Formal Specification of the MSPA project

D1.

1.   Company Reps: Accessing the Astronauts and manipulating the data for them. Insert a reservation into the system
2.   Port Administrators (Officers): Accessing, inserting and manipulating Confirmed Shipments
3.   Crew: Accessing and manipulating cargo, Passengers, Astronauts

List all the IDs of rockets with capacity greater than 2500 (kg) (by Company Reps)

$$\pi_{RocketID}(\sigma_{capacity>2500} Rockets)$$

```
SELECT RocketID, Capacity
FROM Rockets
WHERE capacity > 2500;
```

List all the crew names and astroIDs of company with CompanyID = 1190 (by Port Administrators or Company Reps)

$$\pi_{astroID, name}(\sigma_{companyID=1190} Crews)$$

```
SELECT Astroid, Name
FROM Crews, Astronaut
WHERE companyID = 1190;
```

D2
Insert new astronaut into database:

```
INSERT INTO Astronaut(AstroID, Name)
VALUES (11901155, "Stevens")
```

D3

Delete a Astronaut from the Astronaut Table (when a Astronaut retires):

```
DELETE FROM Astronaut
WHERE AstroID = 11901155
```

D4
Update an Astronaut's and Name:

```
UPDATE Astronaut
```

```
SET Name= 'Stevens Q. Qiu'
WHERE RocketID = 11901155;
```

D5) List the details of confirmed shipment with invoice# 22334 with the time slot and the cargo weight and type that are carried:

```
SELECT Invoice#, CargoType, weight, StartDate, EndDate, StartTime, Endtime
FROM  Cargo, ShipmentLaunchpadSlot, AvailibilitySlot
WHERE invoice# = 22334;
```

D6) List all the rocket IDs owned by company with companyID = 1190.

```
SELECT Rocket.RocketID, Company.CompanyID
FROM Rocket, Company
WHERE Rocket.CompanyID = Company.CompanyID and Company.CompanyID = 1190;
```

D7) Obtain the total value of cargo owned by each company by grouping by CompanyID.

D8) Make a new reservation with all the information needed and a unique id (generated by hashing) (by company reps)

```
INSERT INTO Reservation(ReserveID, RequestedDate, isDeparture, CompanyID, RocketID)
VALUES('2HQW20801029P', 2080-10-29, 0, 100906, 906023)
```

D9) List all the confirmed shipments that are headed to a certain destination

```
SELECT Invoice#, Destination
FROM ConfirmedShipment JOIN Reservation
ON [ConfirmedShipment].ReserveID = Reservation.ReserveID
WHERE Destination = "Mars Station 1"
```

D10) List the passengers who require assistance on shipment 22334

```
SELECT AstroID, requireAssistance
FROM AstronautShipment JOIN Passenger
ON [AstronautShipment].AstroID = Passenger.AstroID
WHERE requireAssistance IS NOT NULL AND invoice# = 22334
```

D11) Create a view success reservation because we do not want to disclose all the reservations to a customer.