

CPSC 304 Project Cover Page

Milestone #: 4

Date: November 28, 2021

Group Number: 90

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By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your email address, and then let us assign you to a TA for your project supervisor.)

In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia

Repository:

[CPSC304-2021W-T1/project_d9l2b_o4l1b_w9v2b \(ubc.ca\)](CPSC304-2021W-T1/project_d9l2b_o4l1b_w9v2b (ubc.ca))

SQL file:

See schema.sql file in the repository/handed in on Canvas

Final Project Description:

The final project allows the user, who would be an aquarium manager, to query through the aquarium's animals, employees, schedules, checkups, and events in their database. They are able to enter criteria to search and delete on, input information they want to delete and update for events, find the biologists' conducting specific priority checkups, find the number of animals that are not 'healthy,' count the number of schedules of each frequency, and various other things using this database interface.

Differences in Final Schema:

Changes made to the final schema include:

- Changed the name of date, time attributes to checkup_date, checkup_time, etc. because date and time were invalid attribute names
- Changed To table name to Is_For because it was an invalid name
- Added name and animal_group attributes to Animal to allow for easier selection querying on animal as there are now more options and the user does not need to know the species' scientific name to search them up
- Removed ON DELETE UPDATE CASCADE as Oracle does not support that function and we are not required to show it
- Removed ON DELETE NO ACTION as that is the default and do not need to specify
- Changed TIME datatype to VARCHAR because Oracle datatype is TIMESTAMP but it outputs a strange format that we did not want
- Changed priority attribute from an INT to VARCHAR because the numbers were not very descriptive to the user
- Total participation constraints were not enforced as we didn't learn about ASSERT until very recently

Queries:

1. **INSERT:** Create a new event

```
INSERT INTO Event(ID, name, event_date, start_time, end_time) VALUES ($maxId,  
'$tmpName', TO_DATE('$tmpDate', 'YYYY-MM-DD'), '$tmpStartTime', '$tmpEndTime')
```

Found under the Events tab (**event-page.php**):

Before Insert

EMPLOYEES

CHECKUPS

Update Event

Event ID To Update:

New Event Name:

New Date: yyyy-mm-dd

New Start Time: --:--:--

New End Time: --:--:--

Delete Event

Event ID To Delete:

Find the Date with the Maximum Average Number of Group Size of Customer Events

Search Event

Select Search Criteria:

Event Name: test event

Event Date: 2021-12-01

CHECKUPS

Update Event

Event ID To Update:

New Event Name:

New Date: yyyy-mm-dd

New Start Time: --:--:--

New End Time: --:--:--

Delete Event

Event ID To Delete:

Find the Date with the Maximum Average Number of Group Size of Customer Events

Search Event

Select Search Criteria:

Event Name:

Event Date: yyyy-mm-dd

After Insert

UBC Aquarium

Create Event

Event Name:

Date:

Start Time:

End Time:

Update Event

Event ID To Update:

New Event Name:

New Date:

New Start Time:

New End Time:

UBC Aquarium

Create Event

Event Name:

Date:

Start Time:

End Time:

Insert Successful.

Update Event

Event ID To Update:

New Event Name:

New Date:

New Start Time:

New End Time:

CHECKUPS

Event ID To Update:	<input type="text"/>
New Event Name:	<input type="text"/>
New Date:	<input type="text"/> yyyy-mm-dd <input type="button" value="..."/>
New Start Time:	<input type="text"/> --:--:-- <input type="button" value="..."/>
New End Time:	<input type="text"/> --:--:-- <input type="button" value="..."/>
<input type="button" value="Update"/>	

Delete Event

Event ID To Delete:	<input type="text"/>
<input type="button" value="Delete"/>	

Find the Date with the Maximum Average Number of Group Size of Customer Events

<input type="button" value="Let's Find Out!"/>
--

Search Event

Select Search Criteria:	<input type="button" value="Event Name"/>
Event Name:	<input type="text"/>
Event Date:	<input type="text"/> yyyy-mm-dd <input type="button" value="..."/>
<input type="button" value="Search"/>	

Event ID	Event Name	Event Date	Start Time	Event Time
11	test event	01-DEC-21	15:01:48	17:01:56

2. **DELETE:** Delete an event

DELETE FROM Event WHERE ID = \$idToDelete

Found under the Events tab (**event-page.php**):

CHECKUPS

Event ID To Update:	<input type="text"/>
New Event Name:	<input type="text"/>
New Date:	<input type="text"/> yyyy-mm-dd <input type="button" value="..."/>
New Start Time:	<input type="text"/> --:--:-- <input type="button" value="..."/>
New End Time:	<input type="text"/> --:--:-- <input type="button" value="..."/>
<input type="button" value="Update"/>	

Delete Event

Event ID To Delete:	<input type="text"/> 2 <input type="button" value="..."/>
<input type="button" value="Delete"/>	

Find the Date with the Maximum Average Number of Group Size of Customer Events

<input type="button" value="Let's Find Out!"/>
--

Search Event

Select Search Criteria:	<input type="button" value="Event Name"/>
Event Name:	<input type="text"/>
Event Date:	<input type="text"/> yyyy-mm-dd <input type="button" value="..."/>
<input type="button" value="Search"/>	

Event ID	Event Name	Event Date	Start Time	Event Time
2	Dolphin Show	23-DEC-21	13:30:00	13:59:59

EMPLOYEES

CHECKUPS

Update Event

Event ID To Update:

New Event Name:

New Date: yyyy-mm-dd

New Start Time: --:--:-- --

New End Time: --:--:-- --

Delete Event

Event ID To Delete:

Delete Successful.

Find the Date with the Maximum Average Number of Group Size of Customer Events

Search Event

Select Search Criteria:

Event Name: Dolphin Show

Event Date: 2021-12-23

CHECKUPS

Update Event

Event ID To Update:

New Event Name:

New Date: yyyy-mm-dd

New Start Time: --:--:-- --

New End Time: --:--:-- --

Delete Event

Event ID To Delete:

Find the Date with the Maximum Average Number of Group Size of Customer Events

Search Event

Select Search Criteria:

Event Name:

Event Date: yyyy-mm-dd

3. UPDATE: Update an existing event

```
UPDATE Event SET name= '$newName' , event_date = TO_DATE('$newDate',  
'YYYY-MM-DD'), start_time= '$newStartTime' , end_time= '$newEndTime' WHERE ID =  
$IDUpdate
```

Found under the Events tab ([event-page.php](#));

CHECKUPS

Event ID To Update:

New Event Name:

New Date:

New Start Time:

New End Time:

Delete Event

Event ID To Delete:

Find the Date with the Maximum Average Number of Group Size of Customer Events

Search Event

Select Search Criteria:

Event Name:

Event Date:

Event ID	Event Name	Event Date	Start Time	Event Time
7	Volunteer Cleanup	15-NOV-21	11:30:00	13:59:59


ANIMALS

SCHEDULES

EVENTS

EMPLOYEES

CHECKUPS

Event Name:

Date:

Start Time:

End Time:

Update Event

Event ID To Update:

New Event Name:

New Date:

New Start Time:

New End Time:

Update Successful.

Delete Event

Event ID To Delete:

Find the Date with the Maximum Average Number of Group Size of Customer Events

EMPLOYEES

CHECKUPS

Update Event

Event ID To Update:

New Event Name:

New Date: yyyy-mm-dd

New Start Time: --:--:--

New End Time: --:--:--

Update Successful.

Delete Event

Event ID To Delete:

Find the Date with the Maximum Average Number of Group Size of Customer Events

Search Event

Select Search Criteria:

Event Name: Volunteer Cleanup at Stanley Park

Event Date: 2021-12-15

CHECKUPS

Update Event

Event ID To Update:

New Event Name:

New Date: yyyy-mm-dd

New Start Time: --:--:--

New End Time: --:--:--

Delete Event

Event ID To Delete:

Find the Date with the Maximum Average Number of Group Size of Customer Events

Search Event

Select Search Criteria:

Event Name:

Event Date: yyyy-mm-dd

Event ID	Event Name	Event Date	Start Time	Event Time
7	Volunteer Cleanup at Stanley Park	15-DEC-21	13:00:00	15:59:59

4. SELECTION:

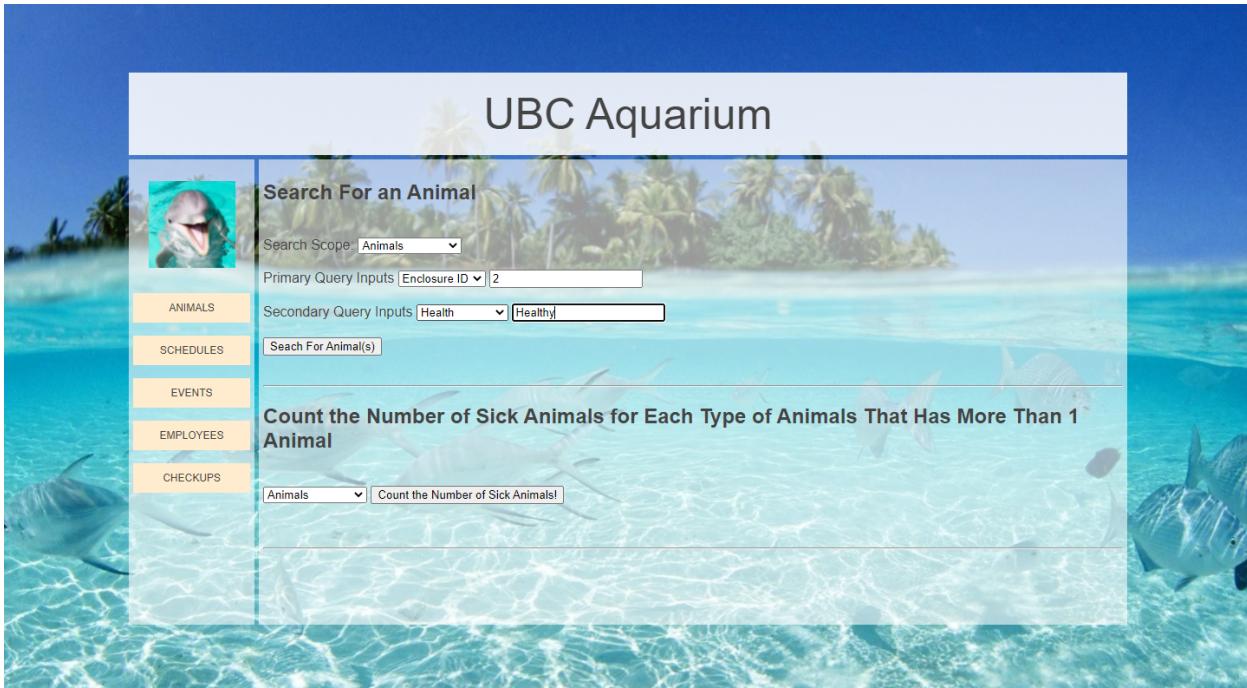
SELECT *

FROM \$table

WHERE \$field1 = \$var1 AND \$field2 = \$var2

Found under all tabs (**animal-page.php**, **schedule-page.php**, **event-page.php**, **employee-page.php**, **checkup-page.php**):

Animals:



UBC Aquarium

Search For an Animal

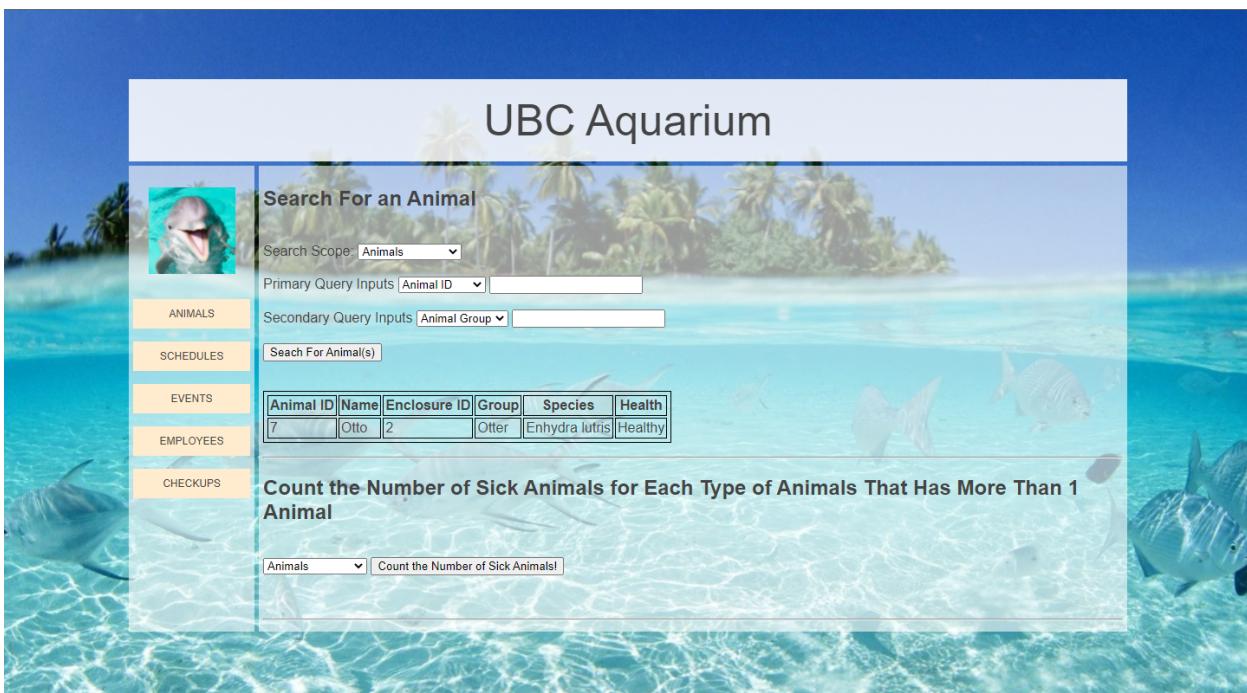
Search Scope: Animals

Primary Query Inputs: Enclosure ID 2

Secondary Query Inputs: Health Healthy

Count the Number of Sick Animals for Each Type of Animals That Has More Than 1 Animal

Animals Count the Number of Sick Animals!



UBC Aquarium

Search For an Animal

Search Scope: Animals

Primary Query Inputs: Animal ID 1

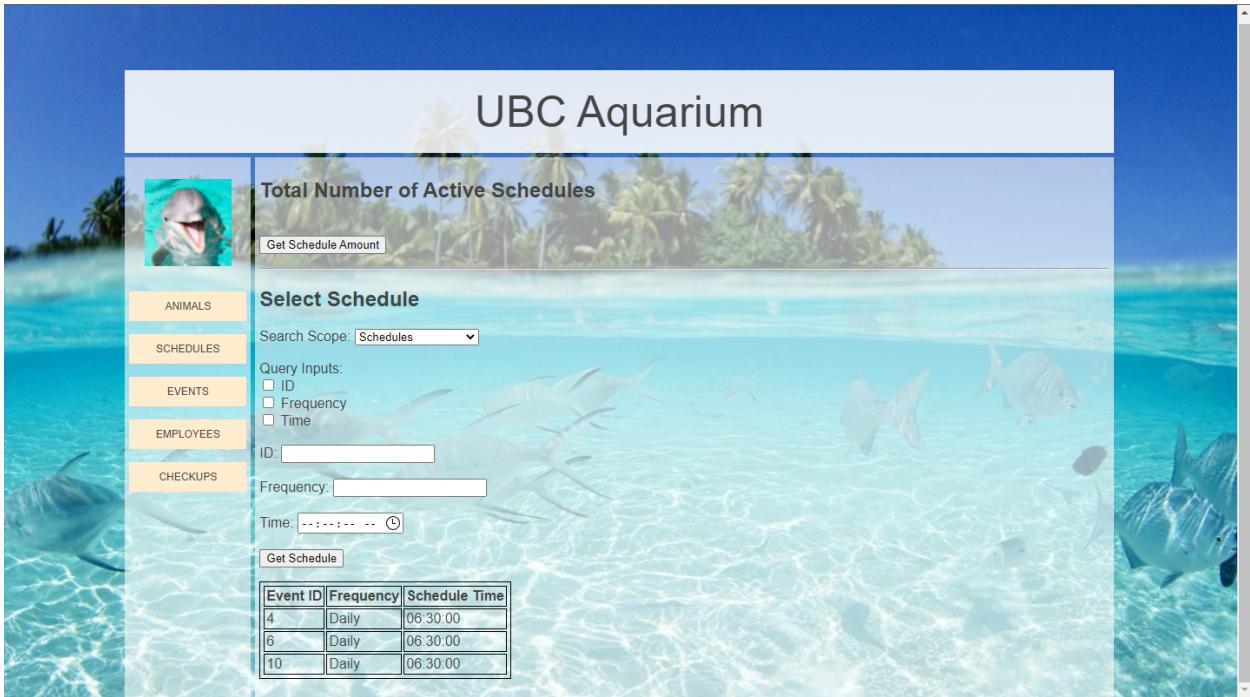
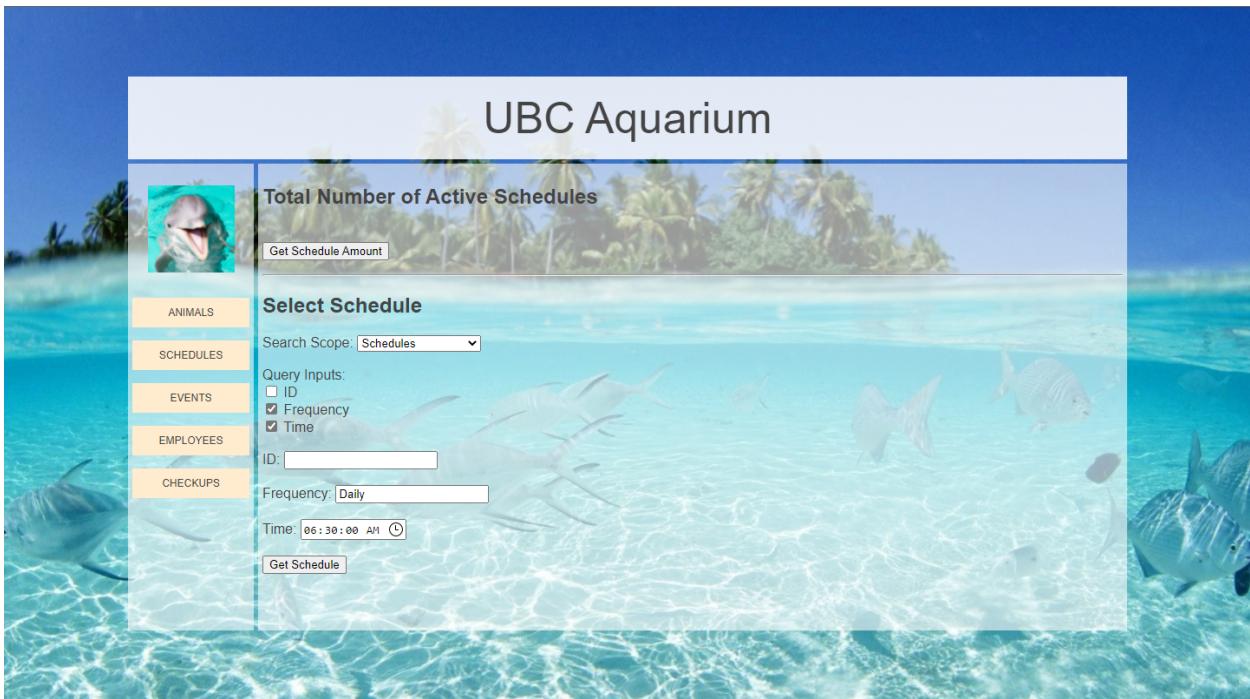
Secondary Query Inputs: Animal Group

Animal ID	Name	Enclosure ID	Group	Species	Health
7	Otto	2	Otter	Enhydra lutris	Healthy

Count the Number of Sick Animals for Each Type of Animals That Has More Than 1 Animal

Animals Count the Number of Sick Animals!

Schedules:



Events:

Update Event

Event ID To Update:

New Event Name:

New Date: yyyy-mm-dd

New Start Time: --:--:--

New End Time: --:--:--

Delete Event

Event ID To Delete:

Find the Date with the Maximum Average Number of Group Size of Customer Events

Search Event

Select Search Criteria:

Event Name: Virtual Aquarium Tour

Event Date: 2021-11-15

CHECKUPS

Update Event

Event ID To Update:

New Event Name:

New Date: yyyy-mm-dd

New Start Time: --:--:--

New End Time: --:--:--

Delete Event

Event ID To Delete:

Find the Date with the Maximum Average Number of Group Size of Customer Events

Search Event

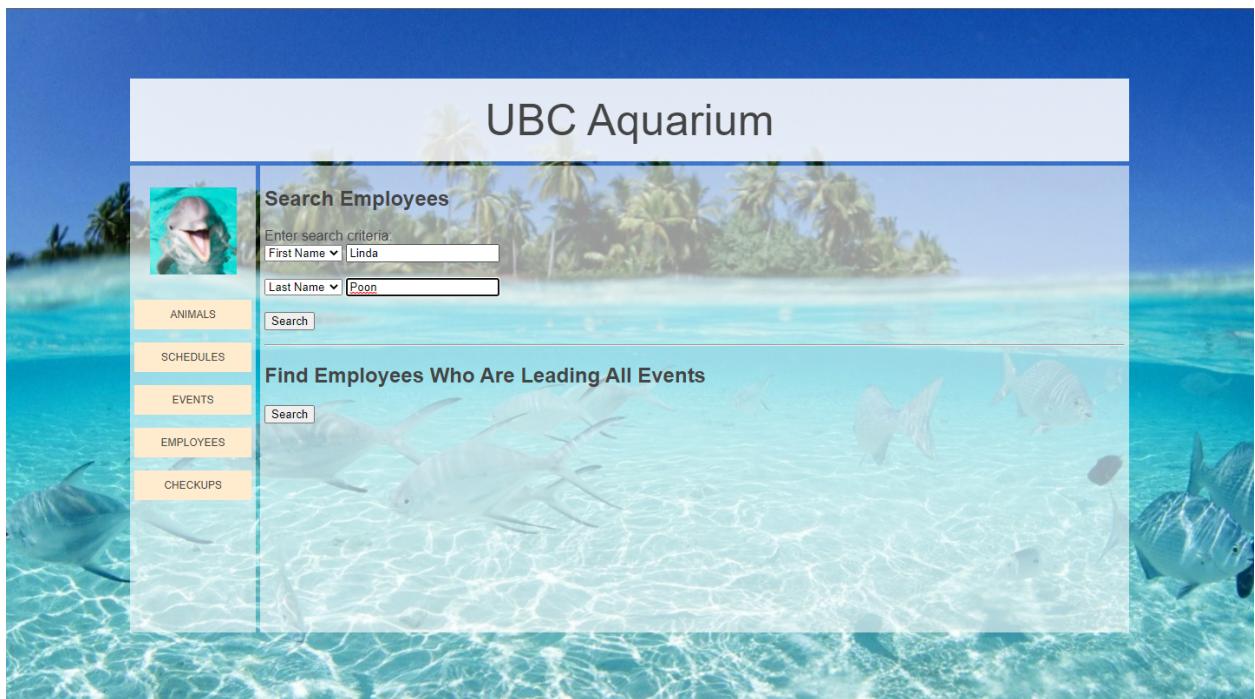
Select Search Criteria:

Event Name:

Event Date: yyyy-mm-dd

Event ID	Event Name	Event Date	Start Time	Event Time
10	Virtual Aquarium Tour	15-NOV-21	12:30:00	13:59:59

Employee:



UBC Aquarium

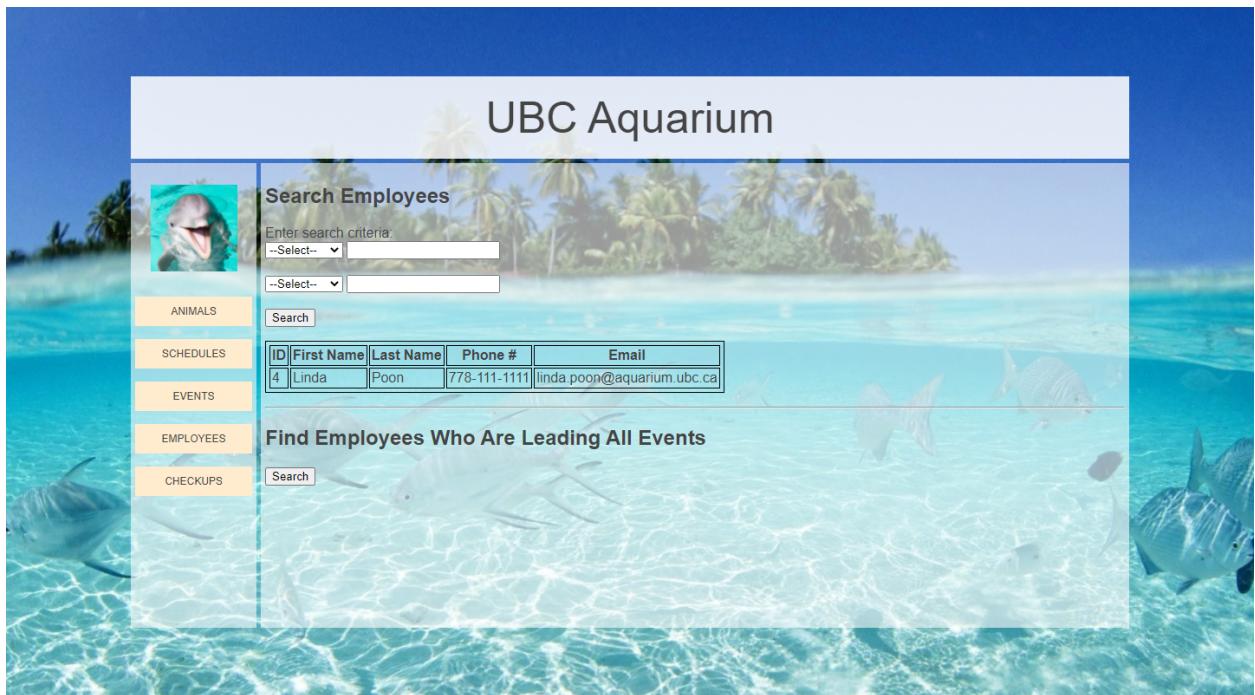
Search Employees

Enter search criteria:

First Name Last Name

Find Employees Who Are Leading All Events

ANIMALS
SCHEDULES
EVENTS
EMPLOYEES
CHECKUPS



UBC Aquarium

Search Employees

Enter search criteria:

--Select-- --Select--

ID	First Name	Last Name	Phone #	Email
4	Linda	Poon	778-111-1111	linda.poon@aquarium.ubc.ca

Find Employees Who Are Leading All Events

ANIMALS
SCHEDULES
EVENTS
EMPLOYEES
CHECKUPS

Checkups:

The screenshot shows the UBC Aquarium website's search interface for 'Checkups'. The main title 'UBC Aquarium' is at the top. On the left, there is a sidebar with a dolphin icon and links for ANIMALS, SCHEDULES, EVENTS, EMPLOYEES, and CHECKUPS. The 'CHECKUPS' link is highlighted. The main search area has a title 'Search Checkups' and a sub-section 'Find Biologists Conducting Checkups by Priority'. It includes dropdown menus for 'First search criteria' (Type) and 'Second search criteria' (Date set to 2021-12-01), and a 'Search' button. Below these are options to 'Find all checkup' with Type, Date, or Time filters, and another 'Search' button. The background features a tropical island and fish.

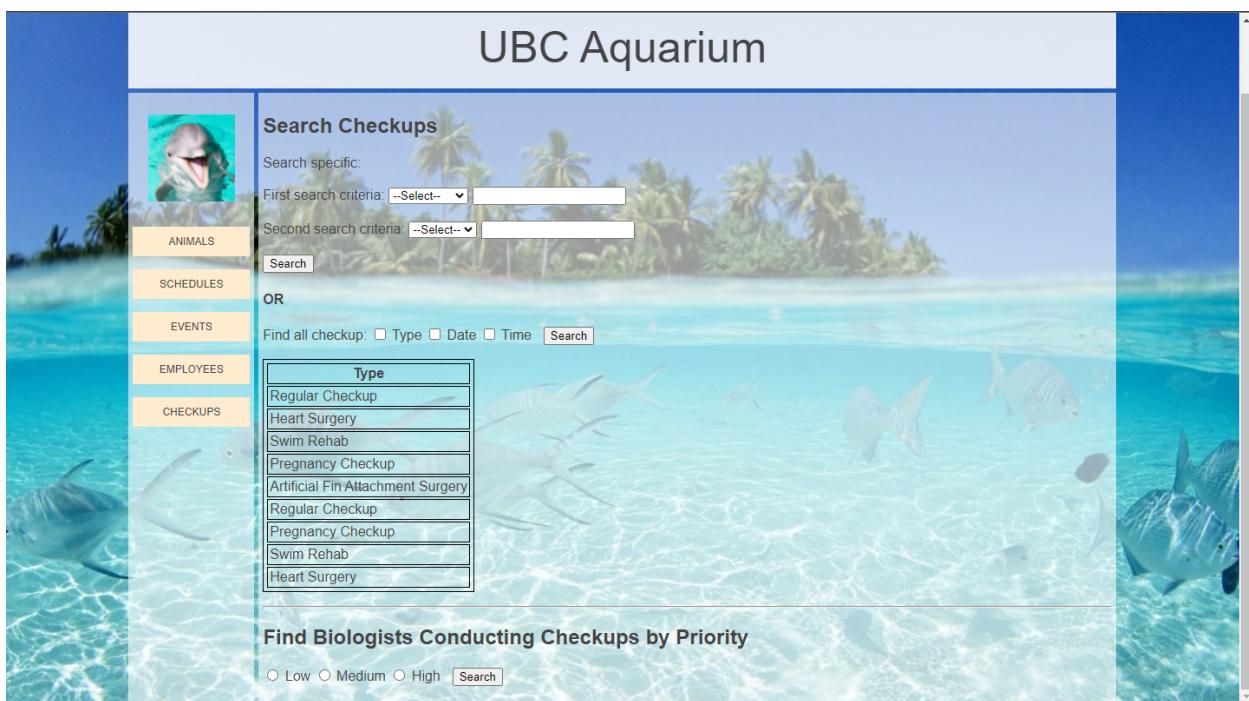
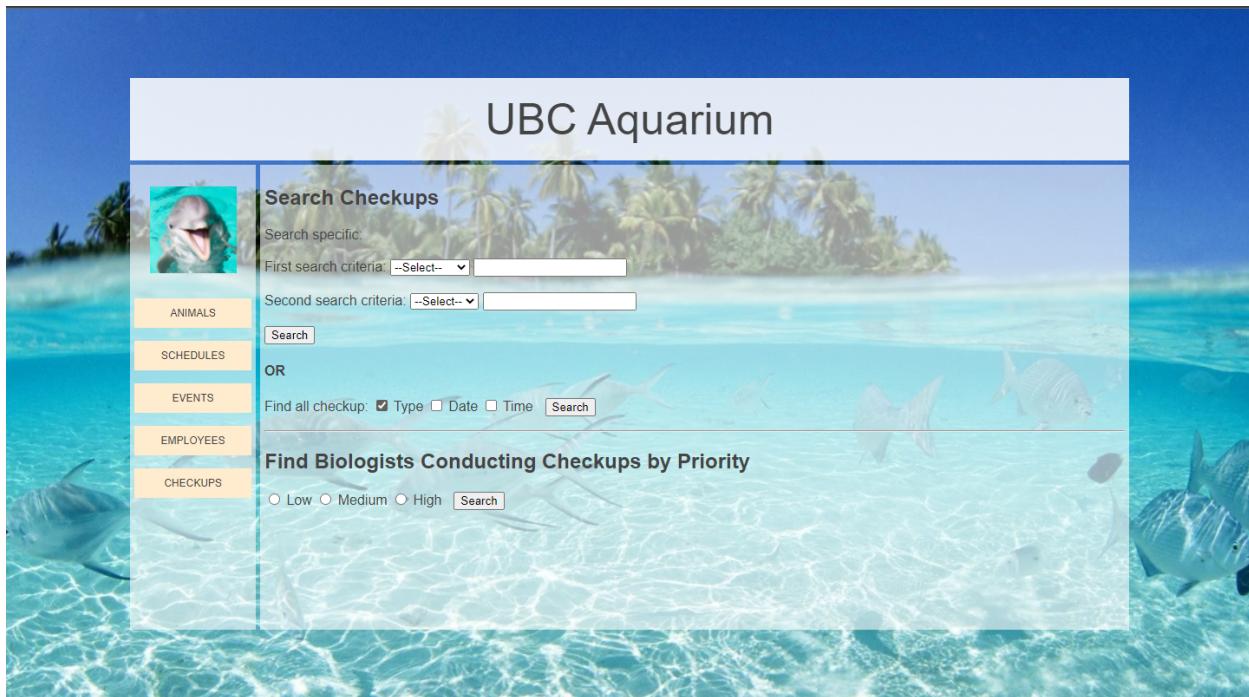
This screenshot shows the results of a search for 'Checkups' on the UBC Aquarium website. The layout is identical to the first screenshot, but the search results are displayed below the priority filter section. A table shows two entries:

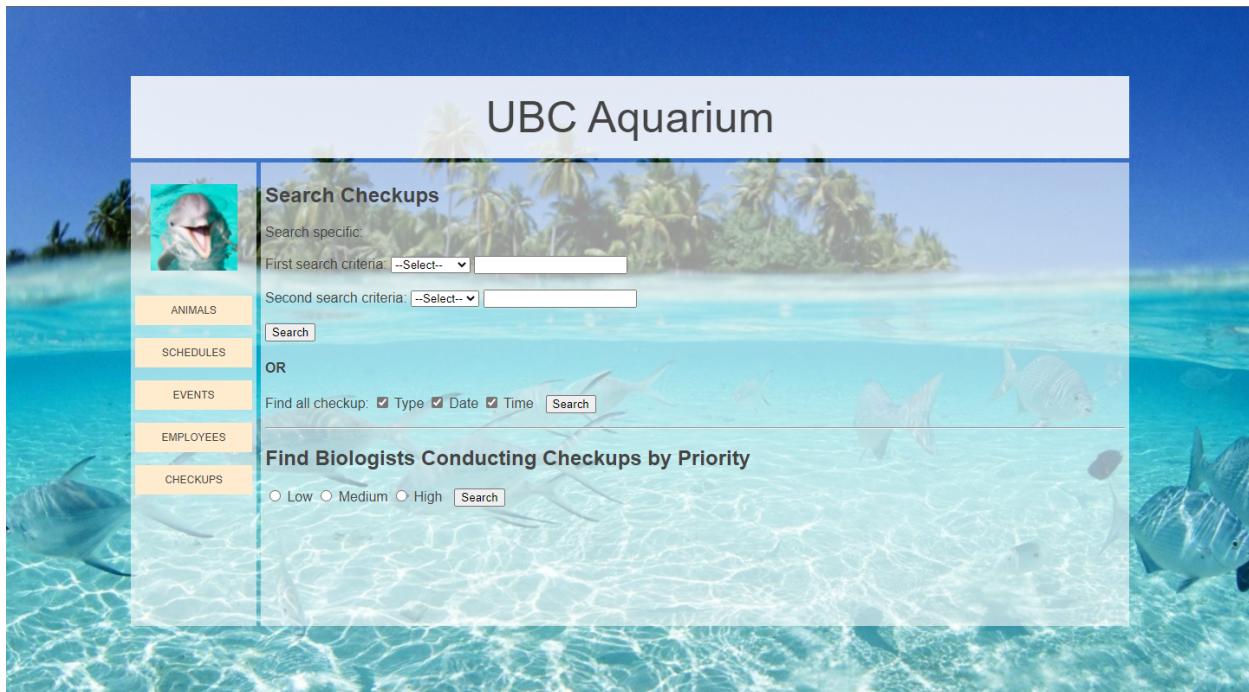
ID	Biologist ID	Animal ID	Type	Priority	Date	Time
1	4	5	Regular Checkup	Low	01-DEC-21	09:30:00
6	6	6	Regular Checkup	Low	01-DEC-21	10:30:00

5. **PROJECTION:** Find all checkup type, date, and/or time

```
SELECT $attr_str  
FROM Checkup
```

Found under the Checkup tab (**checkup-page.php**):





Search Checkups		
Search specific:		
First search criteria: <input type="button" value="--Select--"/>		
Second search criteria: <input type="button" value="--Select--"/>		
<input type="button" value="Search"/>		
OR		
Find all checkup: <input checked="" type="checkbox"/> Type <input checked="" type="checkbox"/> Date <input checked="" type="checkbox"/> Time <input type="button" value="Search"/>		
Find Biologists Conducting Checkups by Priority		
<input type="radio"/> Low <input type="radio"/> Medium <input type="radio"/> High <input type="button" value="Search"/>		

6. **JOIN:** Find employees conduction specific priority checkups
- ```
SELECT DISTINCT e.first_name, e.last_name, b.specialty
FROM Biologist b, Checkup c, Checkup_Priority cp, Employee e
WHERE b.employee_id = e.id AND c.biologist_id = b.employee_id AND c.type = cp.type
AND cp.priority = '$priority'
```

Found under the Checkups tab (**checkup-page.php**):

Search specific:

First search criteria:

Second search criteria:

OR

Find all checkup:  Type  Date  Time

**Find Biologists Conducting Checkups by Priority**

Low  Medium  High

Search specific:

First search criteria:

Second search criteria:

OR

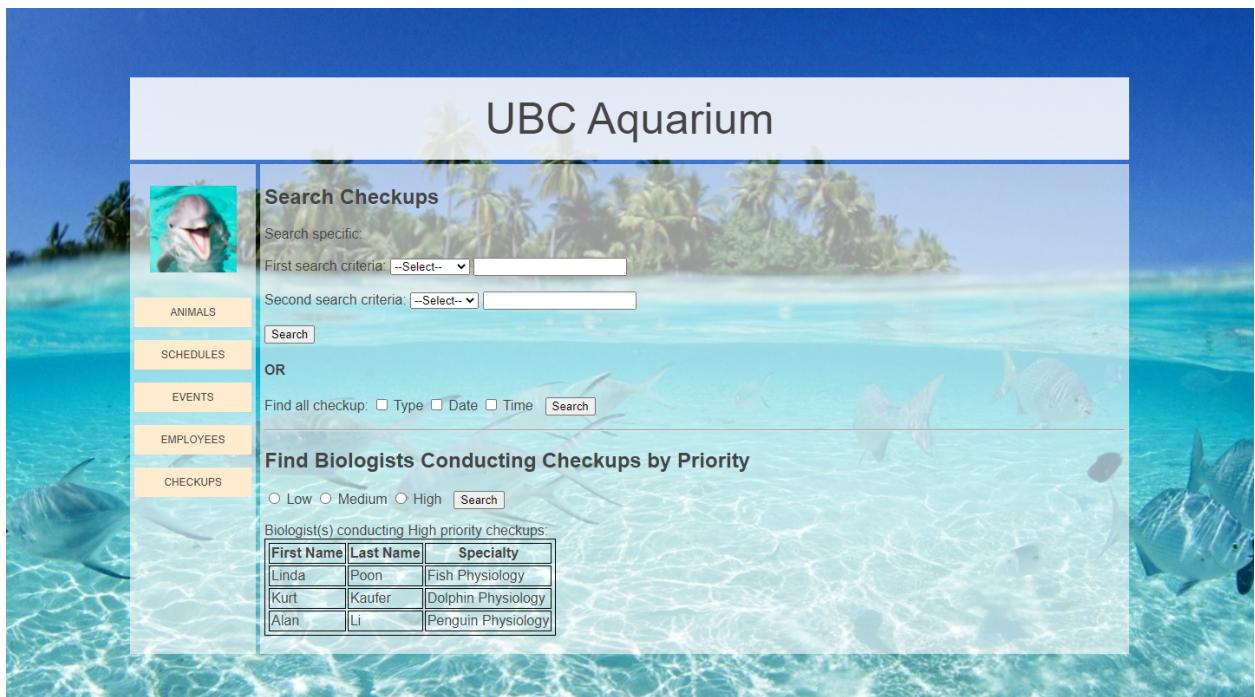
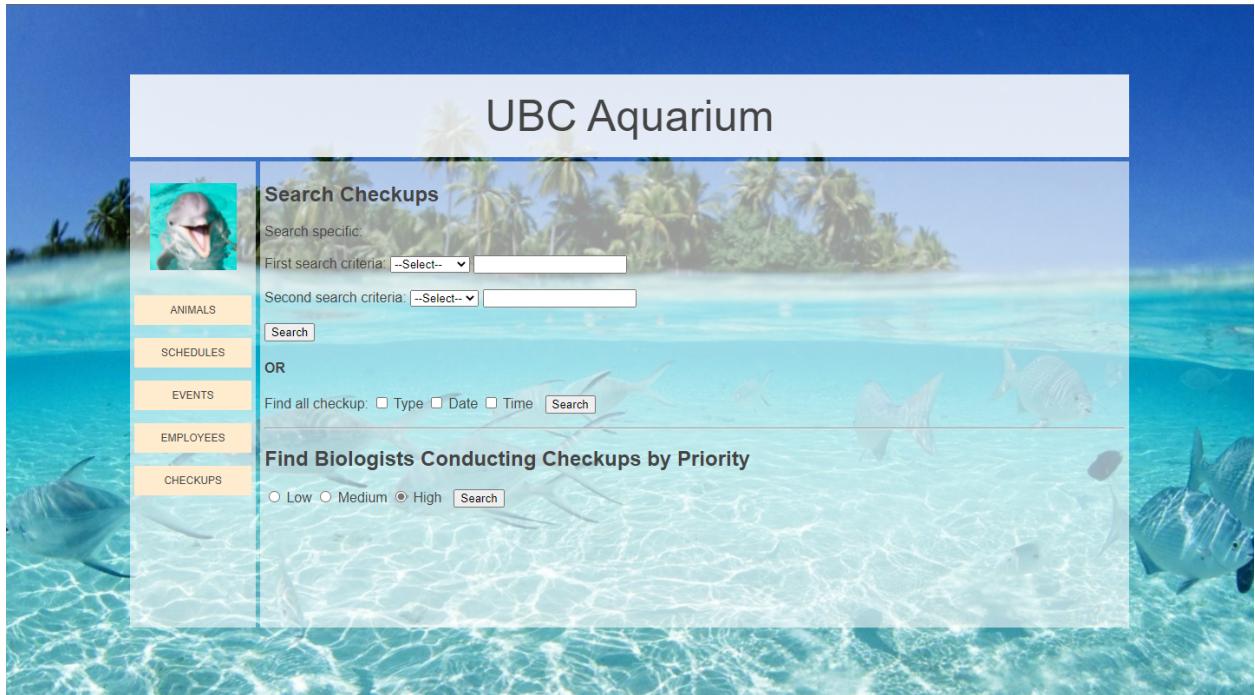
Find all checkup:  Type  Date  Time

**Find Biologists Conducting Checkups by Priority**

Low  Medium  High

Biologist(s) conducting Medium priority checkups:

| First Name | Last Name | Specialty          |
|------------|-----------|--------------------|
| Kurt       | Kaufer    | Dolphin Physiology |
| Alan       | Li        | Penguin Physiology |
| Taylor     | Swift     | Reproduction       |



7. **AGGREGATION WITH GROUP BY:** Count the number of active schedules belonging to each frequency
- ```
SELECT s.frequency, COUNT(*)  
FROM Schedule s  
GROUP BY s.frequency
```

Found under the Schedules tab (**schedule-page.php**):

The screenshot shows a web application titled "UBC Aquarium". The main header features a dolphin icon and the title "Total Number of Active Schedules". Below the header is a "Get Schedule Amount" button. On the left, there is a sidebar menu with the following items: ANIMALS (highlighted in orange), SCHEDULES, EVENTS, EMPLOYEES, and CHECKUPS. The main content area contains a "Select Schedule" section with a dropdown menu set to "Schedules". It includes fields for "Query Inputs": "ID", "Frequency", and "Time". There are also input fields for "ID", "Frequency", and "Time", along with a "Get Schedule" button. The background of the page is a scenic underwater image of fish swimming in clear blue water.

This screenshot shows the same "UBC Aquarium" application. The main header and sidebar are identical to the first screenshot. The main content area now displays a table titled "Total Number of Active Schedules" with the following data:

Frequency Type	Number of Schedules
Monthly	3
Weekly	4
Daily	5
Bi-weekly	3

Below the table is the same "Select Schedule" section as the first screenshot, including the "Search Scope" dropdown set to "Schedules" and the "Query Inputs" fields. The background image of fish in the water remains.

8. **AGGREGATION WITH HAVING:** Count the number of not healthy animals in each animal group with more than 1 animal
SELECT animal_group, COUNT(*)
FROM Animal
WHERE health <> 'Healthy'

GROUP BY animal_group
HAVING COUNT(*) > 1

Found under the Animals tab ([animal-page.php](#)):

The screenshot shows the 'Search For an Animal' page. On the left, there is a sidebar with a dolphin icon and five tabs: ANIMALS (selected), SCHEDULES, EVENTS, EMPLOYEES, and CHECKUPS. The main area has a search form with 'Search Scope: Animals' dropdown, 'Primary Query Inputs' dropdown set to 'Animal ID', and 'Secondary Query Inputs' dropdown set to 'Animal Group'. A 'Search For Animal(s)' button is present. Below the form, a section titled 'Count the Number of Not Healthy Animals for Each Type of Animals That Has More Than 1 Animal' contains a dropdown menu set to 'Animals' and a button labeled 'Count the Number of Sick Animals!'. The background of the page is a scenic underwater view of fish swimming near a tropical island.

The screenshot shows the same search interface as above, but now displaying the results of the query. The results table has two columns: 'Animal Group' and 'Number of Animals With Poor Health'. The data is as follows:

Animal Group	Number of Animals With Poor Health
Penguin	2
Dolphin	2
Otter	2

9. **NESTED AGGREGATION WITH GROUP BY:** Find the date with the max avg group size of customer events

```

SELECT e.event_date, avg(c.group_size) as AverageGroupSize
FROM Event e, Customer_Event c
WHERE e.ID = c.event_id
GROUP BY e.event_date
HAVING avg(c.group_size) >= ALL(SELECT avg(c1.group_size)
                                FROM Event e1, Customer_Event c1
                                WHERE e1.ID = c1.event_id
                                GROUP BY e1.event_date)

```

Found under the Events tab ([event-page.php](#)):

Update Event

Event ID To Update:

New Event Name:

New Date: yyyy-mm-dd

New Start Time: --:--:--

New End Time: --:--:--

Delete Event

Event ID To Delete:

Find the Date with the Maximum Average Number of Group Size of Customer Events

Search Event

Select Search Criteria:

Event Name:

Event Date: yyyy-mm-dd

CHECKUPS

Event ID To Update:

New Event Name:

New Date: yyyy - mm - dd

New Start Time: -- : -- : --

New End Time: -- : -- : --

Delete Event

Event ID To Delete:

Find the Date with the Maximum Average Number of Group Size of Customer Events

Let's Find Out!

Event Date	Average Group Size
02-FEB-22	50

Search Event

Select Search Criteria:

Event Name:

Event Date: yyyy - mm - dd

10. DIVISION: Find employees who are leading all events

```

SELECT *
FROM Employee e
WHERE NOT EXISTS ((SELECT ev.ID as event_id
                   FROM Event ev)
                  MINUS
                  (SELECT l.event_id as event_id
                   FROM Leads l
                   WHERE l.employee_id = e.ID))
    
```

Found under the Employees tab ([employee-page.php](#)):

