University of British Columbia, Vancouver
Department of Computer Science

CPSC 304 Project Cover Page

Milestone #: 04

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Group Number: 76

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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

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Description of the Final project:

"Global Run" is an all encompassing manager for participating and organising a Marathon Event. Through it runners can view their past race results sorted first by the event and then category. They can also find upcoming Marathon dates, times for each category alongside past events which have taken place throughout the years. Users are also able to view the fastest time set for a Marathon Event for each category. Those that wish to volunteer at any event can also do so with the signup page.

Organisers can add, delete and edit information regarding Runners, Volunteers, Marathon Event, Vendors and Sponsors. They are also able to view the total number of registrations and filter to find events that exceed a certain number of registrations.

Also as often times, many people run for a charitable cause, we have displayed all the organisations that receive the most number of donations on the page.

Final Schema

- The schema changes with respect to Registration, Race Result as a Weak Entity, Charity, and Volunteer.
- Registration has a new attribute called finishTime which corresponds to the finish time of the Runner
- Race Result as a weak entity, therefore, was changed. We introduced a new weak entity which is Cause connected to Charity. Cause basically is the type of cause (Education, Environment, etc) the Charity supports.
- Volunteer's attribute of role was shifted to Volunteers relation since it makes sense that the role will be dependent on the event the person is volunteering for at the time.

In terms of planning, we realised that many changes like the ones mentioned above would occur once we started working on the implementation. There were logical fallacies that needed to be addressed that were only discovered during this stage. These changes make our database design more coherent.

Schema Screenshots

1. Booths(**vendorName**, **marathonDate**, **marathonDate**)

	VENDORNAME	MARATHONDATE	MARATHONNAME
1	Energize Nutrition	2024-10-28	Great Trek
2	Footwear Fit Zone	2024-11-30	Mumbai Marathon
3	Healthy Snack Haven	2024-04-14	Boston Marathon
4	Hydrate Hub	2024-10-08	Chicago Marathon
5	Marathon Merchandise	2024-04-14	Boston Marathon
6	Motivational Books	2024-05-30	BMO Marathon
7	Recovery Essentials	2024-04-14	Boston Marathon
8	Runners Refuel Station	2024-10-28	Great Trek
9	Sports Gear Zone	2024-10-08	Chicago Marathon
10	Tech Gadgets Galore	2024-11-30	Mumbai Marathon

2. Cause(**charityName**, cause)

	CHARITYNAME	CAUSE
1	Greenpeace	Environment
2	Malala Fund	Education
3	Red Cross	Humanitarian Aid
4	UNICEF	Education
5	WWF	Environment

3. Charity(<u>charityName</u>, country)

	CHARITYNAME	COUNTRY
1	Red Cross	USA
2	Malala Fund	International
3	Tata Foundation	India
4	WWF	International
5	Greenpeace	USA
6	Save the Children	International
7	Reliance Foundation	India
8	Salvation Army BC	Canada
9	UNICEF	Canada
10	Canadian Cancer Society	Canada

4. Comprises(**<u>name</u>**, **<u>eventDate</u>**, **<u>categoryDistance</u>**, startTime)

	NAME	EVENTDATE	CATEGORYDISTANCE	STARTTIME
1	Great Trek	2024-10-28	5.0	2023-12-01 08:00:00.000000
2	Great Trek	2024-10-28	10.0	2023-12-01 08:15:00.000000
3	Great Trek	2024-10-28	21.1	2023-12-01 08:45:00.000000
4	Great Trek	2023-10-27	5.0	2023-12-01 08:00:00.000000
5	Great Trek	2023-10-27	10.0	2023-12-01 08:15:00.000000
6	Great Trek	2023-10-27	21.1	2023-12-01 08:45:00.000000
7	Great Trek	2022-10-26	5.0	2023-12-01 08:00:00.000000
8	Great Trek	2022-10-26	10.0	2023-12-01 08:15:00.000000
9	Great Trek	2022-10-26	21.1	2023-12-01 08:45:00.000000
10	Mumbai Marathon	2023-11-30	10.0	2023-12-01 08:30:00.000000
11	Mumbai Marathon	2023-11-30	21.1	2023-12-01 08:40:00.000000
12	Mumbai Marathon	2023-11-30	42.2	2023-12-01 08:50:00.000000
13	Mumbai Marathon	2024-11-30	10.0	2023-12-01 08:30:00.000000
14	Mumbai Marathon	2024-11-30	21.1	2023-12-01 08:40:00.000000
15	Mumbai Marathon	2024-11-30	42.2	2023-12-01 08:50:00.000000
16	Chicago Marathon	2024-10-08	42.2	2023-12-01 08:00:00.000000
17	Chicago Marathon	2023-07-07	42.2	2023-12-01 08:00:00.000000
18	Chicago Marathon	2022-07-06	42.2	2023-12-01 08:00:00.000000
19	Boston Marathon	2024-04-14	42.2	2023-12-01 08:00:00.000000
20	Boston Marathon	2023-04-13	42.2	2023-12-01 08:00:00.000000
21	Boston Marathon	2022-04-08	42.2	2023-12-01 08:00:00.000000
22	BMO Marathon	2024-05-30	42.2	2023-12-01 08:00:00.000000
23	BMO Marathon	2023-05-31	42.2	2023-12-01 08:00:00.000000
24	BMO Marathon	2022-05-29	42.2	2023-12-01 08:00:00.000000

5. Donates(**runnerID**, **charityName**, amount)

	RUNNERID	CHARITYNAME	AMOUNT
1	1	Red Cross	40
2	2	Malala Fund	80
3	3	Greenpeace	20
4	2	UNICEF	50
5	5	WWF	40
6	7	UNICEF	40

6. marathonTable(name, city, eventDate, weatherCond)

	NAME	CITY	EVENTDATE	WEATHERCOND
1	Great Trek	Vancouver	2024-10-28	<null>
2	Great Trek	Vancouver	2023-10-27	Rainy
3	Great Trek	Vancouver	2022-10-26	Sunny
4	Chicago Marathon	Chicago	2024-10-08	<null>
5	Chicago Marathon	Chicago	2023-07-07	Cloudy
6	Chicago Marathon	Chicago	2022-07-06	Clear
7	Boston Marathon	Boston	2024-04-14	<null>
8	Boston Marathon	Boston	2023-04-13	Clear
9	Boston Marathon	Boston	2022-04-08	Clear
10	Mumbai Marathon	Mumbai	2024-11-30	<null>
11	Mumbai Marathon	Mumbai	2023-11-30	Clear
12	BMO Marathon	Vancouver	2024-05-30	Clear
13	BMO Marathon	Vancouver	2023-05-31	Clear
14	BMO Marathon	Vancouver	2022-05-29	Clear
15	Demo Marathon	Demo City	2023-10-28	Demo Weather

7. RaceCategory(categoryDistance, fee)

	CATEGORYDISTANCE	FEE
1	5.0	30
2	10.0	55
3	21.1	80
4	42.2	100

8. Runner(runnerID, contact, firstName, lastName, gender, age)

	RUNNERID	CONTACT	FIRSTNAME	LASTNAME	GENDER	AGE
1	1	eleanorbennet1@example.com	Eleanor	Bennet	female	28
2	2	felixmontgomery2@example.com	Felix	Montgomery	male	35
3	3	serenafitzgerald3@example.com	Serena	Fitzgerald	female	22
4	4	adrianpembroke4@example.com	Adrian	Pembroke	male	31
5	5	ariathorne5@example.com	Aria	Thorne	female	26
6	6	xavierdonovan6@example.com	Xavier	Donovan	male	29
7	7	elarawindsor7@example.com	Elara	Windsor	female	24
8	8	danteharrington8@example.com	Dante	Harrington	male	30
9	9	novasinclair9@example.com	Nova	Sinclair	female	27
10	10	caspiankensington10@example.com	Caspian	Kensington	male	32
11	11	aliciamartin11@example.com	Alicia	Martin	female	15
12	12	brandonfoster12@example.com	Brandon	Foster	male	18
13	13	zoeyjohnson13@example.com	Zoey	Johnson	female	20
14	14	nathanhale14@example.com	Nathan	Hale	male	40
15	15	emilybaker15@example.com	Emily	Baker	female	45
16	16	oliveranderson16@example.com	Oliver	Anderson	male	48
17	17	isabellacook17@example.com	Isabella	Cook	female	55
18	18	ethanjones18@example.com	Ethan	Jones	male	60
19	19	elizabethbennet@example.com	Elizabeth	Bennet	female	23
20	20	fitzwilliamdarcy@example.com	Fitzwilliam	Darcy	male	28
21	21	janebennet@example.com	Jane	Bennet	female	25
22	22	charlotteLucas@example.com	Charlotte	Lucas	female	27
23	23	georgeWickham@example.com	George	Wickham	male	26
24	24	lydiaBennet@example.com	Lydia	Bennet	female	20
25	25	carolineBingley@example.com	Caroline	Bingley	female	29
26	26	kittyBennet@example.com	Kitty	Bennet	female	42

9. RunnerElite (**runnerID**, fastestKM)

	RUNNERID	FASTESTKM
1	1	5.5
2	2	4.8
3	3	5.2
4	4	3.6
5	5	4.2
6	6	4.9
7	7	5.8
8	8	3.4
9	9	5.7
10	10	5.9
11	30	5.2
12	31	5.5
13	32	4.8
14	33	5.9
15	34	5.3
16	35	5.7
17	36	5.1
18	37	5.6
19	38	4.9
20	39	5.4
21	40	5.8

10. RunnerRookie(**runnerID**, estimatedTime)

	RUNNERID	ESTIMATEDTIME
1	11	11.2
2	12	9.8
3	13	12
4	14	11.8
5	15	10.9
6	16	11.5
7	17	12.2
8	18	10.2
9	19	11
10	20	10.8
11	22	10.8

11. Sponsor (sponsorName, contribution)

	SPONSORNAME	CONTRIBUTION
1	BMO	100000
2	BlueShore	75000
3	TCS	120000
4	Goldman Sachs	50000
5	Reliance	80000

12. Vendor(name, contact, stallNo, type)

	NAME	CONTACT	STALLNO	TYPE
1	Energize Nutrition	123-456-7890	1	Nutrition
2	Runners Refuel Station	987-654-3210	2	Snacks
3	Hydrate Hub	555-123-4567	3	Beverages
4	Sports Gear Zone	777-888-9999	4	Sporting Goods
5	Recovery Essentials	444-333-2222	5	Recovery Products
6	Marathon Merchandise	666-555-4444	6	Merchandise
7	Healthy Snack Haven	222-111-0000	7	Healthy Snacks
8	Footwear Fit Zone	888-999-0001	8	Footwear
9	Tech Gadgets Galore	111-222-3333	9	Technology
10	Motivational Books	999-000-1111	10	Books

13. Sponsors(**marathonName**, **marathonDate**, **sponsorName**)

WHERE ORDER BY

	MARATHONNAME	MARATHONDATE	SPONSORNAME
1	BMO Marathon	2024-05-30	BMO
2	Boston Marathon	2024-04-14	TCS
3	Chicago Marathon	2024-10-08	Goldman Sachs
4	Great Trek	2024-10-28	BlueShore
5	Mumbai Marathon	2024-11-30	Reliance

14. Volunteer(<u>volunteerID</u>, volunteerFirstName, volunteerLastName, volunteerContact)

	VOLUNTEERID	VOLUNTEERFIRSTNAME	VOLUNTEERLASTNAME	VOLUNTEERCONTACT
1	1	Amy	Cooper	amy@gmail.com
2	2	Sheldon	Cooper	sheldon@gmail.com
3	3	Leonard	Hofstader	leonard@gmail.com
4	4	Penny	Hofstader	penny@hotmail.com
5	5	Howard	Holowitz	howard@outlook.com
6	6	Bernadette	Holowitz	bernie@outlook.com
7	7	Raj	Kumar	raj@gmail.com
8	8	Mary	Copper	mary@gmail.com
9	9	Lucy	Gray	lucygray@district12.com
10	10	Cornelius	Snow	snow@capital.com

15. Volunteers(**<u>id</u>**, role, **<u>marathonName</u>**, **<u>marathonDate</u>**)

	ID	ROLE	MARATHONNAME	MARATHONDATE
1	1	Water Station Attendant	Great Trek	2024-10-28
2	2	Registration and Packet Pickup	Great Trek	2024-10-28
3	3	Medical Team Support	Chicago Marathon	2024-10-08
4	4	Cheer Squad	Chicago Marathon	2024-10-08
5	5	Photographer	Boston Marathon	2024-04-14
6	6	Social Media and Communications	Boston Marathon	2024-04-14
7	7	Videographer	Boston Marathon	2024-04-14
8	8	Medical Team Support	Mumbai Marathon	2024-11-30
9	9	Water Station Attendant	Mumbai Marathon	2024-11-30
10	10	Registration and Packet Pickup	BMO Marathon	2024-05-30

16. HeldOn-RaceCourse(courseDistance, **courseName**, terrainType, StartPoint, EndPoint)

	COURSEDISTANCE	COURSENAME	TERRAINTYPE	STARTPOINT	ENDPOINT
1	5.0	UBC	Trail	Pacific Park	Pacific Park
2	10.0	UBC	Paved	Main Mall	Flag Pole
3	21.1	UBC	Paved	Main Mall	Flag Pole
4	5.0	Mumbai	City	Marine Drive	Sea Link
5	10.0	Mumbai	City	Marine Drive	Sea Link
6	21.1	Mumbai	City	Marine Drive	Sea Link
7	42.2	Mumbai	City	Marine Drive	Sea Link
8	5.0	Chicago	Paved	Millenium Park	Navy Pier
9	10.0	Chicago	Paved	Millenium Park	Navy Pier
10	21.1	Chicago	City	Navy Pier	Millenium Park
11	42.2	Chicago	City	Navy Pier	Millenium Park
12	5.0	Boston	Trail	Boston Garden	Freedom Trail
13	10.0	Boston	City	Navy Yard	Freedom Trail
14	21.1	Boston	City	Freedom Trail	Navy Yard
15	42.2	Boston	City	Freedom Trail	Navy Yard
16	5.0	Vancouver	Trail	Pacific Park	Pacific Park
17	10.0	Vancouver	Trail	Pacific Park	Pacific Park
18	21.1	Vancouver	Trail	Stanley Park	Yaletown
19	42.2	Vancouver	City	Yaletown	Stanley Park

17. Registration(confirmationID, **registrationDate**, finishTime, **runnerID**, **eventName**, **eventDate**, **categoryDistance**)

	CONFIRMATIONID	REGISTRATIONDATE	FINISHTIME	RUNNERID	EVENTNAME	EVENTDATE	CATEGORYDISTANCE
1	1002	2023-02-28	90	12	BMO Marathon	2023-05-31	21.1
2	1003	2023-03-17	<null>	28	Great Trek	2024-10-28	10.0
3	1004	2023-04-05	300	15	Great Trek	2023-10-27	5.0
4	1005	2023-05-22	<null>	33	Boston Marathon	2024-04-14	42.2
5	1006	2023-06-11	230	7	Boston Marathon	2023-04-13	42.2
6	1007	2023-07-04	<null>	22	Chicago Marathon	2024-10-08	42.2
7	1008	2023-08-19	210	38	Chicago Marathon	2023-07-07	42.2
8	1009	2023-09-02	<null>	10	Mumbai Marathon	2024-11-30	42.2
9	1010	2023-10-11	140	19	Mumbai Marathon	2023-11-30	21.1
10	1012	2023-05-28	900	42	Demo Marathon	2023-10-28	5.0
11	1013	2023-05-28	1100	43	Demo Marathon	2023-10-28	5.0
12	1014	2023-05-28	1200	44	Demo Marathon	2023-10-28	5.0
13	1016	2023-05-28	2100	46	Demo Marathon	2023-10-28	10.0
14	1017	2023-05-28	2220	47	Demo Marathon	2023-10-28	10.0
15	1018	2023-05-28	2400	48	Demo Marathon	2023-10-28	10.0
16	1020	2023-05-28	4000	50	Demo Marathon	2023-10-28	21.1
17	1021	2023-05-28	4050	51	Demo Marathon	2023-10-28	21.1
18	1022	2023-05-28	4100	52	Demo Marathon	2023-10-28	21.1
19	1024	2023-05-28	7300	54	Demo Marathon	2023-10-28	42.2
20	1025	2023-05-28	7350	55	Demo Marathon	2023-10-28	42.2
21	1026	2023-05-28	7400	56	Demo Marathon	2023-10-28	42.2
22	1023	2023-05-28	7200	30	BMO Marathon	2023-05-31	42.2
23	1023	2023-05-28	7200	30	Great Trek	2023-10-27	21.1
24	1023	2023-05-28	7200	30	Mumbai Marathon	2023-11-30	42.2
25	1023	2023-05-28	7200	30	Chicago Marathon	2023-07-07	42.2

List of all SQL queries

A list of all SQL queries used and where it can be found in the code (i.e., file name and line number(s)). For SQL query requirements, check the rubric listed on Canvas for Milestone 4.

1. INSERT Operation

appDB/appBooth.js - line 60

```
`INSERT INTO Booths (marathonName, marathonDate, vendorName) VALUES (:marathonName, TO_DATE(:marathonDate,'YYYY-MM-DD'), :vendorName)`
```

appDB/appCharity.js - line 86

```
`INSERT INTO Charity (charityName, country) VALUES (:name, :country)`,
```

appDB/appComprises.js - line 78

```
`INSERT INTO ComprisesTable (name, eventDate, categoryDistance, startTime) VALUES (:name, TO_DATE(:eventDate,'YYYY-MM-DD'), :categoryDistance, TO_TIMESTAMP(:startTime,'YYYY-MM-DD HH24:MI:SS'))`
```

appDB/appDonates.js - line 70

```
`INSERT INTO Donates (runnerID, charityName, amount) VALUES (:runnerID, :charityName, :amount)`
```

appDB/appMarathon.js - line 74

```
`INSERT INTO MarathonTable (name, city, eventDate, weatherCond) VALUES (:name,:city, TO_DATE(:eventDate,'YYYY-MM-DD'), :weatherCond)`
```

appDB/appRaceCategory.js - line 66

```
`INSERT INTO RaceCategory (categoryDistance, fee) VALUES (:distance, :fee)`
```

appDB/appRaceCourse.js - line 68

```
`INSERT INTO RaceCourse (courseDistance, courseName, terrainType, startPoint, endPoint) VALUES (:distance, :name, :tarrain, :stp, :endp)`
```

appDB/appRegistration.js - line76

```
`INSERT INTO Registration (confirmationID,registrationDate,finishTime,runnerID,eventName,eventDate,categoryDistance) VALUES(:confirmationID,TO_DATE(:registrationDate, 'YYYY-MM-DD'),:finishTime,:runnerID,:eventName,TO_DATE(:eventDate, 'YYYY-MM-DD'),:categoryDistance)`
```

appDB/appRunner.js - line 60

```
`INSERT INTO Runner (runnerId, contact, firstName, lastName, gender, age)
```

appDB/appRunnerElite.js - line 64

```
`INSERT INTO RunnerElite (runnerId, fastestKM) VALUES (:id, :fkm)
```

appDB/appRunnerRookie.js - line 63

```
`INSERT INTO RunnerRookie (runnerId, estimatedTime)VALUES (:id, :et)`
```

appDB/appSponsor.js - line 65:

```
 `INSERT INTO Sponsor (sponsorName, contribution) VALUES (:name, :contribution)`,
```

appDB/appSponsors.js - line 69

```
`INSERT INTO Sponsors (marathonName, marathonDate, sponsorName) VALUES (:marathonName, TO_DATE(:marathonDate,'YYYY-MM-DD'), :sponsorName)`
```

appDB/appVendor.js - line 67

```
`INSERT INTO Vendor (name, contact, stallNo, type) VALUES (:name, :contact, :stallNo, :type)`
```

appDB/appVolunteer.js - line 93

```
`INSERT INTO Volunteer (volunteerID, volunteerFirstName,
```

```
volunteerLastName, volunteerContact) VALUES (:id,:firstName,:lastName,
:contact)`
```

appDB/appVolunteers.js - line 75

```
`INSERT INTO Volunteers (id, role, marathonName, marathonDate)VALUES
(:id,:role,:marathonName, TO_DATE(:marathonDate,'YYYY-MM-DD'))`
```

2. DELETE Operation

appDB/appMarathon.js (line 143)

```
DELETE FROM MarathonTable WHERE name = :name AND TRUNC(eventDate) =
TRUNC(TO_DATE(:eventDate, 'YYYY-MM-DD'))
```

appDB/appRunner.js (line 133)

```
DELETE FROM Runner WHERE runnerId = :runnerId
```

appDB/appSponsor.js (line 122)

```
DELETE FROM Sponsor WHERE sponsorName = :sponsorName
```

appDB/appVendor.js (line 126)

```
DELETE FROM Vendor WHERE name = :name
```

appDB/appVolunteer.js(line 152)

```
DELETE FROM Volunteer WHERE volunteerID = :id
```

3. UPDATE Operation

appDB/appRunner.js (line 93)

```
UPDATE Runner SET ${updateParams.join(', ')} WHERE runnerId = :id
```

appDB/appMarathon.js (line 105)

```
UPDATE MarathonTable SET ${upeventDateParams.join(', ')} WHERE name =
:name AND TRUNC(eventDate) = TRUNC(TO_DATE(:eventDate,'YYYY-MM-DD'))
```

appDB/appVendor.js (line 98)

```
UPDATE Vendor SET ${updateParams.join(', ')} WHERE name = :name
```

appDB/appSponsor.js (line 84)

```
UPDATE Vendor SET contribution = :contribution WHERE sponsorName =
:name
```

appDB/appVolunteer.js (line 122)

```
UPDATE VolunteerContact SET ${updateParams.join(', ')} WHERE
volunteerID = :id
```

4. Selection

appDB/appCharity.js (line 36)

```
SELECT C.CHARITYNAME, C.COUNTRY,sum(D.Amount) as AMOUNT
       FROM CHARITY C, DONATES D
       WHERE C.CHARITYNAME = D.CHARITYNAME
       GROUP BY C.CHARITYNAME, C.COUNTRY
       ORDER BY AMOUNT DESC
```

appDB/appComprises.js (line 106)

```
SELECT * FROM ComprisesTable
        WHERE categoryDistance = :categoryDistance
       ORDER BY categoryDistance
```

appDB/appComprises.js (line 123)

```
SELECT name, eventDate, categoryDistance FROM ComprisesTable
          WHERE EXTRACT(YEAR FROM eventDate) = :year
          ORDER BY categoryDistance
```

appDB/appComprises.js (line 140)

```
SELECT categoryDistance FROM ComprisesTable
        WHERE name = :name AND
        TRUNC(eventDate)=TRUNC(TO_DATE(:eventDate,'YYYY-MM-DD'))
```

appDB/appRegistration.js (line 146)

```
SELECT DISTINCT runnerID, finishTime
FROM Registration
WHERE eventName = :eventName
  AND eventDate = TO_DATE(:eventDate, 'YYYY-MM-DD')
  AND categoryDistance = :categoryDistance
```

5. Projection

appDB/appComprises.js (line 123)

```
SELECT name, eventDate, categoryDistance FROM ComprisesTable
          WHERE EXTRACT(YEAR FROM eventDate) = :year
          ORDER BY categoryDistance
```

appDB/appComprises.js (line 140)

```
SELECT categoryDistance FROM ComprisesTable
        WHERE name = :name AND
        TRUNC(eventDate)=TRUNC(TO_DATE(:eventDate,'YYYY-MM-DD'))
```

appDB/appRegistration.js (line 146)

```
SELECT DISTINCT runnerID, finishTime
FROM Registration
WHERE eventName = :eventName
  AND eventDate = TO_DATE(:eventDate, 'YYYY-MM-DD')
  AND categoryDistance = :categoryDistance
```

6. Join

appDB/appRegistration.js (line 113)

```
SELECT EXTRACT(YEAR FROM T.eventDate) AS Year,
R2.FIRSTNAME, R2.LASTNAME, T.FINISHTIME
FROM REGISTRATION T
INNER JOIN RUNNER R2 ON R2.RUNNERID = T.RUNNERID
WHERE T.eventDate < SYSDATE
AND T.EVENTNAME = :eventName
AND T.CATEGORYDISTANCE = :categoryDistance
ORDER BY T.FINISHTIME
FETCH FIRST 1 ROW ONLY
```

7. Aggregation with Group By

appCharity.js - line 36

```
SELECT C.CHARITYNAME, C.COUNTRY,sum(D.Amount) as AMOUNT
       FROM CHARITY C, DONATES D
       WHERE C.CHARITYNAME = D.CHARITYNAME
       GROUP BY C.CHARITYNAME, C.COUNTRY
       ORDER BY AMOUNT DESC`
```

appComprises.js - line 140

```
SELECT categoryDistance, count(*) as Count FROM ComprisesTable
       WHERE EXTRACT(YEAR FROM eventDate) = :year
       GROUP BY categoryDistance
       ORDER BY categoryDistance
```

8. Aggregation with Having

appRegistration.js - line 216

```
SELECT eventName, eventDate, Count(runnerID) as Total
       FROM Registration
       GROUP BY eventName , eventDate
       HAVING COUNT(runnerID) > :greater
```

9. Nested Aggregation with Group By

appRegistration.js - line 163

```
SELECT R.CATEGORYDISTANCE, round(AVG(AGE)) as Average_Age
FROM REGISTRATION R
JOIN RUNNER R2 on R.RUNNERID = R2.RUNNERID
GROUP BY R.CATEGORYDISTANCE
HAVING round(avg(AGE)) >= ALL (SELECT  round(AVG(AGE))
                        FROM RUNNER
                        GROUP BY GENDER)
```

10. Division

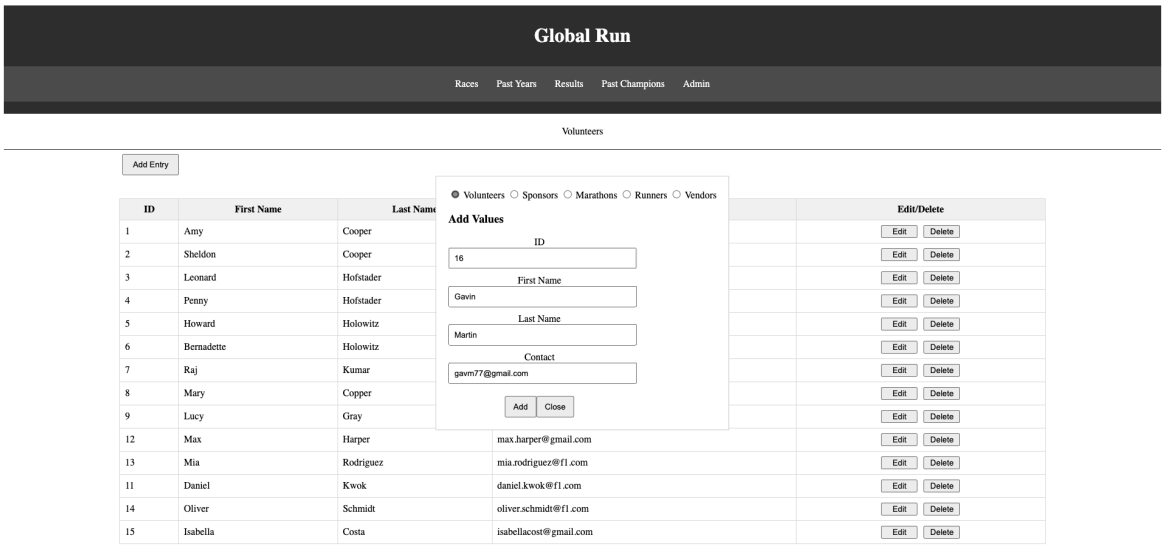
appRegistration.js - line 137

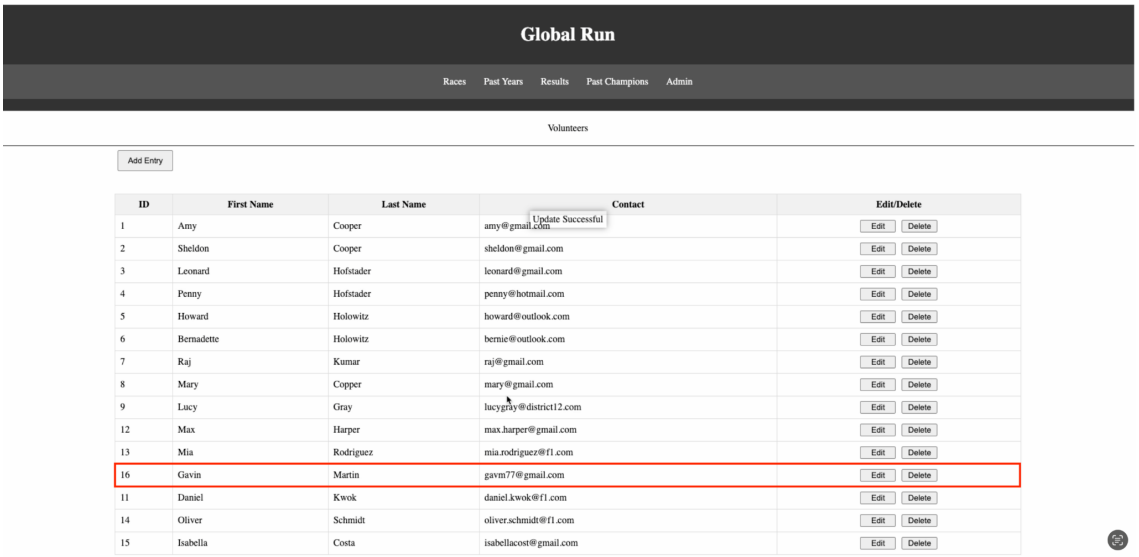
```
SELECT R2.FIRSTNAME, R2.LASTNAME
FROM RUNNER R2
WHERE R2.RUNNERID = (SELECT R.RUNNERID
                FROM REGISTRATION R
                WHERE EXTRACT(YEAR FROM R.eventDate) = 2023
                GROUP BY R.RUNNERID
                HAVING COUNT(DISTINCT R.EVENTNAME) = (
                    SELECT COUNT(DISTINCT EVENTNAME)
                    FROM REGISTRATION
                    WHERE EXTRACT(YEAR FROM eventDate) = 2023
                    ))
```

Screenshots of GUI

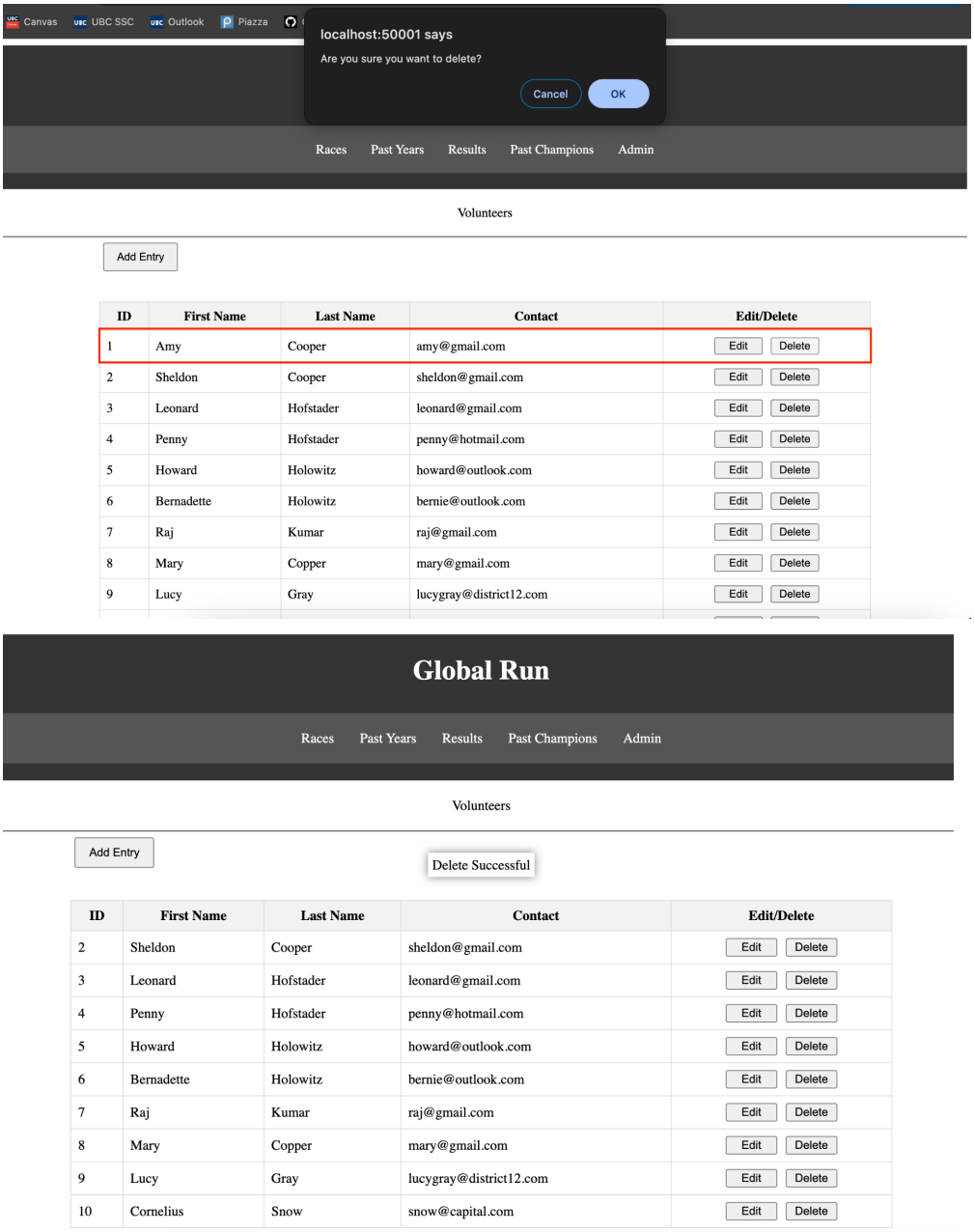
functionality of each query using the GUI

1. INSERT Operation





2. DELETE Operation



3. UPDATE Operation

ID	First Name	Last Name	Contact	Edit/Delete
2	Sheldon	Cooper	sheldon@gmail.com	Edit Delete
3	Leonard	Hofstader	leonard@gmail.com	Edit Delete
4	Penny	Hofstader	penny@hotmail.com	Edit Delete
5	Howard	Holowitz	howard@outlook.com	Edit Delete
6	Bernadette	Holowitz	bernie@outlook.com	Edit Delete
7	Raj	Kumar	raj@gmail.com	Edit Delete
8	Mary	Copper	mary@gmail.com	Edit Delete
9	Lucy	Gray	lucygray@district12.com	Edit Delete
10	Cornelius	Snow	snow@capital.com	Edit Delete

ID
2
First Name
Sheldon
Last Name
Cooper
Contact
sheldon@icloud.com
Save Changes

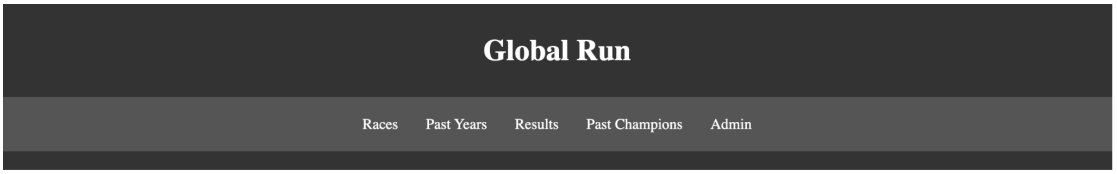
Volunteers

Add Entry

Update Successful

ID	First Name	Last Name	Contact	Edit/Delete
2	Sheldon	Cooper	sheldon@icloud.com	Edit Delete
3	Leonard	Hofstader	leonard@gmail.com	Edit Delete
4	Penny	Hofstader	penny@hotmail.com	Edit Delete
5	Howard	Holowitz	howard@outlook.com	Edit Delete
6	Bernadette	Holowitz	bernie@outlook.com	Edit Delete
7	Raj	Kumar	raj@gmail.com	Edit Delete
8	Mary	Copper	mary@gmail.com	Edit Delete
9	Lucy	Gray	lucygray@district12.com	Edit Delete

4. Selection

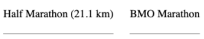


Charity Name	Country	Amount
UNICEF	Canada	90
Malala Fund	International	80
WWF	International	40
Red Cross	USA	40
Greenpeace	USA	20

5. Projection

Event Name	Event Date	Distance
Great Trek	2023-10-27	5
Demo Marathon	2023-10-28	5
Demo Marathon	2023-10-28	10
Mumbai Marathon	2023-11-30	10
Great Trek	2023-10-27	10
BMO Marathon	2023-05-31	21.1
Demo Marathon	2023-10-28	21.1
Mumbai Marathon	2023-11-30	21.1
Great Trek	2023-10-27	21.1
Boston Marathon	2023-04-13	42.2

6. Join



Year	First Name	Last Name	Finish Time
2023	Brandon	Foster	90

7. Aggregation with Group By

Distance Type	Count
5	2
10	3
21.1	4
42.2	5

8. Aggregation with Having

Total Registrations

Add Entry

1 Filter

Marathon Name	Marathon Date	Total Runners Regsitered
Demo Marathon	2023-10-28	12

9. Nested Aggregation with Group By

Categories that have Higher Average Age

Distance	Avg Age (Rounded)
5	27
10	27

10. Division

Runners who have pariticpated in all events of the year

First Name	Last Name
Percy	Jackson