

CS 340 - Project Step 6 [Star Gazers]

Assignment Submitted: 12/5/22

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URL (Was Tested On Microsoft Edge; Screen Size May Impact Positioning of UI):

<http://flip1.engr.oregonstate.edu:28514/index.html>

Executive Summary:

The project went through some fundamental revisions throughout our time with it. For example, during the outlining process of our project, we had to change some of our tables and their relationships within the schema. This included replacing “Observatories” and “Observers” with “Universities” and “Reservations”, and adding two new tables “RelayTowers” and “RelayProbeIntersect” to our schema (which were later renamed “Relays” and “RelaysProbes”). This was due to the feedback we received from our TA about how simplistic our original design was, which caused us to approach our database outline more logically (for the betterment of our project). It started becoming less about asteroid tracking (while it is still important, it is more like an aesthetic backdrop) and more about the logistics of managing the data/connections between universities and satellites. Because of these seemingly constant changes to our original design, we went through many different iterations of how our schema would look both functionally and visually until we got to the one we have now, which in part is thanks to the quality feedback provided to us from our peers and graders.

We hope that the database driven-website we have created adequately reflects the caliber of our work in the most positive of ways, but it didn’t always perform as smoothly back then. There were some missing aspects, such as the implementation of CASCADE operations in our DDL.sql file, the implementation of JOINs in our DML.sql file to make our foreign keys user-friendly, having a dropdown menu for ID values of primary/foreign keys, and a basic search function of all things. Simple things might have gone unnoticed or unimplemented properly if certain peer reviews didn’t provide us with the time and day. Another major change between the Step 3 Draft and Step 3 Final was of course the aesthetic one. Going from the simple but generic website UI to the more stylish one that is nearly identical to the one we have now took five days to implement, with most credit given to Smith for its initial creation. The reason for this change was nothing but a pipedream conjured up by Justice, but we are proud to say that our collaborative efforts thus far have mostly realized that vision. We have spent considerable amounts of time and energy on this project throughout our time in this course, something that we hope shows in our code and documentation below.

a.) Overview:

The non-profit organization, *Star Gazers*, keeps track of thousands of asteroids that move past the Asteroid Belt, in an effort to make sure that none of them intersect the orbital trajectory of Earth and to better understand the natural phenomenon of our solar system. *Star Gazers* relies on satellites and deep space probes to relay information back to their databases. There are 50 *Probes* that *Star Gazers* are approved to lease out for academic purposes and each one is only able to focus on one asteroid (or other space objects) at a time, but there are hundreds of *Universities* that want access and control over the probes. A database-driven website will manage the organization of the data and control over the *Probes*, via *Reservations* and *Relay Towers*, to ensure efficient use of the equipment and track important milestones such as discovery details and whether or not the *Asteroids* are dangerous.

b.) Database Outline:

- **Asteroids:** records the details of Asteroids the Probe(s) are tracking.
 - asteroid_id: int(11), auto_increment, not NULL, PK.
 - asteroid_name: varchar(255), unique, not NULL.
 - discovery_date: date, not NULL.
 - distance_from_earth: int(11).
 - composition: varchar(255).
 - currently_tracked: tinyint(1), not NULL.
- **Relationship:** A 1:M relationship between Asteroids and Probes; many probes can watch the same asteroid.

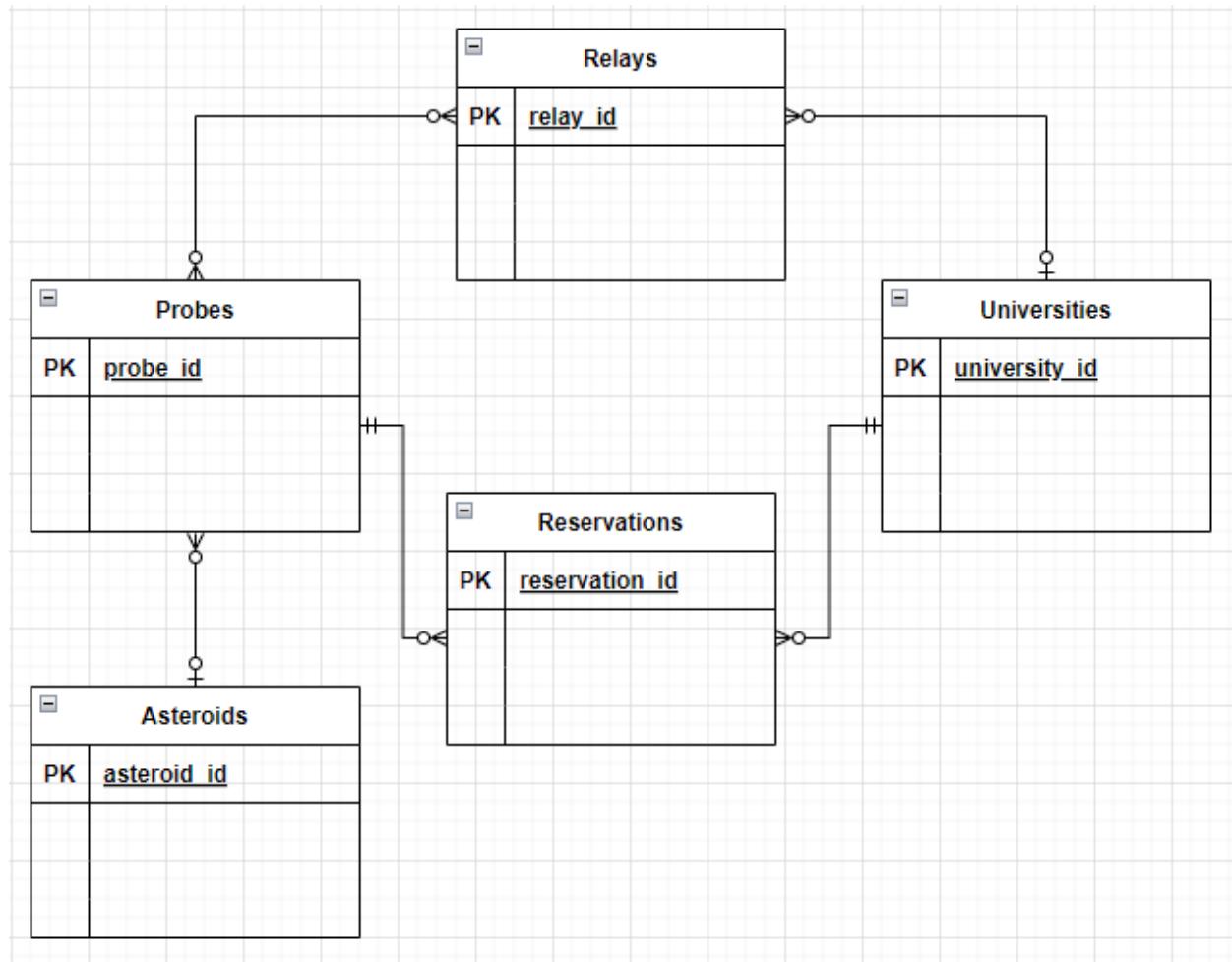
- **Probes:** records the details of the Probe that is tracking/locating the Asteroid(s).
 - probe_id: int(11), auto_increment, not NULL, PK.
 - assigned_asteroid: int, FK.
 - probe_name: varchar(255), unique, not NULL.
 - in_use: tinyint(1).
 - is_functional: tinyint(1).
- **Relationship:** A M:1 relationship between Probes and Asteroids, with *assigned_asteroid* implemented as an FK inside of Probes; many probes can keep track of the same asteroid. A 1:M relationship between Probes and Reservations; the same probe can be linked to many reservations, over time. A M:N relationship between Probes and Universities through the intersection at the Reservations entity. Another M:N relationship

between Probes and Relays, with a RelayProbes intersection table between.

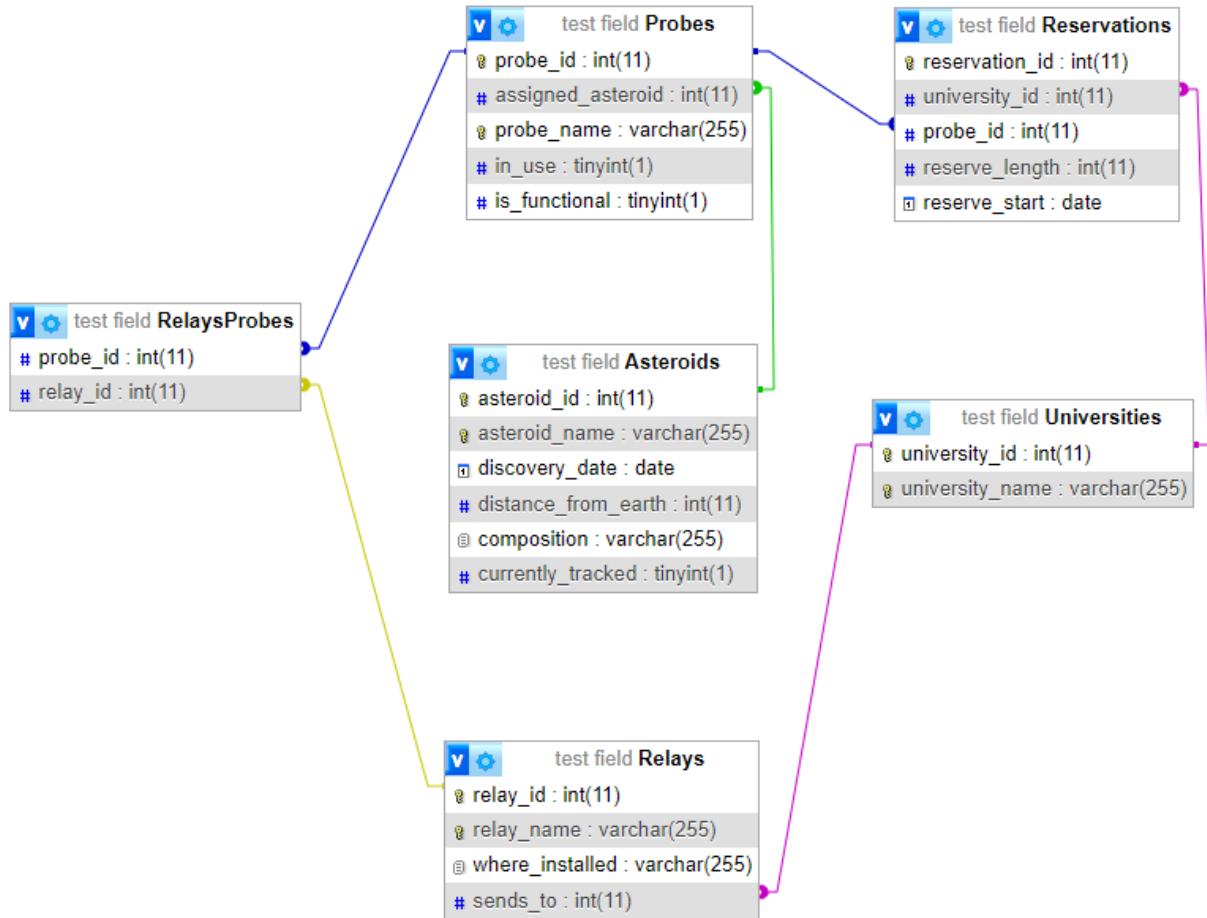
- **Universities:** records the details of the University that are accessing the Probes.
 - university_id: int(11), auto_increment, not NULL, PK.
 - university_name: varchar(255), unique, not NULL.
 - **Relationship:** A 1:M relationship between Universities and Relays; one university could use many relay towers, over time. A 1:M relationship between Universities and Reservations; universities can be linked to many reservations. A M:N relationship between Universities and Probes through the intersection at Reservations.
- **Relays:** records the details of the University usage of Probe(s), via Relay Towers.
 - relay_id: int, auto-increment, not NULL, PK.
 - relay_name: varchar(255), unique, not NULL.
 - where_installed: varchar(255), not NULL.
 - sends_to: int(11), FK.
 - **Relationship:** A M:1 relationship between Relays and Universities, with *sends_to* implemented as an FK inside of Relays; many relay towers could be access by one university, over time. A M:N relationship between Relays and Probes through the intersection at the RelayProbes table.
- **RelaysProbes:** intersection table for the many to many relationship between Relay Towers and Probes.
 - probe_id: int(11), not NULL, FK.
 - relay_id: int(11), not NULL, FK.
 - **Relationship:** A M:1 relationship between RelaysProbes and Probes, with *probe_id* implemented as an FK inside of RelaysProbes. A M:1 relationship between RelaysProbes and Relays, with *relay_id* implemented as an FK inside of RelaysProbes.
- **Reservations:** records the details of the Reservations that the University has made to access the Probe(s).
 - reservation_id: int(11), auto_increment, not NULL, PK.
 - university_id: int(11), not NULL, FK.
 - probe_id: int(11), not NULL, FK.
 - reserve_length: int, not NULL.
 - reserve_start: date, not NULL.

- **Relationship:** A M:1 relationship between Reservations and Probes, with *probe_id* implemented as an FK inside of Reservations; many reservations can have the same probe, over time. A M:1 relationship between Reservations and Universities, with *university_id* implemented as an FK inside of Reservations; many reservations can store the same university, over time.

c.) Entity-Relationship Diagram:



d.) Schema:



e.) Example Data:

Asteroids:

asteroid_name	discovery_date	distance_from_earth	composition	currently_tracked
'4 Vesta'	'1807-03-29'	5	'V-Type'	unchecked
'2 Pallas'	'1802-03-28'	10	'B-Type'	unchecked
'10 Hygiea'	'1849-04-12'	16	'C-Type'	unchecked
'951 Gaspra'	'1916-07-30'	2	'S-Type'	unchecked
'243 Ida'	'1993-08-28'	1.5	'S-Type'	unchecked

Probes:

probe_name	is_functional
'Sputnik-SS5'	checked
'Explorer-25'	checked
'CUBERICK-CL4KE'	checked
'Discovery 2'	checked
'Eye of Hawking'	unchecked

Universities:

university_name
'Oregon State University'
'Universidade de Coimbra'
'Massachusetts Institute of Technology'
'University of Oxford'

Relays:

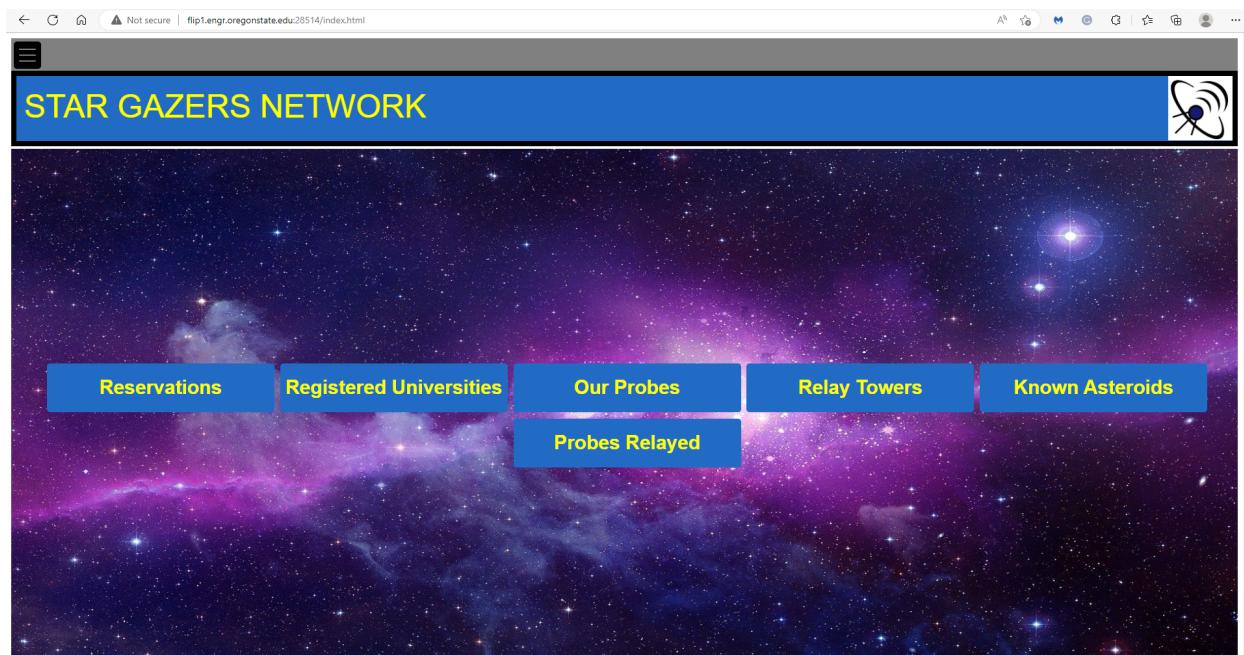
relay_name	where_installed
'America North 16'	'USA'
'America South 5'	'Brazil'
'Europe West 3'	'Germany'
'South East Asia 1'	'Thailand'

Reservations:

university_id	probe_id	reserve_length	reserve_start
'Oregon State University'	'Explorer-25'	'2 Days'	'2018-01-22'
'Universidade de Coimbra'	'CUBERICK-CL4KE'	'2 Days'	'2020-05-13'
'Massachusetts Institute of Technology'	'Discovery 2'	'3 Days'	'2020-08-04'
'University of Oxford'	'Sputnik-SS5'	'2 Days'	'2021-08-28'

f.) Screen Capture:

Home Screen (index.html):



A screenshot of the same web browser displaying the homepage of the Star Gazers Network. The layout is identical to the first screenshot, featuring the same header, background image, and navigation menu. In this version, a new section titled "Our Mission:" is visible at the bottom of the page. This section contains a detailed paragraph about the organization's purpose and operations, explaining how it tracks asteroids and manages access for registered universities and relay towers.

RESERVATIONS PAGE:

DISPLAY Reservations page:

Reservations					
Reservation ID	University Name	Probe Name	Scheduled Reservation Length	Reservation Start Date	Delete/Edit
5	Massachusetts Institute of Technology	Eye of Hawking	4 Days	2000-10-10	
11	Purdue University	Eye of Hawking	7 Days	2023-06-01	
13	Texas Tech University	Eye of Hawking	4 Days	1995-07-05	

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INSERT form Reservations page:

Please Enter Your Reservation Details Below:

University Name:

Probe Name:

Reservation Length:

Reservation Start Date:

Add Reservation

Reservation ID	University Name	Probe Name	Scheduled Reservation Length	Reservation Start Date	Delete/Edit
5	Massachusetts Inst of Technology	Eye of Hawking	4 Days	2000-10-10	
11	Purdue University	Eye of Hawking	7 Days	2023-06-01	
13	Texas Tech University	Eye of Hawking	4 Days	1995-07-05	

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ZERS NE

Please Enter Your Reservation Details Below:

University Name: Oregon State University

Probe Name: Eye of Hawking

Reservation Length: 5 Days

Reservation Start Date: 12/05/2022

Add Reservation

Start	End
0	0
1	1
5	5

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DISPLAY Reservations page:

STAR GAZERS NETWORK

Create New Reservation

Reservations

Reservation ID	University Name	Probe Name	Scheduled Reservation Length	Reservation Start Date	Delete/Edit
5	Massachusetts Institute of Technology	Eye of Hawking	4 Days	2000-10-10	 
11	Purdue University	Eye of Hawking	7 Days	2023-06-01	 
13	Texas Tech University	Eye of Hawking	4 Days	1995-07-05	 
14	Oregon State University	Eye of Hawking	5 Days	2022-12-05	 

Attributions:

UPDATE form Reservations page:

STAR GAZERS NE

Please Edit Your Reservation's Name Below:

Reservation ID	University Name
5	Massachusetts Institute of Technology
11	Purdue University
13	Texas Tech University
14	Oregon State University

Attributions:

X

University Name: Oregon State University

Probe Name: Eye of Hawking

Reservation Length: 5 Days

Reservation Start Date: 12/05/2022

Save

Start Delete/Edit

trash can edit icon

trash can edit icon

trash can edit icon

trash can edit icon

Please Edit Your Reservation's Name Below:

sity Name	University Name
chusetts	University Name: Oregon State University
Institute of	Probe Name: Eye of Hawking
Technology	Reservation Length: 5 Days
Universit	Reservation Start Date: 12/05/2022
h Univers	Save
in State	
versity	

X

Start Delete

Please Edit Your Reservation's Name Below:

University Name:	Oregon State University
Probe Name:	Sputnik-SS5
Reservation Length:	3 Days
Reservation Start Date:	12/05/2022
Save	

DISPLAY Reservations page:



Reservations

Reservation ID	University Name	Probe Name	Scheduled Reservation Length	Reservation Start Date	Delete/Edit
5	Massachusetts Institute of Technology	Eye of Hawking	4 Days	2000-10-10	
11	Purdue University	Eye of Hawking	7 Days	2023-06-01	
13	Texas Tech University	Eye of Hawking	4 Days	1995-07-05	
14	Oregon State University	Sputnik-SS5	3 Days	2022-12-05	

Attributions:

DELETE button Reservations page:

The screenshot shows a web application interface for managing reservations. At the top, there is a blue header bar with the text "STAR GAZERS NETWORK" and a logo on the right. Below the header is a "Create New Reservation" button. The main content area is titled "Reservations" and contains a table with six columns: "Reservation ID", "University Name", "Probe Name", "Scheduled Reservation Length", "Reservation Start Date", and "Delete/Edit". The table has three rows of data. Each row includes a small icon for deleting or editing the entry.

Reservation ID	University Name	Probe Name	Scheduled Reservation Length	Reservation Start Date	Delete/Edit
5	Massachusetts Institute of Technology	Eye of Hawking	4 Days	2000-10-10	
11	Purdue University	Eye of Hawking	7 Days	2023-06-01	
13	Texas Tech University	Eye of Hawking	4 Days	1995-07-05	

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DISPLAY NAV UI (top left button):

This screenshot shows the same "Reservations" page as above, but with a vertical navigation sidebar on the left. The sidebar has several buttons: "Home", "Reservations", "Universities", "Probes", "Relays", "Asteroids", and "Relays/Probes". The "Reservations" button is currently selected, which is why the "Reservations" page is displayed. The rest of the interface is identical to the one in the first screenshot.

UNIVERSITIES PAGE:

DISPLAY Universities page:

The screenshot shows a web application interface for managing universities. At the top, there is a blue header bar with the text "STAR GAZERS NETWORK" in yellow. On the right side of the header is a logo consisting of a stylized eye with a blue iris and a white pupil. Below the header is a button labeled "Add New University". The main content area is titled "Universities" and contains a table with the following data:

University ID	Name	Delete/Edit
3	Massachusetts Institute of Technology	
1	Oregon State University	
8	Purdue University	
10	Texas Tech University	
2	Universidade de Coimbra	
4	University of Oxford	

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INSERT form Universities page:

The screenshot shows a modal dialog box for adding a new university. The dialog has a dark gray background and contains the following text and input fields:

Please Enter Your University's Name Below:

Add University

Below the modal, a portion of the main table is visible, showing the following data:

University ID	Name
3	Massachusetts Institute of Technology
1	Oregon State University
8	Purdue University
10	Texas Tech University
2	Universidade de Coimbra
4	University of Oxford

DISPLAY Universities page:

The screenshot shows a web application interface. At the top, there is a blue header bar with the text "STAR GAZERS NETWORK" in yellow. On the left side of the header is a small icon of a person's head with a brain-like pattern. On the right side is a logo featuring a stylized eye with a blue iris and a black pupil. Below the header, there is a button labeled "Add New University". The main content area is titled "Universities" and contains a table with the following data:

University ID	Name	Delete/Edit
3	Massachusetts Institute of Technology	
1	Oregon State University	
15	OSU	
8	Purdue University	
10	Texas Tech University	
2	Universidade de Coimbra	
4	University of Oxford	

Attributions:

UPDATE form Universities page:

The screenshot shows a modal dialog box centered on the screen. The dialog has a dark gray background and a white content area. At the top of the dialog, it says "Please Edit Your University's Name Below:". Inside the dialog, there is a text input field containing the text "OSU-Ohio State University". Below the input field is a blue "Save" button. In the top right corner of the dialog, there is a white "X" button. Behind the dialog, the main content of the page is visible, showing a list of universities with their IDs and names. The list includes: 3 (Massachusetts Institute of Technology), 1 (Oregon State University), 15 (OSU), 8 (Purdue University), 10 (Texas Tech University), 2 (Universidade de Coimbra), and 4 (University of Oxford). The "OSU" entry in the list corresponds to the university being edited in the dialog.

DISPLAY Universities page:

STAR GAZERS NETWORK

Add New University

University ID	Name	Delete/Edit
3	Massachusetts Institute of Technology	
1	Oregon State University	
15	OSU-Ohio State University	
8	Purdue University	
10	Texas Tech University	
2	Universidade de Coimbra	
4	University of Oxford	

Attributions:

APPEARS in the Reservation page:

Please Enter Your Reservation Details Below:

University Name: OSU-Ohio State University

Probe Name: Select

Reservation Length: 1 Day

Reservation Start Date: mm/dd/yyyy

Add Reservation

DELETE button Universities page:

The screenshot shows a web application interface. At the top, there is a blue header bar with the text "STAR GAZERS NETWORK" in white. On the far left of the header is a small icon representing a menu or list. On the far right is a logo featuring a stylized eye with a blue iris and a black pupil, surrounded by concentric circles.

Below the header, there is a blue button with the text "Add New University".

The main content area is titled "Universities" in bold black text. Below the title is a table with the following data:

University ID	Name	Delete/Edit
3	Massachusetts Institute of Technology	
1	Oregon State University	
8	Purdue University	
10	Texas Tech University	
2	Universidade de Coimbra	
4	University of Oxford	

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PROBES PAGE:

DISPLAY Probes page:

STAR GAZERS NETWORK

Create New Probe

Search

Probe ID	Probe Name	Assigned Asteroid	In Use	Is Functional	Delete/Edit
21	Eye of Hawking	10 Hygiea	Yes	Yes	
22	Sputnik-SS5	951 Gaspra	Yes	Yes	
25	Benny Beaver	4 Vesta	Yes	Yes	

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INSERT form Probes page:

Please Enter Your Probe Details Below:

Probe Name: Discovery 2

Assigned Asteroid: 951 Gaspra

Outgoing Relay Connection: America North 16

In Use:

Is Functional:

Add Probe

DISPLAY Probes page:

Create New Probe

Search

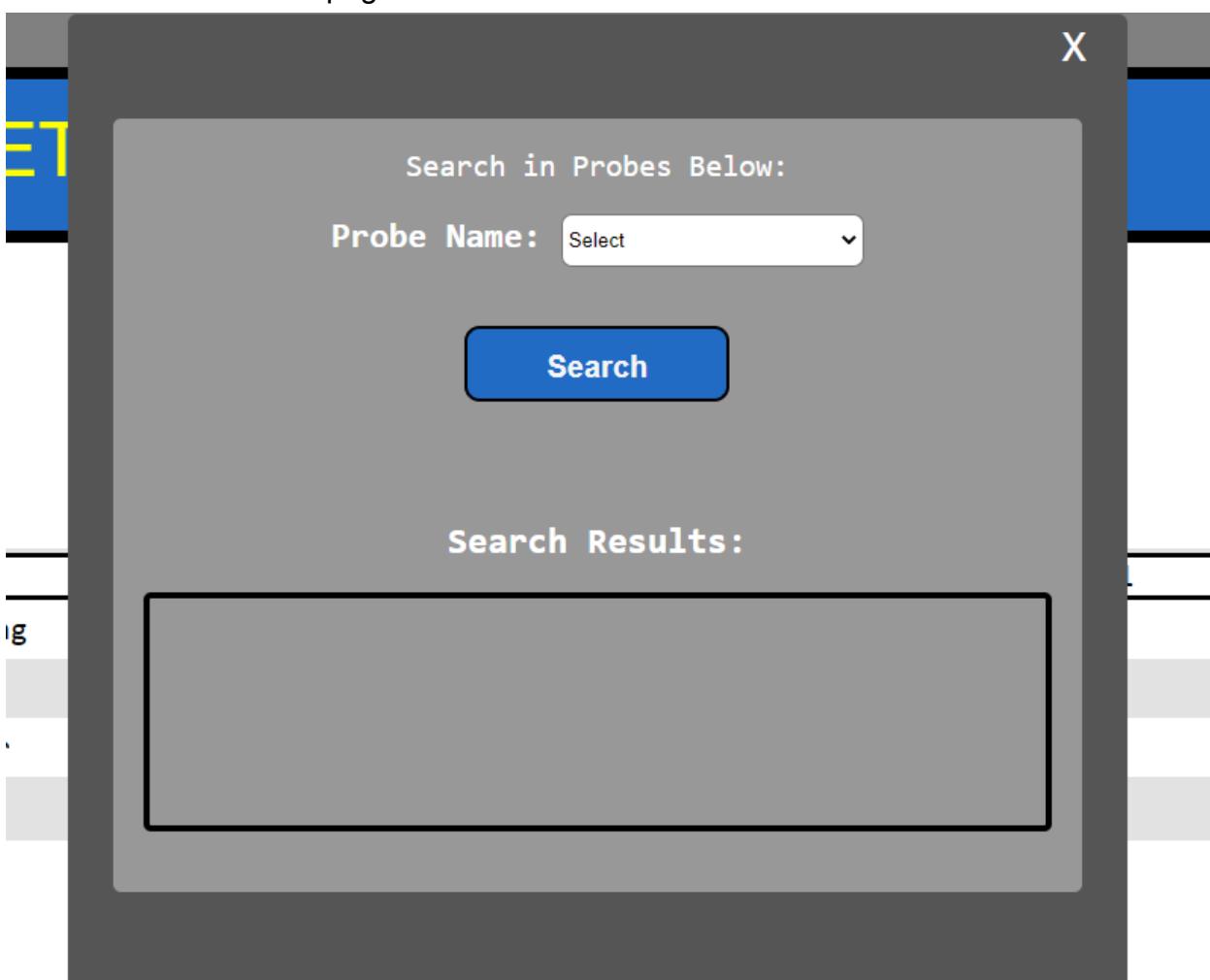
Probes

Probe ID	Probe Name	Assigned Asteroid	In Use	Is Functional	Delete/Edit
21	Eye of Hawking	10 Hygiea	Yes	Yes	
22	Sputnik-SS5	951 Gaspra	Yes	Yes	
25	Benny Beaver	4 Vesta	Yes	Yes	
30	Discovery 2	951 Gaspra	Yes	Yes	

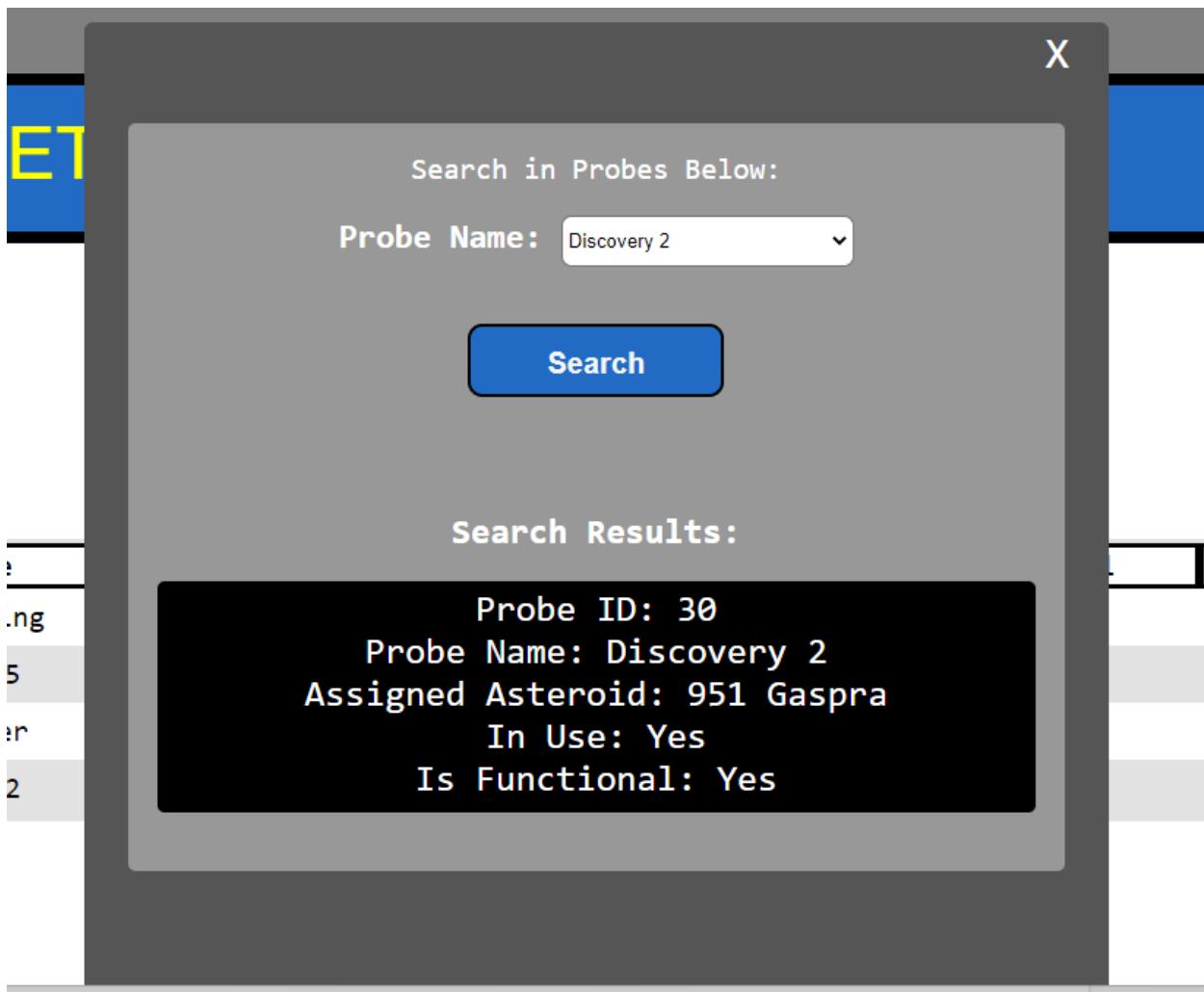
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SEARCH form Probes page:



DISPLAY Probes page:



UPDATE form Probes page:

The screenshot shows a modal dialog box titled "Please Edit Your Probe's Name Below:". Inside the dialog, there are several input fields and controls:

- Probe Name:** A text input field containing the value "CUBERICK-CL4KE".
- Assigned Asteroid:** A dropdown menu currently set to "XMT-200".
- Outgoing Relay Connection:** A dropdown menu currently set to "America North 16".
- In Use:** A checkbox with a checked status.
- Is Functional:** A checkbox with an unchecked status.
- Update Probe:** A blue rectangular button at the bottom of the dialog.

DISPLAY Probes page:

Probe ID	Probe Name	Assigned Asteroid	In Use	Is Functional	Delete/Edit
21	Eye of Hawking	10 Hygiea	Yes	Yes	
22	Sputnik-SS5	951 Gaspra	Yes	Yes	
25	Benny Beaver	4 Vesta	Yes	Yes	
30	CUBERICK-CL4KE	XMT-200	Yes	No	

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DELETE button Probes page:

Probe ID	Probe Name	Assigned Asteroid	In Use	Is Functional	Delete/Edit
21	Eye of Hawking	10 Hygiea	Yes	Yes	
22	Sputnik-SS5	951 Gaspra	Yes	Yes	
25	Benny Beaver	4 Vesta	Yes	Yes	
30	CUBERICK-CL4KE	XMT-200	Yes	No	

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RELAYS PAGE:

DISPLAY Relays page:

The screenshot shows a web application interface for managing relays. At the top, there is a header bar with the text "STAR GAZERS NETWORK" and a logo on the right. Below the header is a blue navigation bar with a "Create New Relay" button. The main content area is titled "Relays" and contains a table with four rows of relay information. Each row includes columns for Relay ID, Relay Name, Location, Sending Data To, and Delete/Edit actions. The table data is as follows:

Relay ID	Relay Name	Location	Sending Data To	Delete/Edit
1	America North 16	USA	Not Connected	
3	Europe West 3	Germany	Oregon State University	
4	South East Asia 1	Thailand	Universidade de Coimbra	

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INSERT form Relays page:

The screenshot shows an "Add Relay" form overlaid on the main Relays page. The form has a dark gray background and white text. It contains the following fields:

- Relay Name:** XMT (input field)
- Location:** UK (input field)
- Outgoing Probe Connection:** Benny Beaver (dropdown menu)
- Connected University:** Oregon State University (dropdown menu)

At the bottom of the form is a large blue button labeled "Add Relay".

DISPLAY Relays page:

STAR GAZERS NETWORK

Create New Relay

Relays

Relay ID	Relay Name	Location	Sending Data To	Delete/Edit
1	America North 16	USA	Not Connected	
3	Europe West 3	Germany	Oregon State University	
4	South East Asia 1	Thailand	Universidade de Coimbra	
11	XMT	UK	Oregon State University	

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UPDATE form Relays page:

Please Edit Your Relay's Name Below:

Relay Name: America Northwest 12

Location: USA

Outgoing Probe Connection: Eye of Hawking

Connected University: Oregon State University

Update Relay

DISPLAY Relays page:

STAR GAZERS NETWORK

Create New Relay

Relays				
Relay ID	Relay Name	Location	Sending Data To	Delete/Edit
1	America North 16	USA	Not Connected	
3	Europe West 3	Germany	Oregon State University	
4	South East Asia 1	Thailand	Universidade de Coimbra	
11	America Northwest 12	USA	Oregon State University	
12	2001	Moon	Oregon State University	

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DELETE button Relays page:

STAR GAZERS NETWORK

Create New Relay

Relays				
Relay ID	Relay Name	Location	Sending Data To	Delete/Edit
1	America North 16	USA	Not Connected	
3	Europe West 3	Germany	Oregon State University	
4	South East Asia 1	Thailand	Universidade de Coimbra	
12	2001	Moon	Oregon State University	

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ASTEROIDS PAGE:

DISPLAY Asteroids page:

≡
STAR GAZERS NETWORK


Add New Asteroid

Asteroids

Asteroid ID	Asteroid Name	Discovery Date	Distance From Earth	Composition	Currently Tracked	Delete/Edit
1	4 Vesta	1807-03-29	5 AU	V-Type	No	 
2	2 Pallas	1802-03-28	10 AU	B-Type	No	 
3	10 Hygiea	1849-04-12	16 AU	C-Type	No	 
4	951 Gaspra	1916-07-30	2 AU	S-Type	No	 
5	243 Ida	1993-08-28	2 AU	S-Type	No	 
15	XMT-200	1911-11-11	6 AU	C-Type	No	 
16	tests	2022-11-25	3434 AU	fsfd	No	 

INSERT form Asteroids pages:

The screenshot shows a modal dialog box titled "Please Enter Your Asteroid Details Below:". The form contains five input fields: "Asteroid Name" (99942 Apophis), "Discovery Date" (06/19/2004), "Distance From Earth" (1), "Composition" (Q-Type), and "Is Currently Tracked" (Yes). A blue "Add Asteroid" button is at the bottom.

Please Enter Your Asteroid Details Below:

Asteroid Name: 99942 Apophis

Discovery Date: 06 / 19 / 2004

Distance From Earth: 1

Composition: Q-Type

Is Currently Tracked: Yes

Add Asteroid

DISPLAY Asteroids page:

Asteroids

Asteroid ID	Asteroid Name	Discovery Date	Distance From Earth	Composition	Currently Tracked	Delete/Edit
1	4 Vesta	1807-03-29	5 AU	V-Type	No	
2	2 Pallas	1802-03-28	10 AU	B-Type	No	
3	10 Hygiea	1849-04-12	16 AU	C-Type	No	
4	951 Gaspra	1916-07-30	2 AU	S-Type	No	
5	243 Ida	1993-08-28	2 AU	S-Type	No	
15	XMT-200	1911-11-11	6 AU	C-Type	No	
16	tests	2022-11-25	3434 AU	fsfd	No	
17	99942 Apophis	2004-06-19	1 AU	Q-Type	Yes	

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UPDATE form Asteroids page:

The screenshot shows a modal dialog box titled "Please Edit Your Asteroid's Name Below:". Inside the dialog, there are five input fields: "Asteroid Name" (value: Red Herring), "Discovery Date" (value: 12/05/2022), "Distance From Earth" (value: 0), "Composition" (value: BOOM-Type), and "Is Currently Tracked" (value: Yes). A blue "Update Asteroid" button is at the bottom. The background of the dialog is dark grey, and the overall interface has a clean, modern look.

Please Edit Your Asteroid's Name Below:

Asteroid Name: Red Herring

Discovery Date: 12/05/2022

Distance From Earth: 0

Composition: BOOM-Type

Is Currently Tracked: Yes

Update Asteroid

DISPLAY Asteroids page:

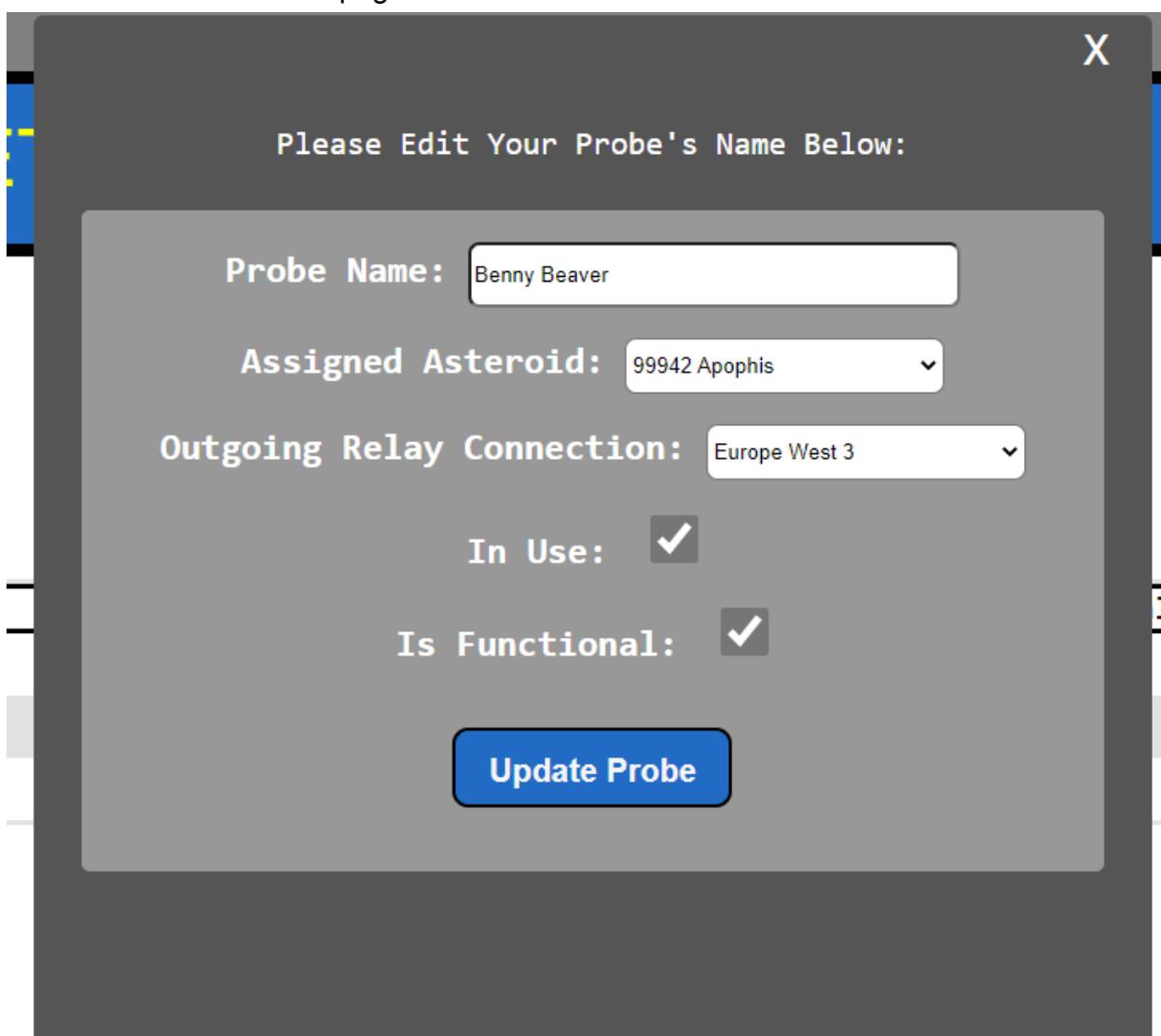
The screenshot shows a web application interface for managing asteroids. At the top, there's a blue header bar with the text "STAR GAZER NETWORK" and a small logo. Below the header is a button labeled "Add New Asteroid". The main content area is titled "Asteroids" and contains a table with the following data:

Asteroid ID	Asteroid Name	Discovery Date	Distance From Earth	Composition	Currently Tracked	Delete/Edit
1	4 Vesta	1807-03-29	5 AU	V-Type	No	
2	2 Pallas	1802-03-28	10 AU	B-Type	No	
3	10 Hygiea	1849-04-12	16 AU	C-Type	No	
4	951 Gaspra	1916-07-30	2 AU	S-Type	No	
5	243 Ida	1993-08-28	2 AU	S-Type	No	
15	XMT-200	1911-11-11	6 AU	C-Type	No	
16	Red Herring	2022-12-05	0 AU	BOOM-Type	Yes	
17	99942 Apophis	2004-06-19	1 AU	Q-Type	Yes	

Below the table, there's a section for attributions:

Attributions:
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APPEARS in the Probes page:



DELETE button Asteroids page:

STAR GAZERS NETWORK



Add New Asteroid

Asteroid ID	Asteroid Name	Discovery Date	Distance From Earth	Composition	Currently Tracked	Delete/Edit
1	4 Vesta	1807-03-29	5 AU	V-Type	No	 
2	2 Pallas	1802-03-28	10 AU	B-Type	No	 
3	10 Hygiea	1849-04-12	16 AU	C-Type	No	 
4	951 Gaspra	1916-07-30	2 AU	S-Type	No	 
5	243 Ida	1993-08-28	2 AU	S-Type	No	 
15	XMT-200	1911-11-11	6 AU	C-Type	No	 
16	Red Herring	2022-12-05	0 AU	BOOM-Type	Yes	 

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RELAYS/PROBES PAGE:

DISPLAY Relays/Probes page:

The screenshot shows a header bar with a menu icon and a network logo. Below it is a blue banner with the text "STAR GAZERS NETWORK". The main content area has a title "Relays/Probes" and a table with the following data:

Probe Name	Relay Name
Eye of Hawking	Europe West 3
Eye of Hawking	South East Asia 1
Sputnik-SS5	South East Asia 1
Eye of Hawking	South East Asia 1

Attributions:

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INSERT in Relays/Probes page:

The screenshot shows a header bar with a menu icon and a network logo. Below it is a blue banner with the text "STAR GAZERS NETWORK". The main content area has a title "Relays/Probes" and a table with the following data:

Probe Name	Relay Name
Eye of Hawking	Europe West 3
Eye of Hawking	South East Asia 1
Sputnik-SS5	South East Asia 1
Eye of Hawking	South East Asia 1
Benny Beaver	XMT

Attributions:

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UPDATE in Relays/Probes:

The screenshot shows a header bar with a menu icon and a network logo. Below it is a blue banner with the text "STAR GAZERS NETWORK". The main content area has a title "Relays/Probes" and a table with the following data:

Probe Name	Relay Name
Eye of Hawking	Europe West 3
Eye of Hawking	South East Asia 1
Sputnik-SS5	South East Asia 1
Eye of Hawking	South East Asia 1
Benny Beaver	America Northwest 12
Eye of Hawking	America Northwest 12
Benny Beaver	2001

Attributions:

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DELETE in Relays/Probes page:

The screenshot shows a web application interface for the "STAR GAZERS NETWORK". At the top, there is a navigation bar with a menu icon on the left and a logo on the right. Below the navigation bar is a blue header bar with the text "STAR GAZERS NETWORK" in yellow. The main content area has a title "Relays/Probes" and a table with two columns: "Probe Name" and "Relay Name". The table contains six rows of data. At the bottom of the table, there are two icons: a red square with a white minus sign and a blue square with a white pencil icon.

Probe Name	Relay Name
Eye of Hawking	Europe West 3
Eye of Hawking	South East Asia 1
Sputnik-SS5	South East Asia 1
Eye of Hawking	South East Asia 1
Benny Beaver	2001

Attributions:

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**We chose not to give the RelaysProbes intersection its own primary key. The values of the table are inputted during Relays' and Probes' insert and update operations respectively. A RelaysProbes row is deleted when one of the Relays or Probes IDs it contains is deleted. Since the RelaysProbes intersection table does not have a Primary Key, it is not possible to directly edit or delete a row. To validate this decision we followed guidance from the exploration “Exploration - Design Patterns (Part 2)”.