",
"HTSU7937482", "22V0","2435", False, "Thailand");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("4",
"HTSU5376715", "22G1","1050", False, "China");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("4",
"HTSU3759870", "22B0","7709", False, "United States");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("4",
"HTSU6532411", "22G1","1136", False, "South Korean");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("4",
"HTSU1374870", "22H0","1000", False, "South Africa");

INSERT INTO list(listID, freightID, freightTypeID, targetID, freightDirection, origin) VALUES ("4",
"HTSU9862459", "22U1","1050", False, "Brazil");

INSERT INTO historicalFreight(freightID, departureTime, arrivalTime,inListID, outListID) VALUES
("HTSU2833926", now(), (SELECT arrivalTime FROM freight WHERE freightID="HTSU2833926"),(SELECT
```

inListID FROM freight WHERE freightID="HTSU2833926"), "4");

INSERT INTO historicalFreight(freightID, departureTime, arrivalTime,inListID, outListID) VALUES ("HTSU8391349", now(), (SELECT arrivalTime FROM freight WHERE freightID="HTSU8391349"),(SELECT inListID FROM freight WHERE freightID="HTSU8391349"), "4");

INSERT INTO historicalFreight(freightID, departureTime, arrivalTime,inListID, outListID) VALUES ("CMSU7773080", now(), (SELECT arrivalTime FROM freight WHERE freightID="CMSU7773080"),(SELECT inListID FROM freight WHERE freightID="CMSU7773080"), "4");

INSERT INTO historicalFreight(freightID, departureTime, arrivalTime,inListID, outListID) VALUES ("HTSU7073493", now(), (SELECT arrivalTime FROM freight WHERE freightID="HTSU7073493"),(SELECT inListID FROM freight WHERE freightID="HTSU7073493"), "4");

INSERT INTO historicalFreight(freightID, departureTime, arrivalTime,inListID, outListID) VALUES ("HTSU7937482", now(), (SELECT arrivalTime FROM freight WHERE freightID="HTSU7937482"),(SELECT inListID FROM freight WHERE freightID="HTSU7937482"), "4");

INSERT INTO historicalFreight(freightID, departureTime, arrivalTime,inListID, outListID) VALUES ("HTSU5376715", now(), (SELECT arrivalTime FROM freight WHERE freightID="HTSU5376715"),(SELECT inListID FROM freight WHERE freightID="HTSU5376715"), "4");

INSERT INTO historicalFreight(freightID, departureTime, arrivalTime,inListID, outListID) VALUES ("HTSU3759870", now(), (SELECT arrivalTime FROM freight WHERE freightID="HTSU3759870"),(SELECT inListID FROM freight WHERE freightID="HTSU3759870"), "4");

INSERT INTO historicalFreight(freightID, departureTime, arrivalTime,inListID, outListID) VALUES ("HTSU6532411", now(), (SELECT arrivalTime FROM freight WHERE freightID="HTSU6532411"),(SELECT inListID FROM freight WHERE freightID="HTSU6532411"), "4");

INSERT INTO historicalFreight(freightID, departureTime, arrivalTime,inListID, outListID) VALUES ("HTSU1374870", now(), (SELECT arrivalTime FROM freight WHERE freightID="HTSU1374870"),(SELECT inListID FROM freight WHERE freightID="HTSU1374870"), "4");

INSERT INTO historicalFreight(freightID, departureTime, arrivalTime,inListID, outListID) VALUES ("HTSU9862459", now(), (SELECT arrivalTime FROM freight WHERE freightID="HTSU9862459"),(SELECT inListID FROM freight WHERE freightID="HTSU9862459"), "4");

- DELETE DATA

```
DELETE FROM freight WHERE freightID="HTSU2833926";
DELETE FROM freight WHERE freightID="HTSU8391349";
DELETE FROM freight WHERE freightID="CMSU7773080";
DELETE FROM freight WHERE freightID="HTSU7073493";
DELETE FROM freight WHERE freightID="HTSU7937482";
DELETE FROM freight WHERE freightID="HTSU5376715";
DELETE FROM freight WHERE freightID="HTSU3759870";
DELETE FROM freight WHERE freightID="HTSU6532411";
DELETE FROM freight WHERE freightID="HTSU1374870";
DELETE FROM freight WHERE freightID="HTSU9862459";
```

- PRINT CONTENT USING (USING SELECT * FROM)

select * from agent;

agentID	agentName	agentEmail	specialisation
AIS	Albanian Int Shipping Agency	arbagent@arbaship.com	Shipping Agency
CMS	Commonwealth of Man	commonwealthOfMan@stellaris.milkyway.earth	FTL Instellar Logistic
CSB	China Shipping Beijing	info@ewtl.com	Cargo Insurance
GSK	Gensokyo The Speedy	gensokyo@gmail.com	Fantasy Travel Logistic
HTS	Harrisons Trading Sabah	general@harrisons.com.my	Fast Moving Consumer Goods
MAC	Mory And Cie	support@ruzave.com	Freight Forwading
PAB	Promar Agencies Belgium	ghent@promar-agencies.be	Ship Spares Handling
PGF	Pasir Gudang Forwarding	sales@pgship.com.my	Shipment Pre-Alert

8 rows in set (0.03 sec)

select * from freight;
(202 rows)

freightID	inListID	arrivalTime	areaID	locX	locY	stackLvl
CMSU8357727	5	2022-01-10 03:12:12	A	6	17	5
CMSU8358282	5	2022-01-10 03:12:12	D	69	13	2
CMSU6987624	5	2022-01-10 03:12:12	B	65	11	1
CMSU0374374	5	2022-01-10 03:12:12	A	78	98	3
CMSU0648217	5	2022-01-10 03:12:12	B	99	95	0
CMSU9205082	5	2022-01-10 03:12:12	C	79	33	3
CMSU7484429	5	2022-01-10 03:12:12	B	37	22	5
CMSU9465921	5	2022-01-10 03:12:12	C	18	96	6
CMSU3615520	5	2022-01-10 03:12:12	C	45	22	7
CMSU2283925	5	2022-01-10 03:12:12	B	58	11	8
CMSU3334251	5	2022-01-10 03:12:12	D	72	54	7
CMSU0188214	5	2022-01-10 03:12:12	A	57	71	8
CMSU8461768	5	2022-01-10 03:12:12	C	87	35	6
CMSU8007040	5	2022-01-10 03:12:12	D	82	13	0
CMSU4243198	5	2022-01-10 03:12:12	D	87	21	4
GSKU4311400	6	2022-01-10 03:12:12	B	4	75	6
GSKU8260174	6	2022-01-10 03:12:12	D	21	5	3
GSKU0211065	6	2022-01-10 03:12:12	D	22	72	3
GSKU8621446	6	2022-01-10 03:12:12	D	76	11	6
GSKU1173191	6	2022-01-10 03:12:12	B	35	69	8
GSKU9572433	6	2022-01-10 03:12:12	D	4	93	8
GSKU2370214	6	2022-01-10 03:12:12	B	7	42	5
GSKU6143559	6	2022-01-10 03:12:12	C	97	63	3

select * from freighttype;

```
mysql> select * from freighttype;
+--------------+--------------------------+--------------+--------------+-----------+---------------+-------------+
| freightTypeID | freightTypeName          | freightHeight | freightLength | tareWeight | maxGrossWeight | maxNetWeight |
+--------------+--------------------------+--------------+--------------+-----------+---------------+-------------+
| 20G0         | General Purpose Container |         2438 |         3048 |      2080 |         30500 |       28300 |
| 20H0         | Insulated Container       |         2591 |         3048 |      2275 |         32311 |       29635 |
| 20P1         | Flat (Fixed Ends)         |         2438 |         3048 |      3172 |         31788 |       28341 |
| 20T5         | Tank Container            |         2896 |        12192 |      3033 |         30626 |       29954 |
| 22B0         | Bulk Container            |         2438 |         6096 |      3462 |         30768 |       29912 |
| 22G1         | General Purpose Container |         2086 |         3007 |      2250 |         30480 |       28300 |
| 22H0         | Insulated Container       |         2896 |         7315 |      3489 |         32858 |       30886 |
| 22U1         | Open Top Container)       |         2677 |         4590 |      3172 |         31788 |       28341 |
| 22U6         | Hardtop Container         |         3421 |         2444 |      3899 |         32884 |       29385 |
| 22V0         | Ventilated Container      |         2378 |         2112 |      3033 |         33423 |       29954 |
+--------------+--------------------------+--------------+--------------+-----------+---------------+-------------+
10 rows in set (0.01 sec)
```

select * from historicalfreight ;
(411 rows)

```
mysql> select * from historicalfreight ;
+-------------+---------------------+---------------------+----------+-----------+
| freightID   | arrivalTime         | departureTime       | inListID | outListID |
+-------------+---------------------+---------------------+----------+-----------+
| CMSU7773080 | 2022-01-10 03:12:10 | 2022-01-10 03:12:10 |        1 |         2 |
| HTSU2833926 | 2022-01-10 03:12:10 | 2022-01-10 03:12:10 |        3 |         4 |
| HTSU8391349 | 2022-01-10 03:12:10 | 2022-01-10 03:12:10 |        3 |         4 |
| CMSU7773080 | 2022-01-10 03:12:10 | 2022-01-10 03:12:10 |        1 |         4 |
| HTSU7073493 | 2022-01-10 03:12:10 | 2022-01-10 03:12:10 |        3 |         4 |
| HTSU7937482 | 2022-01-10 03:12:10 | 2022-01-10 03:12:10 |        3 |         4 |
| HTSU5376715 | 2022-01-10 03:12:10 | 2022-01-10 03:12:10 |        3 |         4 |
| HTSU3759870 | 2022-01-10 03:12:10 | 2022-01-10 03:12:10 |        3 |         4 |
| HTSU6532411 | 2022-01-10 03:12:10 | 2022-01-10 03:12:10 |        3 |         4 |
| HTSU1374870 | 2022-01-10 03:12:10 | 2022-01-10 03:12:10 |        3 |         4 |
| HTSU9862459 | 2022-01-10 03:12:10 | 2022-01-10 03:12:10 |        3 |         4 |
| MACU0414973 | 2022-01-10 03:12:13 | 2022-01-10 03:12:13 |       24 |        25 |
| GSKU3245731 | 2022-01-10 03:12:12 | 2022-01-10 03:12:13 |       11 |        25 |
| HTSU4336298 | 2022-01-10 03:12:10 | 2022-01-10 03:12:13 |        3 |        25 |
| AISU4779276 | 2022-01-10 03:12:12 | 2022-01-10 03:12:13 |       12 |        25 |
| AISU4633384 | 2022-01-10 03:12:12 | 2022-01-10 03:12:13 |       12 |        25 |
| CMSU1649624 | 2022-01-10 03:12:12 | 2022-01-10 03:12:13 |        5 |        25 |
| GSKU7680280 | 2022-01-10 03:12:12 | 2022-01-10 03:12:13 |       13 |        25 |
| CMSU6255710 | 2022-01-10 03:12:13 | 2022-01-10 03:12:13 |       20 |        25 |
| PABU0082630 | 2022-01-10 03:12:13 | 2022-01-10 03:12:13 |       23 |        25 |
| AISU2900542 | 2022-01-10 03:12:13 | 2022-01-10 03:12:13 |       18 |        25 |
```

select * from list;
(1024 rows)

listID	freightID	freightTypeID	targetID	freightDirection	origin
1	CMSU7773080	1000	20G0	1	Lunarian
1	GSKU3053054	1000	20G0	1	Gensokyo
2	CMSU7773078	1000	20G0	1	the Mars
2	GSKU3053078	1000	20G0	0	Gensokyo
3	HTSU1374870	22U6	1050	1	Japan
3	HTSU2833926	20T5	3221	1	France
3	HTSU3759870	22V0	1050	1	Indonesian
3	HTSU4336298	20H0	7709	1	Brazil
3	HTSU5376715	22U6	1450	1	South Korean
3	HTSU6532411	20H0	3221	1	South Korean
3	HTSU7073493	20P1	1450	1	Europe
3	HTSU7937482	22V0	3221	1	Europe
3	HTSU8391349	20G0	2435	1	Malaysia
3	HTSU9862459	20P1	3221	1	Brazil
4	CMSU7773080	22G1	1450	0	France
4	HTSU1374870	22H0	1000	0	South Africa
4	HTSU2833926	20H0	1050	0	United Kingdom
4	HTSU3759870	22B0	7709	0	United States
4	HTSU5376715	22G1	1050	0	China
4	HTSU6532411	22G1	1136	0	South Korean
4	HTSU7073493	20G0	1450	0	United Kingdom
4	HTSU7937482	22V0	2435	0	Thailand
4	HTSU8391349	22G1	8801	0	German
4	HTSU9862459	22U1	1050	0	Brazil
5	CMSU0188214	22U1	1450	1	Japan
5	CMSU0245058	20T5	1000	1	United States

select * from request;
(44 rows)

```
mysql> select * from request;
+--------+---------+------------+----------+-----------+
| listID | agentID | documentID | approval | direction |
+--------+---------+------------+----------+-----------+
|      1 | CMS     | MY10059    |        1 | IN        |
|      2 | GSK     | MY10060    |        1 | INOUT     |
|      3 | HTS     | F5DA587E04 |        1 | IN        |
|      4 | CMS     | 7F96B40BA7 |        1 | IN        |
|      5 | GSK     | DA70599F73 |        1 | IN        |
|      6 | PAB     | DF5B01EDCE |        1 | IN        |
|      7 | PGF     | D1E5C17E48 |        1 | IN        |
|      8 | CMS     | 0E78E2BA52 |        1 | IN        |
|      9 | PGF     | 28E580D713 |        1 | IN        |
|     10 | GSK     | 385F542B9B |        1 | IN        |
|     11 | AIS     | 4AA367A876 |        1 | IN        |
|     12 | GSK     | 27F4AE3459 |        1 | IN        |
|     13 | PGF     | 0495A4644E |        1 | IN        |
|     14 | PAB     | FADDF57949 |        1 | IN        |
|     15 | HTS     | 59E42E046F |        1 | IN        |
|     16 | PAB     | F6BA9AC0C6 |        1 | IN        |
|     17 | AIS     | D799B28F37 |        1 | IN        |
|     18 | HTS     | BBB5984FD4 |        1 | IN        |
|     19 | CMS     | 1317037866 |        1 | IN        |
|     20 | MAC     | 39327E38D9 |        1 | IN        |
|     21 | CSB     | FD62AE7B2C |        1 | IN        |
|     22 | PAB     | 8CB25D92D0 |        1 | IN        |
|     23 | MAC     | ECB14DB0B1 |        1 | IN        |
|     24 | GSK     | 2E7DA93E7F |        1 | OUT       |
|     25 | HTS     | E96101682F |        1 | OUT       |
|     26 | MAC     | 3AE397223D |        1 | OUT       |
|     27 | HTS     | C34D783CCB |        1 | OUT       |
|     28 | PGF     | 0851A1D7E2 |        1 | OUT       |
|     29 | PGF     | 9D47E58D88 |        1 | OUT       |
|     30 | AIS     | F1EB78027B |        1 | OUT       |
|     31 | CMS     | 266A741B3A |        1 | OUT       |
|     32 | AIS     | A014D56E89 |        1 | OUT       |
|     33 | CMS     | DA3526EEE9 |        1 | OUT       |
|     34 | CSB     | B1A678A0BE |        1 | OUT       |
|     35 | GSK     | 4B065A32B8 |        1 | OUT       |
|     36 | PGF     | FF5D4623D4 |        1 | OUT       |
|     37 | AIS     | 35A9643263 |        1 | OUT       |
|     38 | AIS     | E16D507384 |        1 | OUT       |
|     39 | HTS     | B7637689D2 |        1 | OUT       |
|     40 | GSK     | 79CD439C7E |        1 | OUT       |
|     41 | HTS     | 8F3B07AD21 |        1 | OUT       |
|     42 | HTS     | 4468A4A472 |        1 | OUT       |
|     43 | PAB     | 063BA18D64 |        1 | OUT       |
|     44 | MAC     | 3C5B40A6E3 |        1 | OUT       |
+--------+---------+------------+----------+-----------+
```

select * from targetinfo

```
mysql> select * from targetinfo;
+----------+---------+------------------------+-----------+---------------+
| targetID | agentID | PICName                | vehicleID | vehicleTypeID |
+----------+---------+------------------------+-----------+---------------+
|     1000 | GSK     | Marisa Kirisame        | RSD105998 |             1 |
|     1050 | CMS     | Captain Ukewon Vulcan  | SUN388997 |             2 |
|     1136 | CSB     | Saka Smith Rowe        | SOK889077 |             2 |
|     1450 | AIS     | Oliver Haaland         | JKF234467 |             1 |
|     2435 | MAC     | Erling Salah           | FUG776455 |             2 |
|     3221 | PAB     | Ahmad De Bruyne        | BJK334241 |             2 |
|     7709 | PGF     | Lionel Kante           | KSU777231 |             1 |
|     8801 | HTS     | Jacob Frye             | KKB787890 |             2 |
+----------+---------+------------------------+-----------+---------------+
8 rows in set (0.01 sec)
```

select * from vehicleinfo

```
+--------------+-----------------+----------------------+-----------+-----------------------------------------------------------------------------------------+
| vehicleTypeID | vehicleName     | vehicleMaxFreightCounts | vehicleCap | vehicleDescription                                                                      |
+--------------+-----------------+----------------------+-----------+-----------------------------------------------------------------------------------------+
|            1 | Glorious Ark Ship |                 1000 |     50000 | Cutting edge technology made space ship with FTL technology. Able to carry vital goods |
|            2 | Magic Broom     |                   10 |     10000 | the fruit of hardship of an oridnary human                                              |
|            3 | Escalade Chevy  |                    7 |     45000 | Specialty trailer. Carry various of liquid                                              |
|            4 | Chevrolet Roro  |                   12 |     50000 | Specialty trailer. Carry various of liquid                                              |
|            5 | Volvo Appen     |                   10 |     45000 | Fantainer trailer. Mechanically ventillation system                                     |
|            6 | Freuhauf        |                   13 |     40000 | Fantainer trailer. Mechanically ventillation system                                     |
|            7 | Hyundai Translead |                 12 |     50000 | Specialty trailer. Carry various of liquid                                              |
|            8 | Kentucky Trailer |                  10 |     48000 | Fantainer trailer. Mechanically ventillation system                                     |
|            9 | Freuhauf        |                   13 |     40000 | Fantainer trailer. Carry dangerous liquid                                               |
+--------------+-----------------+----------------------+-----------+-----------------------------------------------------------------------------------------+
9 rows in set (0.01 sec)
```

SQL QUERY

1. Produce a list of information about the documents and agents who successfully gain approval that freights were sent out to Japan.

```
select agen..agentName, agent.agentID, request.documentID,list.freightID
from agent,request,list
where agent.agentID=request.agentID and
request.listID=list.listId
and  list.origin in ("Japan")
and request.approval like '1%'
and list.freightDirection like '0%';
```

agentName	agentID	documentID	freightID
Mory And Cie	MAC	3AE397223D	GSKU6356744
Harrisons Trading Sabah	HTS	C34D783CCB	CMSU0519781
Harrisons Trading Sabah	HTS	C34D783CCB	CMSU5417606
Pasir Gudang Forwarding	PGF	0851A1D7E2	GSKU2354450
Pasir Gudang Forwarding	PGF	9D47E58D88	PABU6156601
Commonwealth of Man	CMS	266A741B3A	AISU5569119
Commonwealth of Man	CMS	DA3526EEE9	CMSU4180844
China Shipping Beijing	CSB	B1A678A0BE	CSBU1983386
China Shipping Beijing	CSB	B1A678A0BE	PABU8757480
Gensokyo The Speedy	GSK	4B065A32B8	PGFU7814807
Pasir Gudang Forwarding	PGF	FF5D4623D4	GSKU8798370
Pasir Gudang Forwarding	PGF	FF5D4623D4	PABU6011399
Albanian Int Shipping Agency	AIS	E16D507384	HTSU3419037
Albanian Int Shipping Agency	AIS	E16D507384	PGFU4300810
Harrisons Trading Sabah	HTS	B7637689D2	AISU5331840
Harrisons Trading Sabah	HTS	B7637689D2	PGFU4755341
Gensokyo The Speedy	GSK	79CD439C7E	AISU4066444
Gensokyo The Speedy	GSK	79CD439C7E	PABU4120636
Gensokyo The Speedy	GSK	79CD439C7E	PABU8094345

2. Produce a list of information about the freight's location, freight type, maximum gross weight that from Japan

```
select targetinfo.targetID, freight.areaID,freight.locx, freight.locY, freight.stackLVl,
freightType.freightTypename, freightType.maxgrossWeight
from targetinfo, freight,freightType,list
where targetinfo.targetID = list.targetID
and list.freightID=freight.freightID
and list.freighttypeid=freighttype.freighttypeid
```

and list.origin **in** ("Japan")
order by freight.areaID **asc** ,freight.locx **asc**, freight.locY **asc**, freight.stackLVl **asc**;

targetID	areaID	locx	locY	stackLVl	freightTypename	maxgrossWeight
1050	A	8	1	6	Open Top Container)	31788
7709	A	26	32	6	Open Top Container)	31788
1450	A	57	71	8	Open Top Container)	31788
7709	B	47	7	3	General Purpose Container	30480
7709	B	63	99	0	Tank Container	30626
2435	B	65	11	1	Insulated Container	32311
1450	C	19	60	10	General Purpose Container	30480
1000	C	50	52	3	Bulk Container	30768
2435	C	55	8	9	Insulated Container	32311
7709	C	85	90	2	General Purpose Container	30500
3221	D	45	29	5	Tank Container	30626

3. List all person in charge of freight from japan and their transportation information

select distinct targetinfo.PICname, targetinfo.targetID, vehicleinfo.vehiclename
,vehicleinfo.vehicleMaxFreightCounts,vehicleinfo.vehicledescription
from vehicleinfo, **list**, targetinfo
where targetinfo.targetID = **list**.targetID
and targetinfo.vehicletypeid =vehicleinfo.vehicletypeid
and list.origin **in** ("Japan")
order by targetinfo.PICname **asc** ;

PICname	targetID	vehiclename	vehicleMaxFreightCounts	vehicledescription
Ahmad De Bruyne	3221	Magic Broom	10	the fruit of hardship of an oridnary human
Captain Ukewon Vulcan	1050	Magic Broom	10	the fruit of hardship of an oridnary human
Erling Salah	2435	Magic Broom	10	the fruit of hardship of an oridnary human
Jacob Frye	8801	Magic Broom	10	the fruit of hardship of an oridnary human
Lionel Kante	7709	Glorious Ark Ship	1000	Cutting edge technology made space ship with FTL technology. Able to carry vital goods
Marisa Kirisame	1000	Glorious Ark Ship	1000	Cutting edge technology made space ship with FTL technology. Able to carry vital goods
Oliver Haaland	1450	Glorious Ark Ship	1000	Cutting edge technology made space ship with FTL technology. Able to carry vital goods
Saka Smith Rowe	1136	Magic Broom	10	the fruit of hardship of an oridnary human

4. Produce the list of first 10 person in charge name, agent name and agent contact email that handled outbound of freight based on the departure time.

select agent.agentname,
agent.agentemail,targetinfo.PICname,historicalFreight.departureTime,historicalFreight.freightID
from agent, targetinfo,historicalFreight,**list**
where agent.agentID = targetinfo.agentID
and list.targetID = Targetinfo.targetID
and list.freightID=historicalFreight.freightID

order by historicalFreight.departureTime **asc**
LIMIT 10;

agentname	agentemail	PICname	departureTime	freightID
Commonwealth of Man	commonwealthOfMan@stellaris.milkyway.earth	Captain Ukewon Vulcan	2022-01-10 03:12:10	HTSU1374870
Promar Agencies Belgium	ghent@promar-agencies.be	Ahmad De Bruyne	2022-01-10 03:12:10	HTSU2833926
Commonwealth of Man	commonwealthOfMan@stellaris.milkyway.earth	Captain Ukewon Vulcan	2022-01-10 03:12:10	HTSU3759870
Albanian Int Shipping Agency	arbagent@arbaship.com	Oliver Haaland	2022-01-10 03:12:10	HTSU5376715
Promar Agencies Belgium	ghent@promar-agencies.be	Ahmad De Bruyne	2022-01-10 03:12:10	HTSU6532411
Albanian Int Shipping Agency	arbagent@arbaship.com	Oliver Haaland	2022-01-10 03:12:10	HTSU7073493
Promar Agencies Belgium	ghent@promar-agencies.be	Ahmad De Bruyne	2022-01-10 03:12:10	HTSU7937482
Mory And Cie	support@ruzave.com	Erling Salah	2022-01-10 03:12:10	HTSU8391349
Promar Agencies Belgium	ghent@promar-agencies.be	Ahmad De Bruyne	2022-01-10 03:12:10	HTSU9862459
Albanian Int Shipping Agency	arbagent@arbaship.com	Oliver Haaland	2022-01-10 03:12:10	CMSU7773080

10 rows in set (0.01 sec)

5. Retrieve a list of freight that located at stack level of 10

select freight.freightID, freight.areaID, freight.locx
from freight
group by freight.areaID,freight.locx, freight.locy,freight.stacklvl
having freight.stacklvl=10
order by freight.areaID asc ,freight.locx asc, freight.locy asc,freight.locy**;**

freightID	areaID	locx
AISU4703250	A	6
AISU7853844	A	16
PGFU0644400	A	20
MACU4711795	A	22
GSKU7689138	A	51
MACU2115349	A	82
GSKU3517634	B	51
HTSU4651197	B	66
PGFU3091058	B	92
CMSU7112695	C	19
HTSU5491350	C	22
AISU2406592	D	12
GSKU2621264	D	19
CSBU9118580	D	41
HTSU1950194	D	52
HTSU1558049	D	85

6. Heaviest loadable freight type information

select freighttypeName **as** Heaviest_Freight_Name,freighttypeID,freightheight,freightlength,tareweight
,max(freighttype.maxgrossweight) as Gross_Weight
from freighttype;

Heaviest_Freight_Name	freighttypeID	freightheight	freightlength	tareweight	Gross_Weight
General Purpose Container	20G0	2438	3048	2080	33423

7. To update the departureTime in historicalfreight table for correction

```
update historicalfreight
set departureTime ="2022-12-20 05:05:05"
where freightID in ("PABU2841438","PABU2454948","PABU2615908");
```

```
| PABU0845270 | 2022-01-10 03:12:13 | 2022-01-10 03:12:14 |       23 |        44 |
| AISU0314795 | 2022-01-10 03:12:13 | 2022-01-10 03:12:14 |       18 |        44 |
| HTSU4489419 | 2022-01-10 03:12:13 | 2022-01-10 03:12:14 |       16 |        44 |
| PABU2841438 | 2022-01-10 03:12:13 | 2022-01-10 03:12:14 |       23 |        44 |
| PABU2454948 | 2022-01-10 03:12:13 | 2022-01-10 03:12:14 |       17 |        44 |
| PABU2615908 | 2022-01-10 03:12:13 | 2022-01-10 03:12:14 |       17 |        44 |
+-------------+---------------------+---------------------+----------+-----------+
```

```
| PABU0845270 | 2022-01-10 03:12:13 | 2022-01-10 03:12:14 |       23 |        44 |
| AISU0314795 | 2022-01-10 03:12:13 | 2022-01-10 03:12:14 |       18 |        44 |
| HTSU4489419 | 2022-01-10 03:12:13 | 2022-01-10 03:12:14 |       16 |        44 |
| PABU2841438 | 2022-01-10 03:12:13 | 2022-12-20 05:05:05 |       23 |        44 |
| PABU2454948 | 2022-01-10 03:12:13 | 2022-12-20 05:05:05 |       17 |        44 |
| PABU2615908 | 2022-01-10 03:12:13 | 2022-12-20 05:05:05 |       17 |        44 |
+-------------+---------------------+---------------------+----------+-----------+
```

8. To calculate the number of freight in each area

```
select areaid as Area,count(areaID) as FreightCount
from freight
group by areaID
order by areaid asc;
```

```
+------+--------------+
| Area | FreightCount |
+------+--------------+
| A    |           46 |
| B    |           51 |
| C    |           56 |
| D    |           49 |
+------+--------------+
```

9. To search all information of vehicle info regarding transportation of high risk liquid cargo by using related keywords

```
select *
from vehicleinfo
where vehicleDescription like '%danger%' or  '%dangerous%'
or '%hazardous%' or '%risk%' or '%liquid%' or '%fluid%'
or '%solution%';
```

vehicleTypeID	vehicleName	vehicleMaxFreightCounts	vehicleCap	vehicleDescription
9	Freuhauf	13	40000	Fantainer trailer. Carry dangerous liquid

10. Find all the freight ID and area id where location x is not in the range of 1 and 60, location y is not in the range of 1 and 60 and stack level is in the range of 1 and 3.

select freightID, areaID
from freight
where locx **not between** 1 **and** 60
and locy **not between** 1 **and** 60
and stacklvl **between** 1 **and** 3
order by areaID **asc** ;

freightID	areaID
CMSU0374374	A
AISU9657898	A
PABU1154859	A
PGFU1210918	B
GSKU3914668	B
AISU4952988	B
GSKU6143559	C
GSKU8331350	C
GSKU4562263	C
PABU5969952	D
HTSU4615013	D
MACU3552683	D

NORMALIZATION

1NF

Each record of each entity must be able to be uniquely identified. The **bold** attributes are primary keys that differentiate the records.

Freight(**freightID,** freighTypeID, freighTypeName, freighHeight, freighLength, tareWeight, maxgrossWeight, maxNetWeight, InListID, outListID, **arrivalTime**, **departureTime**, areaID, locX, locY,

stackLvl)

agent (**agentID, listID**, AgentName, agentEmail, specialisation, documentID, approval, direction)

list (**freightID, listID**, freighTypeID, targetID, origin, freightDirection)

targetInfo (**targetID**, PICName, vehicleID, VehicleTypeID, agentID)

vechicleInfo (**VehicleTypeID** , vehicleName, vehicleMaxFreightCounts, vehicleCap, VehicleDescription)

Partial Dependencies

Consider the Freight entity,
freightID, arrivalTime, **departureTime** → freighTypeID, freighTypeName, freighHeight, freighLength, tareWeight, maxgrossWeight, maxNetWeight, InListID, outListID, areaID, locX, locY, stackLvl

But there exist partial dependencies such that

Assuming the freight type can be changed according to the request.
freightID, InListID → freighTypeID, freighTypeName, freighHeight, freighLength, tareWeight, maxgrossWeight, maxNetWeight
freightID, arrivalTime → InListID, areaID, locX, locY, stackLvl
freightID, arrivalTime, **departureTime** → InListID, outListID

Consider another entity, the agent:
agent (**agentID, listID**, AgentName, agentEmail, specialisation, documentID, approval, direction)
since documentID, approval, direction only depends on part of the primary key, **ListID** and nothing do with **agentID.**

Therefore,
agentID → AgentName, agentEmail, specialisation
listID → documentID, approval, direction, agentID

Hence,
2NF
freight (**freightID**, **arrivalTime**, InListID, areaID, locX, locY, stackLvl, freighTypeID, freighTypeName, freighHeight, freighLength, tareWeight, maxgrossWeight, maxNetWeight)

historicalFreight(**freightID, arrivalTime**, **departureTime,** InListID, outListID)

agent (**agentID** AgentName, agentEmail, specialisation)

request (**listID,** documentID, approval, direction,agentID)

list (**listID, freightID,** freighTypeID, targetID, origin, freightDirection)

targetInfo (**targetID**, PICName, vehicleID, VehicleTypeID, agentID)

vechicleInfo(**VehicleTypeID** , vehicleName, vehicleMaxFreightCounts, vehicleCap, VehicleDescription)

Transitive dependencies

Consider the entity freight again,
freight (**freightID**, **arrivalTime**, InListID, areaID, locX, locY, stackLvl, freighTypeID, freighTypeName, freighHeight, freighLength, tareWeight, maxgrossWeight, maxNetWeight)

we see that there exists a transitive dependency in the entity which we will eliminate when doing 3NF.
freightID, **arrivalTime** → freighTypeID
freighTypeID → freighTypeName, freighHeight, freighLength, tareWeight, maxgrossWeight, maxNetWeight

Functional dependencies

agentID → agentName, agentTelNo, agentEmail, specialisation
targetID → PICName, freightCount, agentID, vehicleID, vehicleTypeID
vehicleID → vehicleTypeID
vehicleTypeID → vehicleName, maxFreightCounts, capacity, specDescription

listID → agentID, documentID, approval, direction
listID, freightID → targetID, freightTypeID, freightDirection, grossWeight, origin

#***According to ISO 668, all freight containers have the same width***
freightTypeID → freightTypeName, maxGrossWeight, tareWeight, maxNetWeight, maxVolCap, length, height

#***freight in current port***
freightID → arrivalTime, inListID, areaID, locX, locY, level

#***historical freight***
freightID, **arrivalTime**, **departureTime** → inListID, outListID, targetID

3NF

#freight in current port
freight (**freightID**, InListID, arrivalTime, areaID, locX, locY, stackLvl)

 # historical freight
HistorialFreight (**freightID, arrivalTime, departureTime,** InListID, outListID)

FreightType (**freighTypeID** , freighTypeName, freighHeight, freighLength, tareWeight, maxgrossWeight, maxNetWeight)

agent (**agentID** AgentName, agentEmail, specialisation)

request (**listID,** documentID, approval, direction,agentID)

list (**freightID, listID**, freighTypeID, targetID, origin, freightDirection)

targetInfo (**targetID**, PICName, vehicleID, VehicleTypeID, agentID)

vechicleInfo(**VehicleTypeID** , vehicleName, vehicleMaxFreightCounts, vehicleCap, VehicleDescription)

DATA DICTIONARY

Agent

ATTRIBUTES	DATA TYPE	DESCRIPTION	CONSTRAINTS	EXAMPLE
agentID	VARCHAR(3)	agent ID	PK	AIS
agentName	VARCHAR(125)	agent name	NOT NULL	Albanian Int Shipping Agency
agentEmail	VARCHAR(50)	agent Email	NOT NULL	arbagent@arbaship.com
specialisation	VARCHAR(100)	specialisation	NOT NULL	Shipping Agency

Freight

ATTRIBUTES	DATA TYPE	DESCRIPTION	CONSTRAINTS	EXAMPLE
freightID	VARCHAR(11)	Freight ID	PK	CMSU8357727
inListID	INT	inbound list ID	FK	5
arrivalTime	TIMESTAMP	arrival Time	NOT NULL	1/10/2022 3:12
areaID	VARCHAR(2)	area ID		A
locX	INT	horizontal position		6
locY	INT	vertical position		17
stackLvl	INT	stack level		5

Freighttype

ATTRIBUTES	DATA TYPE	DESCRIPTION	CONSTRAINTS	EXAMPLE
freightTypeID	VARCHAR(4)	freight Type ID	PK	20G0
freightTypeName	VARCHAR(50)	freight Type Name	NOT NULL	General Purpose Container
freightHeight	FLOAT	freight Height		2438
freightLength	FLOAT	freight Length		3048
tareWeight	FLOAT	tare Weight		2080
maxGrossWeight	FLOAT	maximum Gross Weight		30500
maxNetWeight	FLOAT	maximum Net Weight		28300

Historicalfreight

ATTRIBUTES	DATA TYPE	DESCRIPTION	CONSTRAINTS	EXAMPLE
freightID	VARCHAR(11)	freight ID	PK1	CMSU7773080
arrivalTime	TIMESTAMP	arrival Time	PK2	2022-01-10 03:12:10
departureTime	TIMESTAMP	departure Time	PK3	2022-01-10 03:12:10
inListID	INT	inbound list ID		1
outListID	INT	outbound list ID		2

List

ATTRIBUTES	DATA TYPE	DESCRIPTION	CONSTRAINTS	EXAMPLE
listID	INT	list ID	PK, FK	1
freightID	VARCHAR(11)	freight ID	PK	CMSU7773080
freightTypeID	VARCHAR(4)	freight type ID	NOT NULL	1000
targetID	VARCHAR(20)	target ID	NOT NULL	20G0
freightDirection	BOOLEAN	freight Direction	NOT NULL	1
origin	VARCHAR(16)	country of origin		Lunarian

Request

ATTRIBUTES	DATA TYPE	DESCRIPTION	CONSTRAINTS	EXAMPLE
listID	INT	list ID	PK	1
agentID	VARCHAR(3)	agent ID	FK	CMS
documentID	VARCHAR(20)	document ID	NOT NULL	MY10059
approval	BOOLEAN	apporval	NOT NULL	1
direction	VARCHAR(5)	direction	NOT NULL	IN

Targetinfo

ATTRIBUTES	DATA TYPE	DESCRIPTION	CONSTRAINTS	EXAMPLE
targetID	INT	target ID	PK	1000
agentID	VARCHAR(3)	agent ID	FK	GSK
PICName	VARCHAR(50)	name of person in charge		Marisa Kirisame
vehicleID	VARCHAR(20)	vehicle ID		RSD105998
vehicleTypeID	INT	vehicle Type ID	FK	1

Vehicleinfo

ATTRIBUTES	DATA TYPE	DESCRIPTION	CONSTRAINTS	EXAMPLE
vehicleTypeID	INT	vehicle Type ID	PK	9
vehicleName	VARCHAR(20)	vehicle Name		Freuhauf
vehicleMaxFreightCounts	INT	vehicle Maximum Freight Counts		13
vehicleCap	FLOAT	vehicle Capacity		40000
vehicleDescription	VARCHAR(100)	vehicle Description		Fantainer trailer. Carry dangerous liquid

REFERENCES

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- Flowchart Maker and Online Diagram Software

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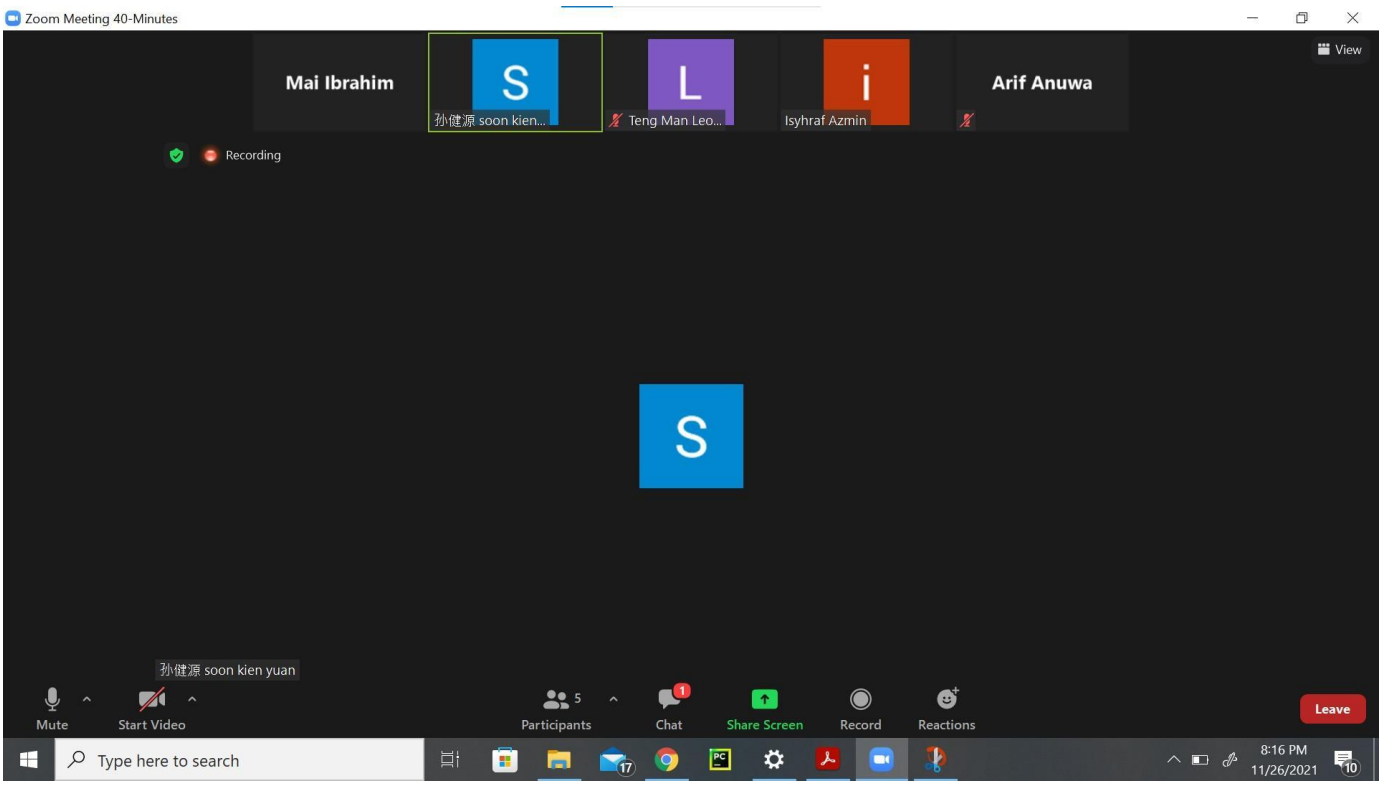
APPENDIX

1st Meeting



Group Meeting Report				
Date and Time: **26/11/2021** **8.00 PM - 9.00 PM** **Platform: Zoom**		**Leader's Name:LEONG TENG MAN**	**Attendees:** • **SITI MAISARAH** • **MUHAMMAD 'ARIF** • **SOON KIEN YUAN** • **MUHAMMAD ISYHRAF**	
	Task List	**Who is Responsible for the task?**	**The task involves which table?**	**Notes**
1	Do the introduction	Maisarah	-	-
2	Find the project scope	All	-	-

3	Find the business rule	All	-	-
4	Do the ERD	Isyhraf & ‘Arif	-	-
5	Compare entities, attributes and primary key of ERD	Isyhraf & ‘Arif	-	-
6	Draw the Entity Relationship (ER) Diagram	Isyhraf & ‘Arif	-	-
7	Draw the Extended Entity Relationship (EER) Diagram	All	-	-
8	Create a case study related to the title given & identify Business Rules & the relationships	All	-	-

2nd Meeting

Group Meeting Report				
Date and Time: **20/12/2021** **8.30 PM - 9.30 PM** **Platform: Whatsapp**		**Leader’s Name:LEONG TENG MAN**	**Attendees:** ● **SITI MAISARAH** ● **MUHAMMAD ‘ARIF** ● **SOON KIEN YUAN** ● **MUHAMMAD ISYHRAF**	
	Task List	**Who is Responsible for the task?**	**The task involves which table?**	**Notes**
1	Do the normalization process	Soon Kien Yuan and Teng Man	All tables	-

2	Do the SQL command	Teng Man	All tables	-
3	Do the SQL query	Soon Kien Yuan	All tables	-
4	Data Dictionary	Soon Kien Yuan	All table	-
5	Prepare report	All	-	-
6	Prepare slide presentation	All	-	-

Vid Presentation

- https://youtu.be/Z_ZUFobVOYk