

DBMS - Mini Project

SpaceX Database Management System

Submitted By:

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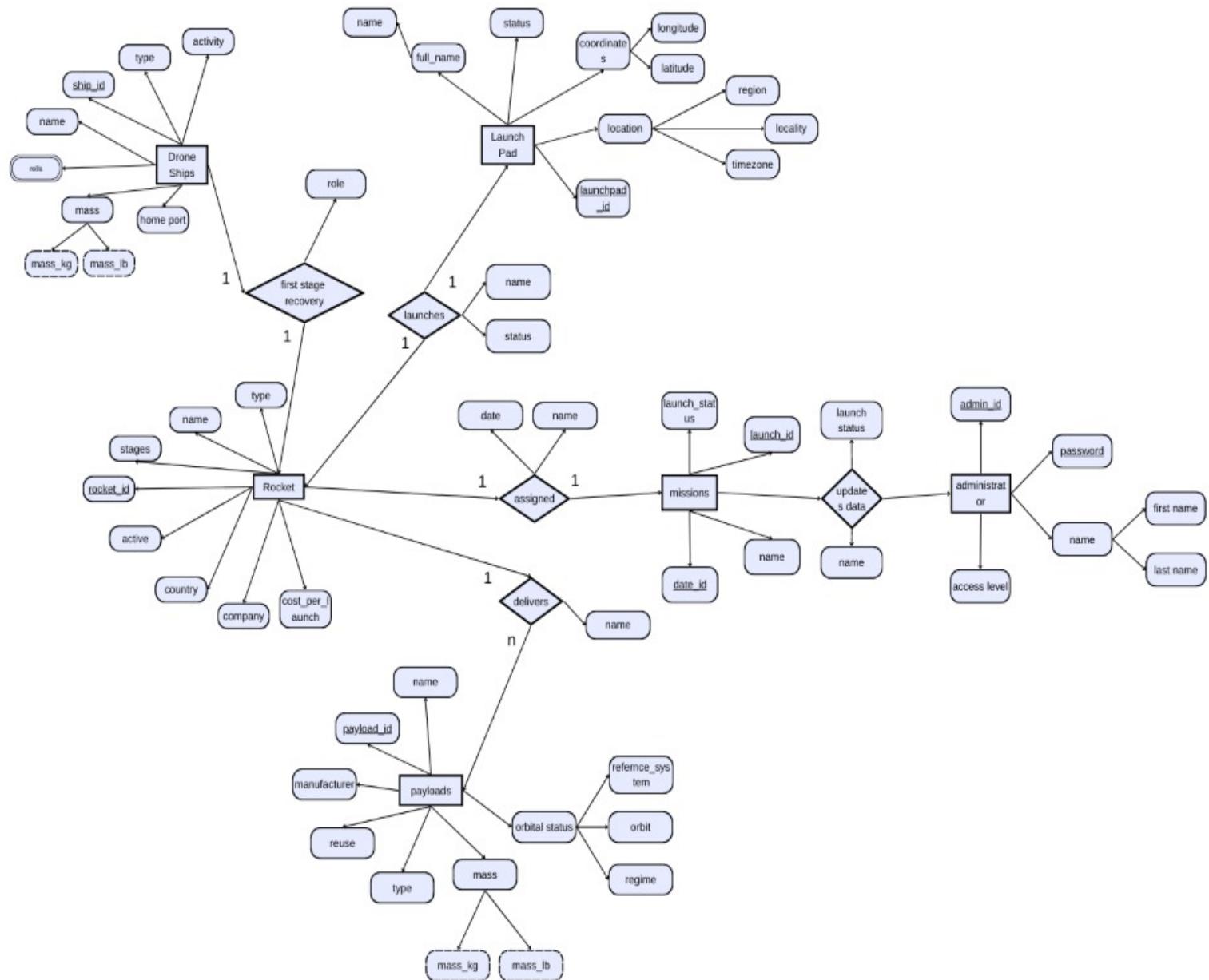
Short Description and Scope of the Project

Observing the Latest advancements In the commercial spaceflight SpaceX has traveled a long way through the line to be the first to get certified by NASA for statistically being the safest option to deliver a payload and Crew to the International Space Station.. This Web Application administrates/simulates the Database informatics, holding the Historical data of SpaceX and also the information about any recent future launches.

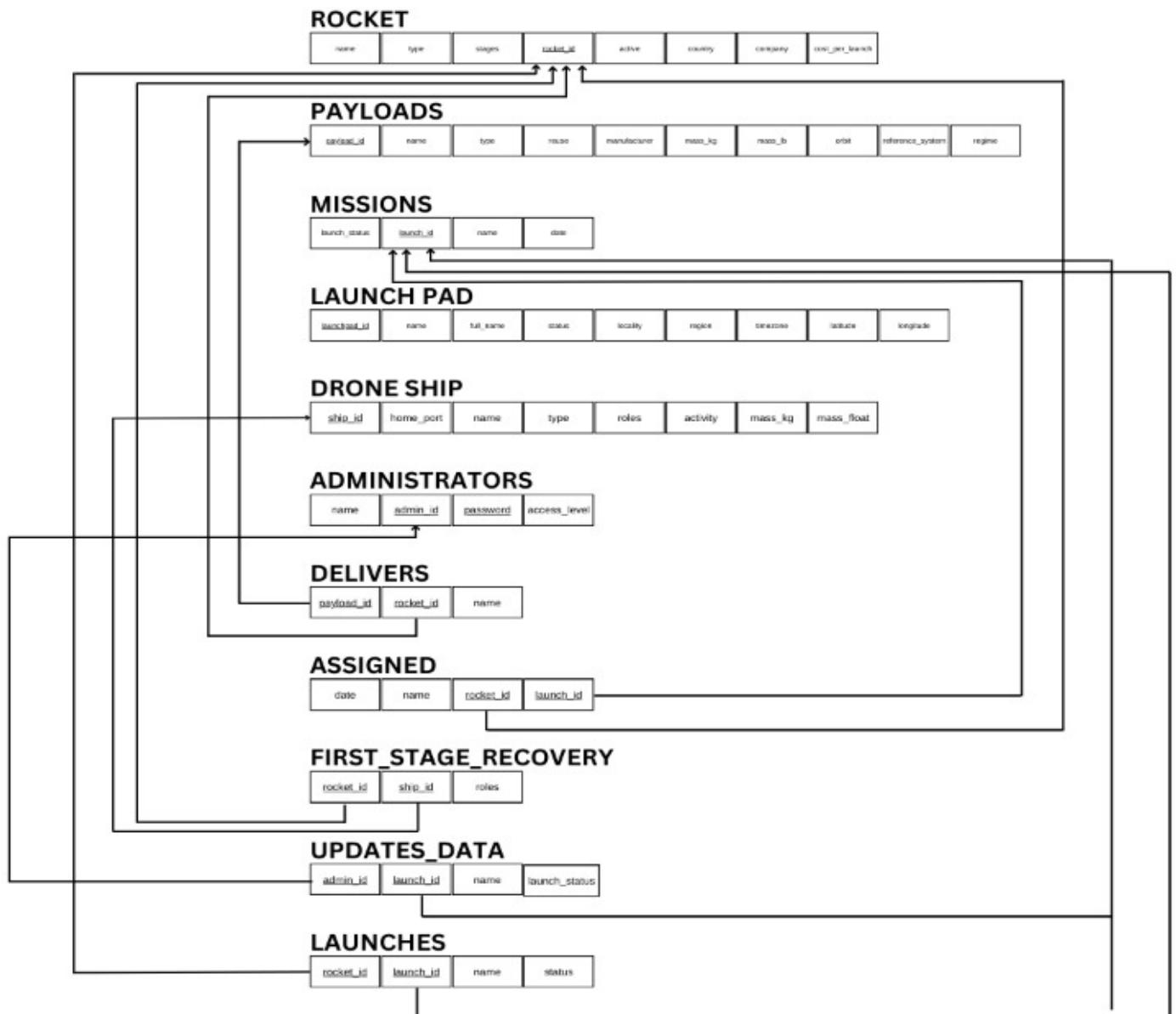
The web application allows the administrator to insert , update or delete the information regarding various entities . The SPACEX database simulates how the administrators can easily access and modify information regarding rockets, drone ships, missions and so on



ER Diagram



Relational Schema



DDL statements - Building the database

1. ADMINISTORS

```
CREATE TABLE Administrators (admin_id VARCHAR(12) NOT NULL  
PRIMARY KEY, name VARCHAR(25), password VARCHAR(20) CHECK (  
LENGTH(password) > 8 ), access_level VARCHAR(10));
```

2. ROCKETS

```
CREATE TABLE Rockets (rocket_id VARCHAR(24) NOT NULL  
PRIMARY KEY, name VARCHAR(20), type VARCHAR(10), active  
VARCHAR(10), country VARCHAR(40),  
company VARCHAR(20), cost_per_launch INTEGER);
```

3. LAUNCH PADS

```
CREATE TABLE LaunchPads (launchpad_id VARCHAR(24) NOT NULL  
PRIMARY KEY, name VARCHAR(50), full_name VARCHAR(80), status  
VARCHAR(30), locality VARCHAR(50), region  
VARCHAR(30), TimeZone VARCHAR(40), Latitude FLOAT, Longitude  
FLOAT);
```

4. PAYLOADS

```
CREATE TABLE Payloads(payload_id VARCHAR(24) NOT NULL  
PRIMARY KEY, name VARCHAR(35), type VARCHAR(20), reuse  
VARCHAR(10), manufacture VARCHAR(40), mass_kg FLOAT,  
mass_lb FLOAT, orbit VARCHAR(10), reference_system  
VARCHAR(30), regime VARCHAR(30));
```

5. DRONE SHIPS

```
CREATE TABLE DroneShip(ship_id VARCHAR(24) NOT NULL  
PRIMARY KEY, home_port VARCHAR(30), name VARCHAR(35), type  
VARCHAR(20), roles VARCHAR(45), activity VARCHAR(10), mass_kg  
FLOAT, mass_lb FLOAT);
```

6. MISSIONS

```
CREATE TABLE Missions (date DATETIME, name VARCHAR(50),  
rocket_id VARCHAR(24), launchpad_id VARCHAR(24), launch_id  
VARCHAR(24) NOT NULL PRIMARY KEY, payload_id VARCHAR(24)  
, FOREIGN KEY (rocket_id) REFERENCES Rockets(rocket_id),  
FOREIGN KEY (launchpad_id) REFERENCES  
LaunchPads(launchpad_id), FOREIGN KEY (payload_id)  
REFERENCES Payloads(payload_id), launch_status  
VARCHAR(10));
```

7. FIRST RECOVERY STAGE

```
CREATE TABLE First_stage_Recovery (ship_id VARCHAR(24),
```

```

rocket_id VARCHAR(24), role VARCHAR(50), FOREIGN KEY
(ship_id) REFERENCES DroneShip(ship_id), FOREIGN KEY
(rocket_id) REFERENCES Rockets(rocket_id));

```

8. LAUNCHES

```

CREATE TABLE Launches (launchpad_id VARCHAR(24), rocket_id
VARCHAR(24), name VARCHAR(50), status VARCHAR(30), FOREIGN
KEY (launchpad_id) REFERENCES LaunchPads(launchpad_id),
FOREIGN KEY (rocket_id) REFERENCES Rockets(rocket_id));

```

9. ASSIGNS

```

CREATE TABLE Assigns (date DATETIME, name VARCHAR(50)
, rocket_id VARCHAR(24), launch_id VARCHAR(24), FOREIGN KEY
(launch_id) REFERENCES Missions(launch_id), FOREIGN KEY
(rocket_id) REFERENCES Rockets(rocket_id));

```

10. DELIVERS

```

CREATE TABLE Delivers (payload_id VARCHAR(24), rocket_id
VARCHAR(24), name VARCHAR(50), FOREIGN KEY (payload_id)
REFERENCES Payloads(payload_id), FOREIGN KEY (rocket_id)
REFERENCES Rockets(rocket_id));

```

Table	Action	Rows	Type	Collation	Size	Overhead
Administrators		6	InnoDB	utf8mb4_general_ci	16.0 Kib	-
Assigns		25	InnoDB	utf8mb4_general_ci	48.0 Kib	-
Delivers		71	InnoDB	utf8mb4_general_ci	48.0 Kib	-
DroneShip		15	InnoDB	utf8mb4_general_ci	16.0 Kib	-
First_stage_Recovery		10	InnoDB	utf8mb4_general_ci	48.0 Kib	-
Launches		25	InnoDB	utf8mb4_general_ci	48.0 Kib	-
LaunchPads		6	InnoDB	utf8mb4_general_ci	16.0 Kib	-
Missions		71	InnoDB	utf8mb4_general_ci	64.0 Kib	-
Payloads		84	InnoDB	utf8mb4_general_ci	16.0 Kib	-
Rockets		4	InnoDB	utf8mb4_general_ci	16.0 Kib	-

ADDING CONSTRAINT:

```
ALTER TABLE `first_stage_recovery` DROP FOREIGN KEY
`first_stage_recovery_ibfk_1`;
ALTER TABLE `first_stage_recovery` ADD CONSTRAINT
`first_stage_recovery_ibfk_1` FOREIGN KEY (`ship_id`) REFERENCES
`droneship`(`ship_id`) ON DELETE CASCADE ON UPDATE CASCADE; ALTER
TABLE `first_stage_recovery` DROP FOREIGN KEY
`first_stage_recovery_ibfk_2`; ALTER TABLE `first_stage_recovery` ADD
CONSTRAINT `first_stage_recovery_ibfk_2` FOREIGN KEY (`rocket_id`)
REFERENCES `rockets`(`rocket_id`) ON DELETE CASCADE ON UPDATE
CASCADE;
```

```
ALTER TABLE `launches` DROP FOREIGN KEY `launches_ibfk_1`;
ALTER TABLE `launches` ADD CONSTRAINT `launches_ibfk_1` FOREIGN KEY
(`launchpad_id`) REFERENCES `launchpads`(`launchpad_id`) ON DELETE
CASCADE ON UPDATE CASCADE; ALTER TABLE `launches` DROP FOREIGN
KEY `launches_ibfk_2`; ALTER TABLE `launches` ADD CONSTRAINT
`launches_ibfk_2` FOREIGN KEY (`rocket_id`) REFERENCES
`rockets`(`rocket_id`) ON DELETE CASCADE ON UPDATE CASCADE;
```

```
ALTER TABLE `assigns` DROP FOREIGN KEY `assigns_ibfk_1`;
ALTER TABLE `assigns` ADD CONSTRAINT `assigns_ibfk_1` FOREIGN KEY
(`launch_id`) REFERENCES `missions`(`launch_id`) ON DELETE CASCADE ON
UPDATE CASCADE; ALTER TABLE `assigns` DROP FOREIGN KEY
`assigns_ibfk_2`; ALTER TABLE `assigns` ADD CONSTRAINT `assigns_ibfk_2`  

FOREIGN KEY (`rocket_id`) REFERENCES `rockets`(`rocket_id`) ON DELETE
CASCADE ON UPDATE CASCADE
```

Populating the Database

```
//TYPES OF POPULATION DATABASE
INSERT INTO Administrators VALUES
('121810303009','Rohan', '121810303009', 'root' );
INSERT INTO Administrators VALUES (
'121810303033' , 'Hari Priya', '121810303033',
'standard' );
INSERT INTO Administrators VALUES (
'121810303023' , 'Dheeraj', '121810303023',
'standard' );
INSERT INTO Administrators VALUES (
'121810303032' , 'Nikhil', '121810303032',
'standard' );
INSERT INTO Administrators VALUES (
'121810303062' , 'Kamala Sree', '121810303062',
'standard' );
INSERT INTO Administrators VALUES (
'121810303046' , 'Sri Charan', '121810303033',
'standard' );

//INSERT MULTIPLE VALUES INTO THE TABLE
INSERT INTO Rockets VALUES
('5e9d0d95eda69955f709d1eb','Falcon
1','rocket','False','Republic of the Marshall
Islands','SpaceX',6700000),
('5e9d0d95eda69973a809d1ec','Falcon
9','rocket','True','United States','SpaceX',
50000000),
('5e9d0d95eda69974db09d1ed','Falcon
Heavy','rocket','True','United States','SpaceX',
90000000),
('5e9d0d96eda699382d09d1ee','Starship','rocket',
'False','United States','SpaceX', 7000000);
```

// THE NEXT METHOD IS BY DIRECTLY UPLOADING THE CSV INTO PHPMYADMIN

The screenshot shows the 'Import' page of PHPMyAdmin. The URL in the address bar is `localhost/phpmyadmin/index.php?route=/database/import&db=spacexdb`. The database selected is `spacexdb`. The main title is "Importing into the database \"spacexdb\"".

File to import:

- File may be compressed (gzip, bzp2, zip) or uncompressed.
- A compressed file's name must end in .[format].[compression]. Example: .sql.zip
- Browse your computer: (Max: 40MB)
- Choose File: `insert_csv.png`
- You may also drag and drop a file on any page.
- Character set of the file: `utf-8`

Partial import:

- Allow the interruption of an import in case the script detects it is close to the PHP timeout limit.
This might be a good way to import large files, however it can break transactions.
- Skip this number of queries (for SQL) starting from the first one: `0`

Other options:

- Enable foreign key checks

Format:

- CSV

Note: If the file contains multiple tables, they will be combined into one.

Format-specific options:

- Update data when duplicate keys found on import (add ON DUPLICATE KEY UPDATE)

Bookmarks Options History Clear

Join Queries

1. Select the rockets that are part of a launch and display the name of the rocket, launch and cost per launch.

```
SELECT rockets.name as Rocket_name, launches.name as Launch_name,  
rockets.cost_per_launch as Cost_per_launch  
FROM Launches  
LEFT JOIN rockets ON launches.rocket_id = rockets.rocket_id;
```

Rocket_name	Launch_name	Cost_per_launch
Falcon 9	CCAFS SLC 40	50000000
Falcon 1	Kwajalein Atoll	6700000
Falcon 9	STLS	50000000
Falcon 9	VAFB SLC 4E	50000000
Falcon 9	VAFB SLC 4E	50000000
Falcon 9	STLS	50000000
Falcon 9	CCAFS SLC 40	50000000
Falcon 9	CCAFS SLC 40	50000000
Falcon 9	CCAFS SLC 40	50000000
Falcon 9	Kwajalein Atoll	50000000
Falcon 9	Kwajalein Atoll	50000000
Falcon 9	KSC LC 39A	50000000
Falcon 9	Kwajalein Atoll	50000000
Falcon Heavy	KSC LC 39A	90000000
Falcon 9	Kwajalein Atoll	50000000
Falcon 9	KSC LC 39A	50000000
Falcon 9	STLS	50000000
Falcon 9	STLS	50000000
Falcon 9	CCAFS SLC 40	50000000
Falcon 9	STLS	50000000

2. Select the payloads that are part of a mission and display the name,date and launch status of the mission, as well as the orbit for the rocket delivering the particular payload.

```
SELECT missions.name as Mission_name, missions.date as Mission_date,
missions.launch_status as Launch_status, payloads.orbit as Orbit
FROM Missions
LEFT JOIN payloads ON missions.payload_id = payloads.payload_id;
```

Mission_name	Mission_date	Launch_status	Orbit
FalconSat	2006-03-24 22:30:00	False	LEO
DemoSat	2007-03-21 01:10:00	False	LEO
Trailblazer	2008-08-03 03:34:00	False	LEO
RatSat	2008-09-28 23:15:00	True	LEO
RazakSat	2009-07-13 03:35:00	True	ISS
Falcon 9 Test Flight	2010-06-04 18:45:00	True	LEO
COTS 1	2010-12-08 15:43:00	True	ISS
COTS 2	2012-05-22 07:44:00	True	PO
CRS-1	2012-10-08 00:35:00	True	GTO
CRS-2	2013-03-01 19:10:00	True	GTO
CASSIOPE	2013-09-29 16:00:00	True	ISS
SES-8	2013-12-03 22:41:00	True	LEO
Thaicom 6	2014-01-06 18:06:00	True	GTO
CRS-3	2014-04-18 19:25:00	True	GTO
OG-2 Mission 1	2014-07-14 15:15:00	True	ISS
AsiaSat 8	2014-08-05 08:00:00	True	ISS
AsiaSat 6	2014-09-07 05:00:00	True	ES-L1
CRS-4	2014-09-21 05:52:00	True	GTO
CRS-5	2015-01-10 09:47:00	True	GTO
DSCOVR	2015-02-11 23:03:00	True	ISS

Aggregate Functions

1. THE MONEY SPENT ON LAUNCH OF ROCKET BY EACH COUNTRY

```
SELECT country, SUM(cost_per_launch) FROM rockets GROUP BY country;
```

```
MariaDB [SpaceXDB]> SELECT country, SUM(cost_per_launch) FROM rockets GROUP BY country;
+-----+-----+
| country | SUM(cost_per_launch) |
+-----+-----+
| Republic of the Marshall Islands | 6700000 |
| United States | 147000000 |
+-----+-----+
2 rows in set (0.000 sec)
```

2. THE AVERAGE MASS IN KG FOR DIFFERENT ORBITAL STATUS OF THE PAYLOAD DELIVERED.

```
SELECT orbit, regime , reference_system , AVG(mass_kg) FROM payloads GROUP BY orbit,regime,reference_system;
```

```
MariaDB [SpaceXDB]> SELECT orbit, regime , reference_system , AVG(mass_kg) FROM payloads GROUP BY orbit,regime,reference_system;
+-----+-----+-----+-----+
| orbit | regime | reference_system | AVG(mass_kg) |
+-----+-----+-----+-----+
| ES-L1 | L1-point | heliocentric | 570 |
| GTO | geostationary | geocentric | 4366.061669921875 |
| GTO | geosynchronous | geocentric | 6761 |
| GTO | highly-elliptical | geocentric | 585 |
| HEO | high-earth | highly-elliptical | 350 |
| ISS | low-earth | geocentric | 2808.277777777778 |
| LEO | low-earth | geocentric | 1149.8 |
| MEO | semi-synchronous | geocentric | 4400 |
| PO | low-earth | geocentric | 7255.3 |
| PO | sun-synchronous | geocentric | 1160 |
| SSO | low-earth | geocentric | 800 |
| SSO | sun-synchronous | geocentric | 2010 |
| VLEO | very-low-earth | geocentric | 13620 |
+-----+-----+-----+-----+
13 rows in set (0.002 sec)
```

3. Checking the number of launches for each rocket

```
SELECT name, COUNT(launch_id) FROM `Missions` GROUP BY rocket_id
```

Showing rows 0 - 2 (3 total, Query took 0.0013 seconds.)

```
SELECT name, COUNT(launch_id) FROM `Missions` GROUP BY rocket_id;
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 ▾ | Filter rows: Search this table

Extra options

name	COUNT(launch_id)
FalconSat	5
Falcon 9 Test Flight	65
Falcon Heavy Test Flight	1

Set Operations

1.FINDING ALL THE ROCKETS NOT CURRENTLY USED (THAT IS THE ROCKETS NOT BEING LAUNCHED OR NOT DELIVERING ANY PAYLOAD)

```
SELECT * FROM rockets WHERE rocket_id not in  
( SELECT rocket_id FROM launches  
UNION  
SELECT rocket_id FROM delivers);
```

```
MariaDB [SpaceXDB]> SELECT *  
-> FROM rockets  
-> WHERE rocket_id  
-> not in  
-> ( SELECT rocket_id FROM launches  
-> UNION  
-> SELECT rocket_id FROM delivers);  
+-----+-----+-----+-----+-----+-----+  
| rocket_id | name | type | active | country | company | cost_per_launch |  
+-----+-----+-----+-----+-----+-----+  
| 5e9d0d96eda699382d09d1ee | Starship | rocket | False | United States | SpaceX | 7000000 |  
| 5e9d0d96eda699382d09d1nu | Falcon crew | rocket | False | Republic of the Marshall Islands | SpaceX | 60000000 |  
+-----+-----+-----+-----+-----+-----+  
2 rows in set (0.002 sec)
```

2. To see all rockets that are launched but do not deliver, using a combination of union all and except

```
SELECT rocket_id FROM Rockets UNION ALL SELECT rocket_id FROM Launches EXCEPT  
SELECT rocket_id FROM Delivers;
```



The screenshot shows a MySQL query results page. At the top, a green bar indicates "Showing rows 0 - 0 (1 total, Query took 0.0003 seconds.)". Below this is a code editor area containing the SQL query:

```
SELECT rocket_id FROM Rockets UNION ALL SELECT rocket_id FROM Launches EXCEPT SELECT rocket_id FROM Delivers;
```

Below the code editor are several buttons: "Profiling", "Edit inline", "Edit", "Explain SQL", "Create PHP code", and "Refresh". Underneath these are filtering options: "Show all" (unchecked), "Number of rows: 25" (selected), "Filter rows: Search this table", and "Extra options". At the bottom, there is a single row of data in a table:| rocket_id |
| --- |
| 5e9d0d96eda699382d09d1ee |

Functions and Procedures

Function : **check_max_mass**

objective: To return the maximum mass of payload for a given orbit type of that payload.

code:

```
DELIMITER $$  
CREATE FUNCTION check_max_mass(orbit_g VARCHAR(30))  
RETURNS int  
DETERMINISTIC  
BEGIN  
    DECLARE max_m int;  
    SELECT max_mass into max_m from (SELECT orbit,max(mass_kg) as max_mass from  
payloads group by orbit) as m WHERE orbit=orbit_g;  
    RETURN max_m;  
END; $$  
DELIMITER ;
```

```
MySQL [spacexdb]> select orbit , check_max_mass(orbit) from payloads group by orbit;  
+-----+-----+  
| orbit | check_max_mass(orbit) |  
+-----+-----+  
| LEO   |      4990 |  
| ISS   |     12259 |  
| PO    |      9600 |  
| GTO   |      7076 |  
| ES-L1 |       570 |  
| SSO   |      4000 |  
| HEO   |       350 |  
| MEO   |      4400 |  
| VLEO  |    13620 |  
+-----+-----+  
1 row in set (0.010 sec)
```

PROCUDURE:launch_in_month

Objective :This procedure is used to find out the payload, rocket, launchpad and satellite name for a satellite being launched in a certain month. The month and year is inputted in a YYYY/MM format when execution of the procedure is done.

Code:

```
SELECT launchpads.full_name as launchpad_name, rockets.name AS Rocket_name,  
payloads.name AS payload_name, launch_id ,missions.name ,launch_status  
FROM ((missions inner join launchpads on missions.launchpad_id=launchpads.launchpad_id)  
inner join rockets on missions.rocket_id=rockets.rocket_id) inner join payloads on  
payloads.payload_id = missions.payload_id  
WHERE date LIKE CONCAT(datee,'%')
```

✓ Your SQL query has been executed successfully.
1 row affected by the last statement inside the procedure.

```
SET @p0='2006-03'; CALL `launch_in_month`(@p0);
```

Execution results of routine `launch_in_month`

launchpad_name	Rocket_name	payload_name	launch_id	name	launch_status
Kwajalein Atoll Omelek Island	Falcon 1	FalconSAT-2	5eb87cd9ffd86e000604b32a	FalconSat	False

Triggers and Cursors

TRIGGER:exceed_mass

Objective: It is being used to check if the mass is exceeding the predefined maximum mass for an orbit in the payloads table

code:

```
BEGIN
```

```
    DECLARE error_msg VARCHAR(255);
    DECLARE max_mass INT(10);
    SET error_msg = ('The new quantity cannot be greater than
max weight');
    SELECT MAX(mass_kg) into max_mass from payloads
where orbit=new.orbit group by orbit;
    IF new.mass_kg > max_mass THEN
        SIGNAL SQLSTATE '45000'
        SET MESSAGE_TEXT = error_msg;
    END IF;
```

```
END
```

Output:

The screenshot shows a dark-themed web application interface for managing payloads. On the left, there's a sidebar with 'Logout' and 'Welcome Anubuthi'. Under 'Tables', 'Payloads' is selected. Under 'Actions', 'Add Payload' is selected. The main area has a form titled 'payload id:' with input '1q2w3e4r5t6'. To the right, under 'orbital information', there are dropdowns for 'ORBIT' (set to 'SSO'), 'Reference system' (set to 'geocentric'), and 'regime' (set to 'low-earth'). There are also dropdowns for 'Type' (set to 'Satellite') and 'reuse' (radio buttons for 'True' and 'False', with 'True' selected). Below these are fields for 'Manufactured by:' (input 'pes') and 'mass of the payload in kg:' (input '5000.00' with a plus/minus button). At the bottom is a red alert box containing the error message: 'DatabaseError: 1644 (45000); The new quantity cannot be greater than max weight'.

Cursor

```
DELIMITER $$  
CREATE procedure cursor_drone(INOUT name_list VARCHAR(4000))  
BEGIN  
DECLARE ship_name VARCHAR(30) DEFAULT "";  
DECLARE is_done INT DEFAULT 0;  
DECLARE PrintActiveDroneShips CURSOR FOR SELECT name FROM droneship  
WHERE activity = 'True';  
DECLARE CONTINUE HANDLER FOR NOT FOUND SET is_done =1;  
OPEN PrintActiveDroneShips;  
print_ships: LOOP  
FETCH PrintActiveDroneShips INTO ship_name;  
IF is_done =1 THEN LEAVE print_ships;  
END IF;  
SET name_list = CONCAT(ship_name,".",name_list);  
END LOOP print_ships;  
CLOSE PrintActiveDroneShips;  
END $$  
DELIMITER ;
```

✓ Your SQL query has been executed successfully.
1 row affected by the last statement inside the procedure.

```
SET @p0='HAWK'; CALL `cursor_drone`(@p0); SELECT @p0 AS `name_list`;
```

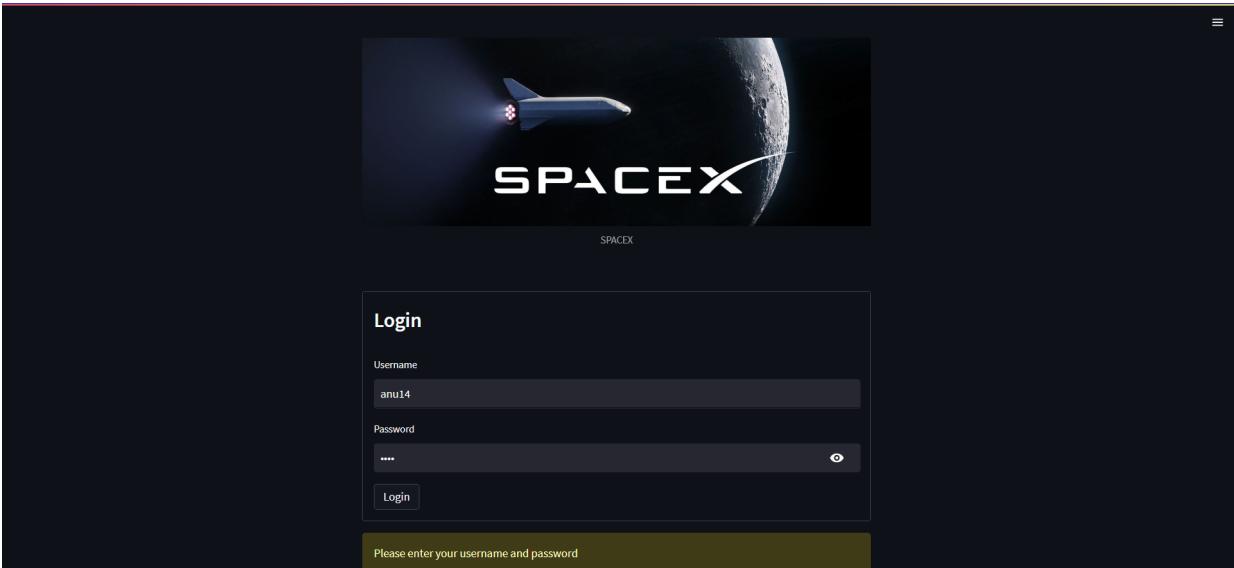
Execution results of routine `cursor_drone`

name_list

Finn Falgout;Pacific Freedom;NRC Quest;Hollywood;GO Searcher;GO Ms Tree;GO Navigator;GO Ms Chief;HAWK

Developing a Frontend

//LOGIN PAGE



//LANDING PAGE



1. ROCKETS

a) Add rockets

The screenshot shows a dark-themed application window titled "Welcome Anubuthi". On the left sidebar, under "Tables", "Rockets" is selected. Under "Actions", "Add Rocket" is selected. The main area is titled "Provide Rocket Details:" and contains the following fields:

Rocket Id:	STATUS
1q2w3e4r5t	True

Rocket Name:	country:
new_rocket	india

Type	company:
Rocket	pes

Select cost of the launch: 123456.00

Add Rocket

Successfully added rocket: "new_rocket"

b) Edit rockets

The screenshot shows a dark-themed application window titled "Welcome Anubuthi". On the left sidebar, under "Tables", "Rockets" is selected. Under "Actions", "Edit Rocket Info" is selected. The main area displays a table of existing rockets:

ID	name	type	active	country	company	cost_per_launch	
0	new_rocket	Rocket	True	india	pes	123456	
1	fd1eb	Falcon 1	rocket	False	Republic of the Marshall Islands	SpaceX	6700000
2	9d1ec	Falcon 9	rocket	True	United States	SpaceX	50000000
3	9d1ed	Falcon Heavy	rocket	True	United States	SpaceX	90000000
4	9d1ee	Starship	rocket	False	United States	SpaceX	7000000
5	9d1nu	Falcon crew	rocket	False	Republic of the Marshall Islands	SpaceX	600000
6	delete	Rocket	True	india	pes	122345	

choose the rocket id of rocket to update: 1q2w3e4r5t

Name: new_rocket Cost Per Launch: 1234500

Update ROCKET

Successfully updated:: new_rocket to ::new_rocket

Updated data

ID	name	type	active	country	company	cost_per_launch	
0	new_rocket	Rocket	True	india	pes	1234500	
1	fd1eb	Falcon 1	rocket	False	Republic of the Marshall Islands	SpaceX	6700000

c) View rockets

Logout

Welcome Anubuthi

Tables

Rockets

Actions

View Rockets

View Rocket Details:

View all Rockets

rocket_id	name	type	active	country	comp	
1qpw3ed5t	new_rocket	Rocket	True	india	pes	
1	Falcon 1	rocket	False	Republic of the Marshall Islands	SpaceX	
2	Falcon 9	rocket	True	United States	SpaceX	
3	Falcon Heavy	rocket	True	United States	SpaceX	
4	Starship	rocket	False	United States	SpaceX	
5	Falcon crew	rocket	False	Republic of the Marshall Islands	SpaceX	
6	newwww	delete	Rocket	True	India	pes

View names of the Rockets

name
new_rocket
Falcon 1
Falcon 9
Falcon Heavy
Starship
Falcon crew
delete

Logout

Welcome Anubuthi

Tables

Rockets

Actions

View Rockets

Rocket Details

index	active
0	True
1	False

Modeled with Streamlit

d) Delete rockets

The screenshot shows a dark-themed user interface for a database management system. On the left, a sidebar includes a 'Logout' button, a 'Welcome Anubuthi' message, a 'Tables' dropdown set to 'Rockets', and an 'Actions' dropdown set to 'Remove Rocket'. The main area displays a table of rocket data:

	rocket_id	name	type	active	country	comp
0	1q2w3e4r5t	new_rocket	Rocket	True	india	pes
1	5e9d0d95eda6995f709d1eb	Falcon 1	rocket	False	Republic of the Marshall Islands	Space
2	5e9d0d95eda69973a809d1ec	Falcon 9	rocket	True	United States	Space
3	5e9d0d95eda69974db09d1ed	Falcon Heavy	rocket	True	United States	Space
4	5e9d0d95eda699382d09d1ee	Starship	rocket	False	United States	Space
5	5e9d0d95eda699382d09d1nu	Falcon crew	rocket	False	Republic of the Marshall Islands	Space
6	newwww	delete	Rocket	True	india	pes

A dropdown menu below the table shows 'choose the rocket id of rocket to Delete' with the value '1q2w3e4r5t'. A confirmation dialog box asks 'Do you want to delete ::1q2w3e4r5t'. A 'Delete rocket' button is present, and a success message 'Rocket has been deleted successfully' is displayed in a green box. Below this, an 'Updated data' table shows the remaining records:

	rocket_id	name	type	active	country	comp
0	5e9d0d95eda6995f709d1eb	Falcon 1	rocket	False	Republic of the Marshall Islands	Space
1	5e9d0d95eda69973a809d1ec	Falcon 9	rocket	True	United States	Space

e) About rockets

The screenshot shows a dark-themed user interface for a database management system. On the left, a sidebar includes a 'Logout' button, a 'Welcome Anubuthi' message, a 'Tables' dropdown set to 'Rockets', and an 'Actions' dropdown set to 'About Rocket'. The main area features a large SpaceX logo with a rocket launching from a planet.

DATABASE MANAGEMENT SYSTEM

About Rocket

SpaceX was formed by entrepreneur Elon Musk in the hopes of revolutionizing the aerospace industry and making affordable spaceflight a reality. The company entered the arena with the Falcon 1 rocket, a two-stage liquid-fueled craft designed to send small satellites into orbit.

2.PAYLOADS

a)add payloads

The screenshot shows a dark-themed user interface for adding a payload. On the left, there's a sidebar with a 'Logout' button, a 'Welcome Anubuthi' message, and dropdown menus for 'Tables' (set to 'Payloads') and 'Actions' (set to 'Add Payload'). The main area is titled 'Provide Payload Details:' and contains the following fields:

- payload id:** 12QW3E4R57
- Payload Name:** new_payload
- ORBIT:** SSO
- Type:** Satellite
- Reference system:** geocentric
- reuse:** True
- Manufactured by:** pes
- mass of the payload in kg:** 3000.00
- regime:** low-earth

At the bottom right is a 'Add Payload' button.

b)edit payloads

The screenshot shows a dark-themed user interface for editing a payload. The sidebar is identical to the previous screenshot. The main area is titled 'Edit Payload Details.' and contains the following fields:

- choose the payload id of payload to update:** 12QW3E4R57
- Name:** new_payload
- Mass in Kg:** 3000.0
- True:**
- Mass in lb:** 6075.0
- false:**

At the bottom right is a 'Update Payload' button. A green success message at the bottom states 'Successfully updated:: new_payload to ::new_payload'. Below this is a table titled 'Updated data' showing the current state of the database:

	name	payload_type	reuse	manufacture	mass_kg	mass_lb	orbit	
0	new_payload	Satellite	false	pes	3,000.0000	6,075.0000	SSO	
1	thisss	Satellite	True	pes	3,000.0000	6,075.0000	SSO	
2	006eeble1	FalconSAT-2	Satellite	true	SSTL	20.0000	43.0000	LEO
3	006eeble5	RatSat	Satellite	False	SpaceX	165.0000	363.0000	LEO
4	006eeble6	BeagleSAT	Satellite	False	Estec	300.0000	440.0000	LEO

c) view payloads

Welcome Anubuthi

Tables

Payloads

Actions

View Payloads

View Payload Details:

payload_id	name	payload_type	reuse	manufacture	mass_kg
0 12QW3E4RS7	new_payload	Satellite	false	pes	3,000.000
1 1q2w3e4r5t6y	thisss	Satellite	True	pes	3,000.000
2 Seb0e4bb6c3bb006eeb1e1	FalconSAT-2	Satellite	true	SSTL	20.000
3 Seb0e4bb6c3bb006eeb1e5	RatSat	Satellite	False	SpaceX	165.000
4 Seb0e4bb6c3bb006eeb1e6	RazakSAT	Satellite	False	Satrec	200.000
5 Seb0e4bb6c3bb006eeb1ea	COTS Demo Flight 2	Dragon 1.0	False	SpaceX	525.000
6 Seb0e4bb6c3bb006eeb1eb	CRS-1	Dragon 1.0	False	SpaceX	400.000
7 Seb0e4bb6c3bb006eeb1ec	Orbcomm-OG2	Dragon 1.0	False	Not Disclosed	400.000
8 Seb0e4bb6c3bb006eeb1ed	CRS-2	Dragon 1.0	False	SpaceX	677.000
9 Seb0e4bb6c3bb006eeb1ee	CASSIOPE	Satellite	False	MDA	500.000
...					

name
3 RatSat
4 RazakSAT
5 COTS Demo Flight 2

Welcome Anubuthi

Tables

Payloads

Actions

View Payloads

View max weights

VLEO

orbit	max_weight
0 VLEO	13620

Payload Details

index	reference_system
0 geocentric	82
1 heliocentric	1
2 highly-elliptical	1

geocentric
heliocentric
highly-elliptical

d)remove payloads

The screenshot shows a dark-themed application window. On the left, a sidebar has a 'Logout' button at the top, followed by 'Welcome Anubuthi', 'Tables' (with 'Payloads' selected), and 'Actions' (with 'Remove Payload' selected). The main area displays a table of payloads:

payload_id	name	payload_type	reuse	manufacture	mass_kg	
0	12QW3E4R57	new_payload	Satellite	false	Pes	3,000,000.00
1	1q2w3e4f3t0y	thoss	Satellite	True	Pes	3,000,000.00
2	Seb0eb5bdc3bb0006eeb1e1	FalconSAT-2	Satellite	true	SSTL	20,000.00
3	Seb0eb4b7bdc3bb0006eeb1e5	RatSat	Satellite	False	SpaceX	165,000.00
4	Seb0eb4b7bdc3bb0006eeb1e6	RazakSAT	Satellite	False	Satrec	200,000.00
5	Seb0eb4babdc3bb0006eeb1ea	COTS Demo Flight 2	Dragon 1.0	False	SpaceX	525,000.00
6	Seb0eb4babdc3bb0006eeb1eb	CRS-1	Dragon 1.0	False	SpaceX	400,000.00
7	Seb0eb4babdc3bb0006eeb1ec	Orbcomm-OG2	Dragon 1.0	False	Not Disclosed	400,000.00
8	Seb0eb4bbbdc3bb0006eeb1ed	CRS-2	Dragon 1.0	False	SpaceX	677,000.00
9	Seb0eb4bbbdc3bb0006eeb1ee	CASSIOPE	Satellite	False	MDA	500,000.00

Below the table, a message says "choose the payload id of the payload to Delete". A dropdown menu shows "12QW3E4R57". A yellow box asks "Do you want to delete : '12QW3E4R57'" with a "Delete payload" button. A green success message says "Payload has been deleted successfully". At the bottom, a table titled "Updated data" shows the remaining payloads:

payload_id	name	payload_type	reuse	manufacture	mass_kg	
0	1q2w3e4f3t0y	thoss	Satellite	True	Pes	3,000,000.00
1	Seb0eb5bdc3bb0006eeb1e1	FalconSAT-2	Satellite	true	SSTL	20,000.00

e)About payloads

The screenshot shows a dark-themed application window. On the left, a sidebar has a 'Logout' button at the top, followed by 'Welcome Anubuthi', 'Tables' (with 'Payloads' selected), and 'Actions' (with 'About Payload' selected). The main area features a large central image of a rocket launching from a planet, with the word 'SPACEX' prominently displayed.

SPACEX
DATABASE MANAGEMENT SYSTEM

About Payload

For a rocket, the payload can be a satellite, space probe, or spacecraft carrying humans, animals, or cargo

3.MISSIONS

a) Add missions

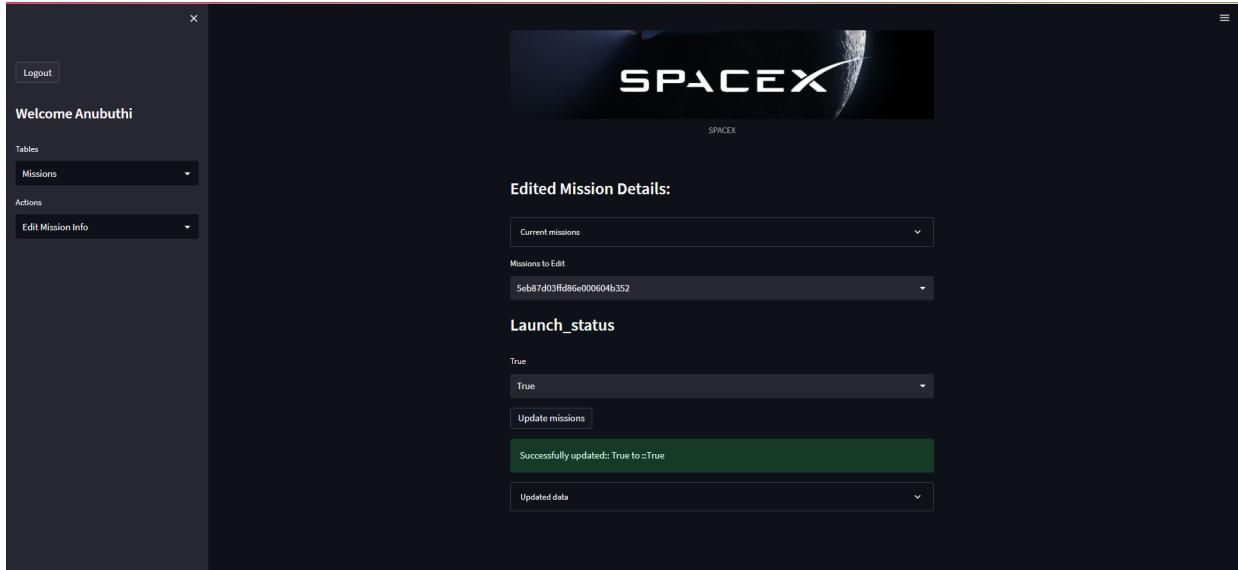
The screenshot shows a Streamlit application interface for adding a mission. On the left, there's a sidebar with 'Logout' and 'Welcome Anubuthi'. Under 'Tables', 'Missions' is selected. Under 'Actions', 'Add Missions' is selected. The main area has a title 'Add Mission Details:' and fields for rocket ID ('newwww'), launchpad ID ('5e4502509094188566f88'), payload ID ('newww'), launch name ('newlaunch'), launch ID ('qsdg247yjnnb'), date of launch ('2022/11/30'), and time of launch ('23:45'). A button 'Add Launch' is at the bottom, and a green message box says 'Successfully added launch: "newlaunch"'.

b)remove missions

The screenshot shows a Streamlit application interface for deleting a mission. The sidebar is identical to the previous screenshot. The main area has a title 'Delete Mission:' and a dropdown 'Choose the launch id of the mission to Delete' set to 'qsdg247yjnnb'. A button 'Delete mission' is present. A green message box says 'Mission has been deleted successfully'. Below it, a table titled 'Updated data' shows a list of missions:

	date	name	rocket_id	launchpad_id
01	2018-06-04T04:45:00	SES-12	5e9d0d95eda69973a809d1ec	5e9e4501f509094ba4566884
02	2018-06-29T09:42:00	CRS-15	5e9d0d95eda69973a809d1ec	5e9e4501f509094ba4566884
03	2018-07-22T05:50:00	Telstar 19V	5e9d0d95eda69973a809d1ec	5e9e4501f509094ba4566884
04	2018-07-25T11:39:26	Iridium NEXT Mission	5e9d0d95eda69973a809d1ec	5e9e4502f509092b78566887
05	2018-08-07T05:18:00	Merah Putih	5e9d0d95eda69973a809d1ec	5e9e4501f509094ba4566884
06	2018-09-10T04:45:00	Telstar 18V	5e9d0d95eda69973a809d1ec	5e9e4501f509094ba4566884
07	2018-10-08T02:22:00	SAOCOM 1A	5e9d0d95eda69973a809d1ec	5e9e4502f509092b78566887
08	2018-11-15T20:46:00	Es'hail 2	5e9d0d95eda69973a809d1ec	5e9e4502f50909418856688

c) edit missions



d) view missions

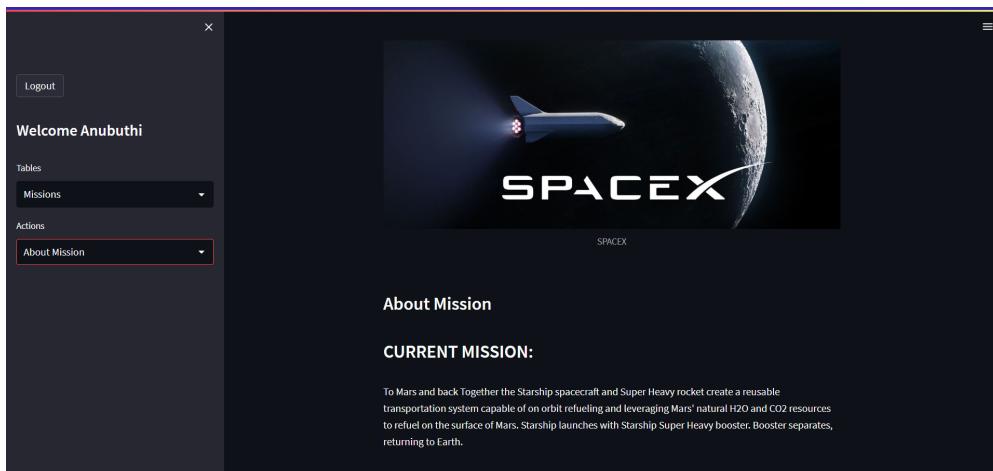
This screenshot shows the same application interface as above, but the 'Actions' dropdown is now set to 'View Missions'. The main content area displays two tables. The top table, titled 'View all Missions', lists 14 entries with columns for date, name, rocket_id, and launchpad_id. The bottom table, titled 'View names of the Missions', lists three entries with a single column for name.

	date	name	rocket_id	launchpad_id
5	2010-06-04T18:45:00	Falcon 9 Test Flight	5e9d0d95eda69973a809d1ec	5e9e4501f509094ba4566fb4
6	2010-12-08T15:43:00	COTS 1	5e9d0d95eda69973a809d1ec	5e9e4501f509094ba4566fb4
7	2012-05-22T07:44:00	COTS 2	5e9d0d95eda69973a809d1ec	5e9e4501f509094ba4566fb4
8	2012-10-08T00:35:00	CRS-1	5e9d0d95eda69973a809d1ec	5e9e4501f509094ba4566fb4
9	2013-03-01T19:10:00	CRS-2	5e9d0d95eda69973a809d1ec	5e9e4501f509094ba4566fb4
10	2013-09-29T16:00:00	CASSIOPE	5e9d0d95eda69973a809d1ec	5e9e4502f509092b78566fb7
11	2013-12-03T22:41:00	SES-8	5e9d0d95eda69973a809d1ec	5e9e4501f509094ba4566fb4
12	2014-01-06T18:06:00	Thaicom 6	5e9d0d95eda69973a809d1ec	5e9e4501f509094ba4566fb4
13	2014-04-18T19:25:00	CRS-3	5e9d0d95eda69973a809d1ec	5e9e4501f509094ba4566fb4
14	2014-07-14T15:15:00	OG-2 Mission 1	5e9d0d95eda69973a809d1ec	5e9e4501f509094ba4566fb4

	name
0	FalconSat
1	DemoSat
2	Trailblazer



e) About missions



4. LAUNCHPADS

a) Add launchpads

The screenshot shows a dark-themed 'Add Launchpad' form. The sidebar includes a 'Logout' button, a 'Welcome Anubuthi' message, and dropdown menus for 'Tables' (selected 'Launchpads'), 'Actions' (selected 'Add Launchpad'), and other tables/actions.

Provide Launchpad Details:

Launchpad id:	1q2w3e4r5t	Locality:	bangalore
Name:	PESL	Region:	karnataka
Full Name:	PES UNIVERSITY LAUNCH	Time Zone:	gmt+5:30
Status:	under construction	Latitude:	34.51
		Longitude:	7.21

Add Launch Pad

Successfully added Launch Pad: "PESL"

b)View launchpads

Logout

Welcome Anubuthi

Tables

Launchpads

Actions

View Launchpads

VIEW LAUNCHPAD DETAILS

Launchpad_id	name	full_name
0	PESL	PES UNIVERSITY LAUNCH
1	VAFB SLC 3W	Vandenberg Air Force Base Space Launch Complex 3W
2	CCAFS SLC 40	Cape Canaveral Air Force Station Space Launch Complex 4C
3	STLS	SpaceX South Texas Launch Site
4	VAFB SLC-4E	Vandenberg Air Force Base Space Launch Complex 4E
5	KSC LC 39A	Kennedy Space Center Historic Launch Complex 39A
6	Kwajalein Atoll	Kwajalein Atoll Omelek Island
7	delete	deletethis

full_name
PES UNIVERSITY LAUNCH
Vandenberg Air Force Base Space Launch Complex 3W
Cape Canaveral Air Force Station Space Launch Complex 40
SpaceX South Texas Launch Site
Vandenberg Air Force Base Space Launch Complex 4E
Kennedy Space Center Historic Launch Complex 39A

Logout

Welcome Anubuthi

Tables

Launchpads

Actions

View Launchpads

LAUNCHPAD DETAILS

index	status
0	retired
1	active
2	under construction

Legend: blue = retired, orange = active, green = under construction

37.5%
37.5%
25%

c)About Launchpads

Logout

Welcome Anubuthi

Tables

Launchpads

Actions

About Launchpad

DATABASE MANAGEMENT SYSTEM

SPACEX

About Launchpad

A launch pad is the area and facilities where rockets or spacecrafts liftoff. A Spaceport (or rocket launch site) can contain one or many launch pads. A typical launch pad consists of the service and umbilical structures. The service structure provides an access platform to inspect the launch vehicle prior to launch.

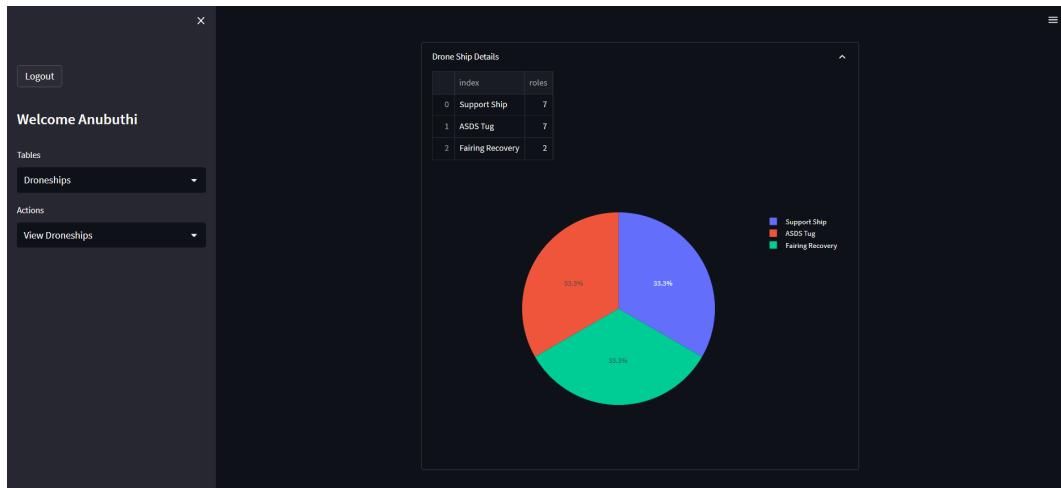
5. DRONESHIPS

a) Add droneships

The screenshot shows a dark-themed application interface. On the left, a sidebar menu includes 'Logout', 'Welcome Anubuthi', 'Tables' (with 'Droneships' selected), and 'Actions' (with 'Add Droneship' selected). The main area is titled 'Provide Droneship Details:' and contains fields for Ship id (123qwert4), Type (High Speed Craft), home port (bangalore port), Roles (Support Ship), name (pes), Activity (True selected), Mass in kg (3032.00), and an 'Add Drone' button. A green success message at the bottom states 'Successfully added Drone: "pes"'.

b) View droneships

The screenshot shows a dark-themed application interface. On the left, a sidebar menu includes 'Logout', 'Welcome Anubuthi', 'Tables' (with 'Droneships' selected), and 'Actions' (with 'View Droneships' selected). The main area displays two tables: one titled 'View names of the Drones' showing names (pes, American Champion, GO Ms Chief, GO Navigator, Betty R Gambarella, Elsbeth III) and another titled 'Droneships' showing details like ship_id, home_port, name, type, and roles for various entries.



c) Remove missions

Logout

Welcome Anubuthi

Tables: Droneships

Actions: Remove Droneship

Delete Droneship:

Current data

Choose the ship_id of Droneship to Delete

123qwet4

Do you want to delete :"123qwet4"

Delete Droneship

Droneship has been deleted successfully

	ship_id	home_port	name	type	roles	act
0	Sealed2d080df4000697c901	Port of Los Angeles	American Champion	Tug	Support Ship	Fal
1	Sealed2d080df4000697c907	Port Canaveral	GO Ms Chief	High Sp	Fairing Recovery	Tr.
2	Sealed2d080df4000697c909	Port Canaveral	GO Navigator	Cargo	Support Ship	Tr.
3	Sealed2e080df4000697c905	Port of Los Angeles	Betty R Gambarella	Tug	ASDS Tug	Fal
4	Sealed2e080df4000697c906	Port Canaveral	Elisbeth III	Tug	ASDS Tug	Fal
5	Sealed2e080df4000697c908	Port Canaveral	GO Ms Tree	High Sp	Fairing Recovery	Tr.
6	Sealed2e080df4000697c90a	Port Canaveral	GO Pursuit	Cargo	Support Ship	Fal

d) About missions

Logout

Welcome Anubuthi

Tables: Droneships

Actions: About Droneship

DATABASE MANAGEMENT SYSTEM



SPACEX

About Droneship

LATEST NEWS

<https://www.space.com/spacex-new-drone-ship-returns-1st-rocket-landing-photos>

6.ADMINISTRATORS

a) Add admin

The screenshot shows the 'Provide Admin Details' form. It includes fields for Admin id (1q2w3e4r523), Access Level (root), Admin name (anubuthi_pes), and password (123456789102). A success message at the bottom states "Successfully added Admin: 'anubuthi_pes'".

admin_id	name	password	access_level
1q2w3e4r523	anubuthi_pes	123456789102	root

b) View admins

The screenshot shows a table titled 'View names of the Admins' with columns for name, admin_id, password, and access_level. The table contains 8 rows of data. Below the table is a dropdown menu listing the same 8 names.

name	admin_id	password	access_level
Rohan	121810303009	121810303009	standard
Dheeraj	121810303023	121810303023	Root
Nikhil	121810303032	121810303032	standard
Hari Priya	121810303033	121810303033	standard
Sri Charan	121810303046	121810303033	standard
Kamala Sree	121810303062	121810303062	standard
aman	123456789102	123456789102	root
anubuthi_pes	1q2w3e4r5	123456789102	root

c) edit admins

The screenshot shows the 'Edit Admin Info' form. It includes fields for admin to Edit (1q2w3e4r5), Change the access level of administrator (root), and a success message "Successfully updated". Below the form is a table titled 'Updated data' showing the same 8 rows of data as the previous screenshot.

admin_id	name	password	access_level
121810303009	Rohan	121810303009	standard
121810303023	Dheeraj	121810303023	Root
121810303032	Nikhil	121810303032	standard
121810303033	Hari Priya	121810303033	standard
121810303046	Sri Charan	121810303033	standard
121810303062	Kamala Sree	121810303062	standard
123456789102	aman	123456789102	root
1q2w3e4r5	anubuthi_pes	123456789102	root

d) Remove admins

The screenshot shows a dark-themed web application interface. On the left, a sidebar has 'Logout' and 'Welcome Anubuthi' at the top, followed by 'Tables' (with 'Administrators' selected), 'Actions' (with 'Remove Admin' selected), and a 'Delete Admin' button. In the main area, a dropdown menu titled 'Choose the admin id of the Admin to Delete' shows '1q2w3e4r5'. A confirmation message 'Do you want to delete :"1q2w3e4r5"' is displayed in a yellow box. Below it, a green box shows the message 'Administrator has been deleted successfully'. At the bottom, a table titled 'Updated data' lists 7 rows of administrator data, including columns for admin_id, name, password, and access_level.

admin_id	name	password	access_level
0	Rohan	121810303009	standard
1	Dheeraj	121810303023	Root
2	Nikhil	121810303032	standard
3	HarPriya	121810303033	standard
4	Sri Charan	121810303033	standard
5	Kamala Sree	121810303062	standard
6	aman	123456789102	root

7. LAUNCHES

a) Add launches

The screenshot shows a dark-themed web application interface. On the left, a sidebar has 'Logout' and 'Welcome Anubuthi' at the top, followed by 'Tables' (with 'Launches' selected), 'Actions' (with 'Add Launches' selected), and an 'Add Launch' button. In the main area, there's a large 'SPACEX' logo. Below it, a form titled 'Provide Launch Details:' asks for the rocket ID ('newwww') and launchpad ID ('newwww'). It also includes a 'Status' section with 'True' checked. A success message 'Successfully added launch: "PES_LAUNCH"' is shown in a green box at the bottom.

b) View launches

The screenshot shows a dark-themed web application interface. On the left, a sidebar has 'Logout' and 'Welcome Anubuthi' at the top, followed by 'Tables' (with 'Launches' selected), 'Actions' (with 'View Launches' selected), and a 'View all Launches' button. In the main area, there's a large 'SPACEX' logo. Below it, a table titled 'View all Launches' lists 17 rows of launch details, including columns for launchpad_id, rocket_id, name, and status.

launchpad_id	rocket_id	name	status
8	Se9e4502f509995dc566f88	Se980d95eda69973a809d1ec	Kwajalein Atoll
9	Se9e4502f50994188566f88	Se980d95eda69974dcb0b1ed	KSC LC 39A
10	Se9e4502f509995dc566f88	Se980d95eda69973a809d1ec	Kwajalein Atoll
11	Se9e4502f50994188566f88	Se980d95eda69973a809d1ec	KSC LC 39A
12	Se9e4501f50994ba4566f88	Se980d95eda69973a809d1ec	CCAFS SLC 40
13	Se9e4502f50994188566f88	Se980d95eda69973a809d1ec	KSC LC 39A
14	Se9e4502f509995dc566f88	Se980d95eda69973a809d1ec	Kwajalein Atoll
15	Se9e4502f509995dc566f88	Se980d95eda69973a809d1ec	Kwajalein Atoll
16	Se9e4501f50994ba4566f88	Se980d95eda69973a809d1ec	CCAFS SLC 40
17	newwww	newwww	PES_LAUNCH
			True

8. ABOUT SPACEX

Logout

Welcome Anubuthi

Tables

About SpaceXDB

DATABASE MANAGEMENT SYSTEM



SPACEX

About SpaceXDB

Space Exploration Technologies Corp. is an American spacecraft manufacturer, launcher, and a satellite communications corporation headquartered in Hawthorne, California. It was founded in 2002 by Elon Musk with the stated goal of reducing space transportation costs to enable the colonization of Mars

Logout

Welcome Anubuthi

Tables

About SpaceXDB



FALCON 9 BLOCK 5 ROCKET



9.SQL QUERY

Logout

Welcome Anubuthi

Tables

SQL QUERY

SQL QUERIES

ENTER AN SQL QUERY:

```
select * from payloads where orbit='SSO'
```

1	2	3	4	5	6	7	8	9
0	thess	Satellite	True	pes	3,000,000	6,075,000	SSO	geocentric
1	Formosat-5	Satellite	False	NSPO	475,000	1,047,000	SSO	geocentric
2	Paz	Satellite	False	Airbus Defence and Space	1,350,000	2,976,200	SSO	geocentric
3	Tintin A & B	Satellite	False	SpaceX	800,000	1,763,700	SSO	geocentric
4	SAOCOM 1A	Satellite	False	INVAP	2,800,000	6,172,940	SSO	geocentric
5	SSO-A	Satellite	False	Spaceflight Industries, Inc	4,000,000	8,818,4900	SSO	geocentric
6	RADARSAT Cc	Satellite	False	Xmas Technologies	1,425,000	3,141,5900	SSO	geocentric