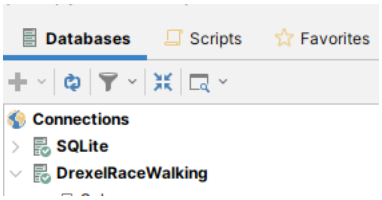
Database Assignment 2

1) **Installed SQLite and DBVisualizer Pro.**
2) **DrexeRaceWalking database created.**



3) **SQL statements used to create your table.**

```
CREATE TABLE
Observer
(
IDObserver INTEGER,
FirstName TEXT,
LastName TEXT,
CONSTRAINT PrimaryKey PRIMARY KEY (IDObserver)
);
----------------------------------------
CREATE TABLE
VideoObservation
(
ID INTEGER,
IDRace INTEGER,
BibNumber INTEGER,
IDObserver INTEGER,
LOCAverage NUMERIC,
LOC1 NUMERIC,
LOC2 NUMERIC,
LOC3 NUMERIC,
LOC4 NUMERIC,
KneeAngle NUMERIC,
Comment TEXT,
VideoFile TEXT,
TOD TEXT,
CONSTRAINT PrimaryKey PRIMARY KEY (ID),
CONSTRAINT VideoObservation_fk1 FOREIGN KEY (IDRace, BibNumber) REFERENCES "Bib"
("IDRace"
, "BibNumber"),
CONSTRAINT VideoObservation_fk2 FOREIGN KEY (IDObserver) REFERENCES "Observer"
("IDObserver")
);
----------------------------------------
CREATE TABLE
Athlete
(
IDAthlete INTEGER NOT NULL,
FirstName TEXT NOT NULL,
LastName TEXT NOT NULL,
CountryCode TEXT NOT NULL,
CONSTRAINT PrimaryKey PRIMARY KEY (IDAthlete)
);
----------------------------------------
ALTER TABLE observer ALTER COLUMN FirstName TEXT;
----------------------------------------
CREATE TABLE
Bib
(
IDRace INTEGER NOT NULL,
IDAthlete INTEGER NOT NULL,
BibNumber INTEGER NOT NULL,
FinishingTime TEXT NOT NULL,
```

```
FinishingPlace INTEGER NOT NULL,
Finished TEXT NOT NULL,
CONSTRAINT PrimaryKey PRIMARY KEY (IDRace, BibNumber),
CONSTRAINT Bib_fk1 FOREIGN KEY (IDRace) REFERENCES "Race" ("IDRace"),
CONSTRAINT Bib_fk2 FOREIGN KEY (IDAthlete) REFERENCES "Athlete" ("IDAthlete")
);
----------------------------------------
CREATE TABLE
    Event
    (
        IDEvent INTEGER NOT NULL,
        Event   TEXT NOT NULL,
        City    TEXT NOT NULL,
        Country TEXT NOT NULL,
        CONSTRAINT PrimaryKey PRIMARY KEY (IDEvent)
    );
----------------------------------------
CREATE TABLE
Judge
(
IDJudge INTEGER NOT NULL,
FirstName TEXT NOT NULL,
LastName TEXT NOT NULL,
CountryCode TEXT NOT NULL,
CONSTRAINT PrimaryKey PRIMARY KEY (IDJudge)
);
----------------------------------------
CREATE TABLE
JudgeCall
(
IDRace INTEGER NOT NULL,
IDJudge INTEGER NOT NULL,
Color TEXT NOT NULL,
Infraction TEXT NOT NULL,
TOD TEXT NOT NULL,
BibNumber INTEGER NOT NULL,
CONSTRAINT PrimaryKey PRIMARY KEY (IDRace, IDJudge, Color, Infraction,
BibNumber),
CONSTRAINT JudgeCall_fk1 FOREIGN KEY (IDRace, BibNumber) REFERENCES "Bib"
("IDRace",
"BibNumber"),
CONSTRAINT JudgeCall_fk2 FOREIGN KEY (IDJudge) REFERENCES "Judge" ("IDJudge")
);
----------------------------------------
CREATE TABLE
Race
(
IDRace INTEGER NOT NULL,
IDEvent INTEGER NOT NULL,
RaceDate TEXT NOT NULL,
StartTime TEXT NOT NULL,
Distance INTEGER NOT NULL,
DistanceUnits TEXT NOT NULL,
Gender TEXT NOT NULL,
CONSTRAINT PrimaryKey PRIMARY KEY (IDRace, IDEvent),
CONSTRAINT Race_fk1 FOREIGN KEY (IDEvent) REFERENCES "Event" ("IDEvent")
);
----------------------------------------
CREATE TABLE
RaceJudge
(
IDRace INTEGER NOT NULL,
IDJudge INTEGER NOT NULL,
CONSTRAINT PrimaryKey PRIMARY KEY (IDRace, IDJudge),
CONSTRAINT RaceJudge_fk1 FOREIGN KEY (IDRace) REFERENCES "Race" ("IDRace"),
```

```
CONSTRAINT RaceJudge_fk2 FOREIGN KEY (IDJudge) REFERENCES "Judge" ("IDJudge")
);
```

4) Loaded all the data for each table.

Manually entered data for Event and Race tables.

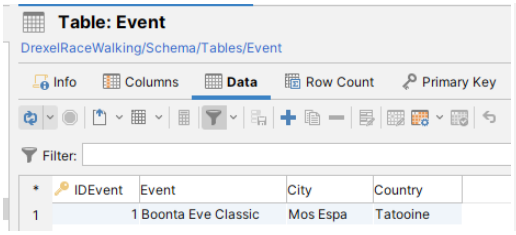


Table: Event

DrexelRaceWalking/Schema/Tables/Event

Info | Columns | Data | Row Count | Primary Key

Filter:

*	IDEvent	Event	City	Country
1	1	Boonta Eve Classic	Mos Espa	Tatooine

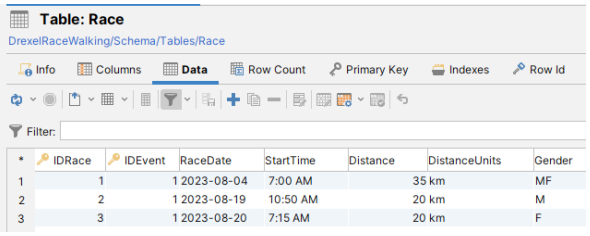


Table: Race

DrexelRaceWalking/Schema/Tables/Race

Info | Columns | Data | Row Count | Primary Key | Indexes | Row Id

Filter:

*	IDRace	IDEvent	RaceDate	StartTime	Distance	DistanceUnits	Gender
1	1	1	2023-08-04	7:00 AM	35	km	MF
2	2	1	2023-08-19	10:50 AM	20	km	M
3	3	1	2023-08-20	7:15 AM	20	km	F

Data loaded from spreadsheets : Athlete, Bib, Judge, JudgeCall, Observer, RaceJudge, and VideoObservation.

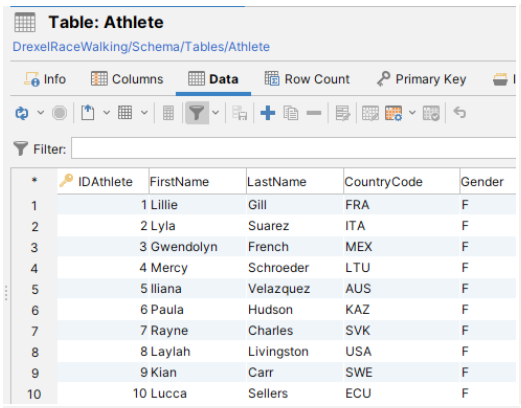


Table: Athlete

DrexelRaceWalking/Schema/Tables/Athlete

Info | Columns | Data | Row Count | Primary Key

Filter:

*	IDAthlete	FirstName	LastName	CountryCode	Gender
1	1	Lillie	Gill	FRA	F
2	2	Lyla	Suarez	ITA	F
3	3	Gwendolyn	French	MEX	F
4	4	Mercy	Schroeder	LTU	F
5	5	Iliana	Velazquez	AUS	F
6	6	Paula	Hudson	KAZ	F
7	7	Rayne	Charles	SVK	F
8	8	Laylah	Livingston	USA	F
9	9	Kian	Carr	SWE	F
10	10	Lucca	Sellers	ECU	F

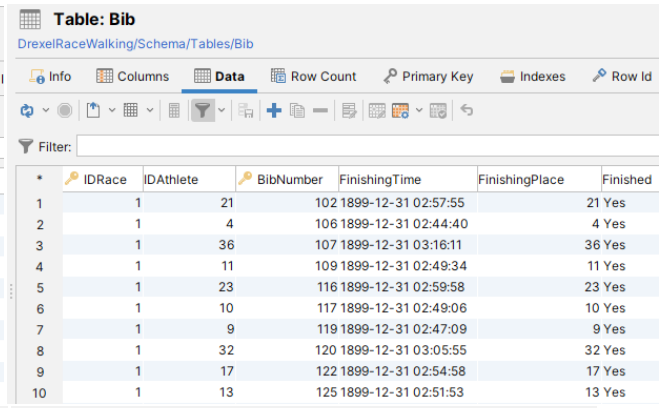


Table: Bib

DrexelRaceWalking/Schema/Tables/Bib

Info | Columns | Data | Row Count | Primary Key | Indexes | Row Id

Filter:

*	IDRace	IDAthlete	BibNumber	FinishingTime	FinishingPlace	Finished
1	1	21	102	1899-12-31 02:57:55	21	Yes
2	1	4	106	1899-12-31 02:44:40	4	Yes
3	1	36	107	1899-12-31 03:16:11	36	Yes
4	1	11	109	1899-12-31 02:49:34	11	Yes
5	1	23	116	1899-12-31 02:59:58	23	Yes
6	1	10	117	1899-12-31 02:49:06	10	Yes
7	1	9	119	1899-12-31 02:47:09	9	Yes
8	1	32	120	1899-12-31 03:05:55	32	Yes
9	1	17	122	1899-12-31 02:54:58	17	Yes
10	1	13	125	1899-12-31 02:51:53	13	Yes

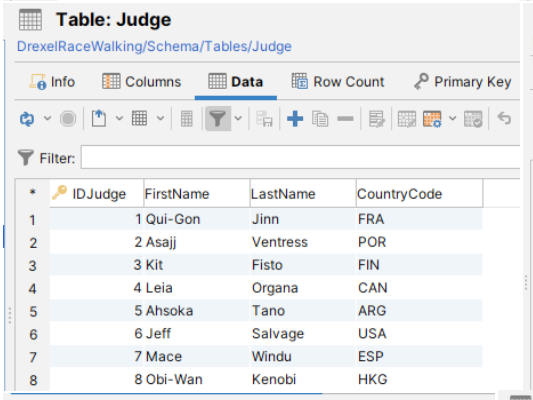


Table: Judge

DrexelRaceWalking/Schema/Tables/Judge

Info | Columns | Data | Row Count | Primary Key

Filter:

*	IDJudge	FirstName	LastName	CountryCode
1	1	Qui-Gon	Jinn	FRA
2	2	Asajj	Ventress	POR
3	3	Kit	Fisto	FIN
4	4	Leia	Organa	CAN
5	5	Ahsoka	Tano	ARG
6	6	Jeff	Salvage	USA
7	7	Mace	Windu	ESP
8	8	Obi-Wan	Kenobi	HKG

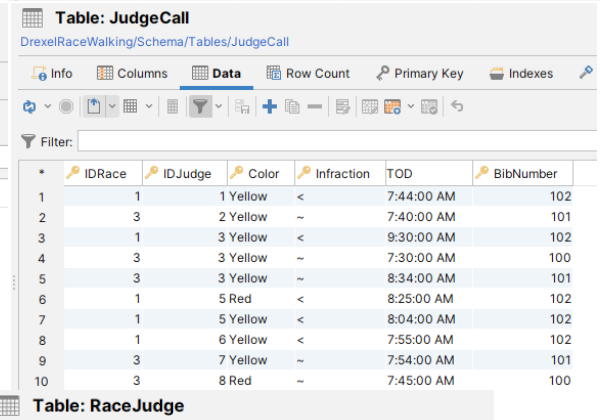


Table: JudgeCall

DrexelRaceWalking/Schema/Tables/JudgeCall

Info | Columns | Data | Row Count | Primary Key | Indexes

Filter:

*	IDRace	IDJudge	Color	Infraction	TOD	BibNumber
1	1	1	Yellow	<	7:44:00 AM	102
2	3	2	Yellow	~	7:40:00 AM	101
3	1	3	Yellow	<	9:30:00 AM	102
4	3	3	Yellow	~	7:30:00 AM	100
5	3	3	Yellow	~	8:34:00 AM	101
6	1	5	Red	<	8:25:00 AM	102
7	1	5	Yellow	<	8:04:00 AM	102
8	1	6	Yellow	<	7:55:00 AM	102
9	3	7	Yellow	~	7:54:00 AM	101
10	3	8	Red	~	7:45:00 AM	100

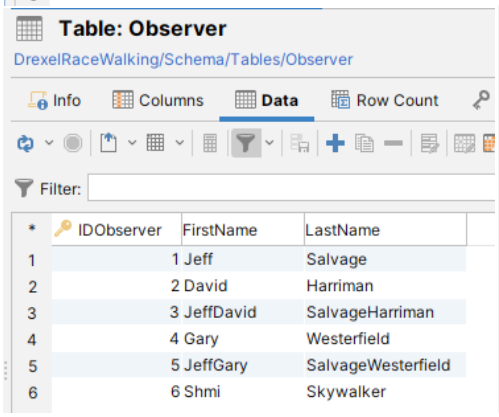


Table: Observer

DrexelRaceWalking/Schema/Tables/Observer

Info | Columns | Data | Row Count

Filter:

*	IDObserver	FirstName	LastName
1	1	Jeff	Salvage
2	2	David	Harriman
3	3	JeffDavid	SalvageHarriman
4	4	Gary	Westerfield
5	5	JeffGary	SalvageWesterfield
6	6	Shmi	Skywalker

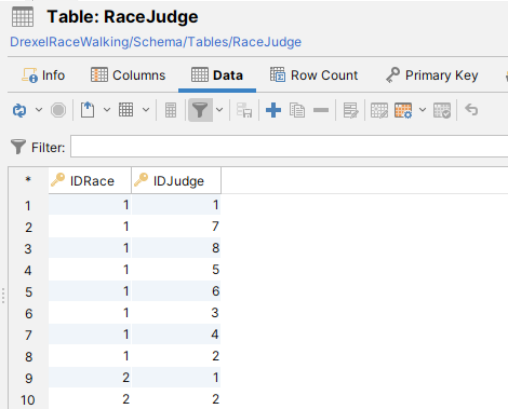


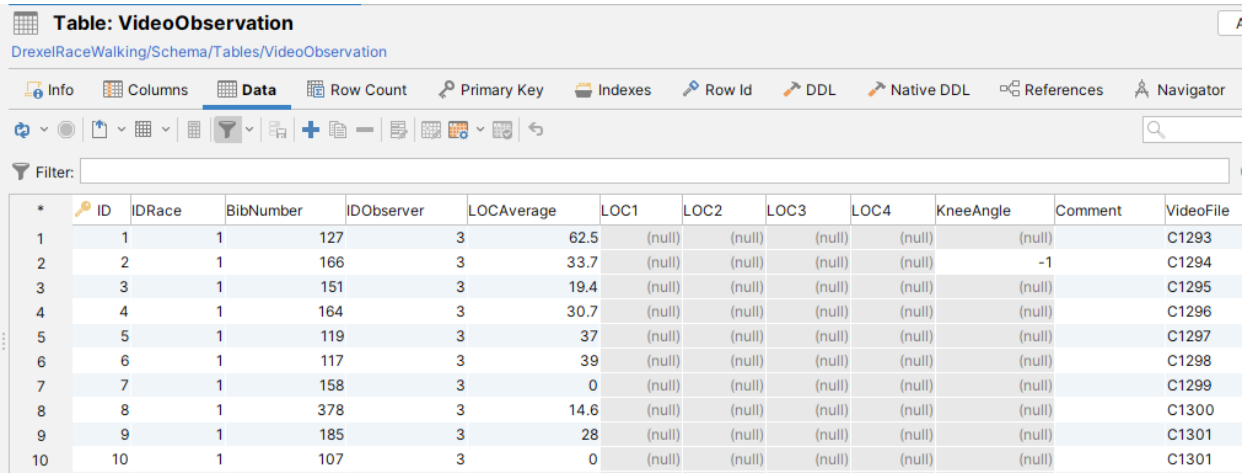
Table: RaceJudge

DrexelRaceWalking/Schema/Tables/RaceJudge

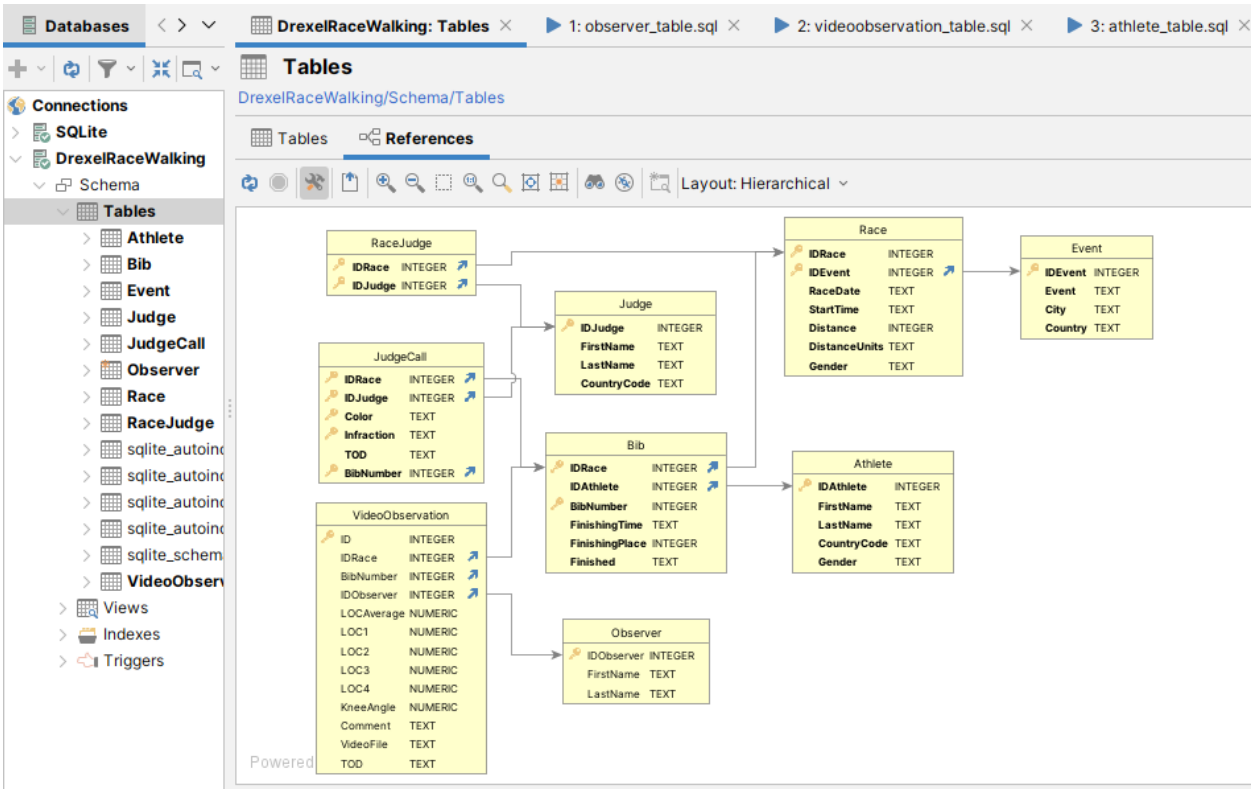
Info | Columns | Data | Row Count | Primary Key

Filter:

*	IDRace	IDJudge
1	1	1
2	1	7
3	1	8
4	1	5
5	1	6
6	1	3
7	1	4
8	1	2
9	2	1
10	2	2



*	ID	IDRace	BibNumber	IDObserver	LOCAverage	LOC1	LOC2	LOC3	LOC4	KneeAngle	Comment	VideoFile
1	1	1	127	3	62.5	(null)	(null)	(null)	(null)	(null)		C1293
2	2	1	166	3	33.7	(null)	(null)	(null)	(null)	-1		C1294
3	3	1	151	3	19.4	(null)	(null)	(null)	(null)	(null)		C1295
4	4	1	164	3	30.7	(null)	(null)	(null)	(null)	(null)		C1296
5	5	1	119	3	37	(null)	(null)	(null)	(null)	(null)		C1297
6	6	1	117	3	39	(null)	(null)	(null)	(null)	(null)		C1298
7	7	1	158	3	0	(null)	(null)	(null)	(null)	(null)		C1299
8	8	1	378	3	14.6	(null)	(null)	(null)	(null)	(null)		C1300
9	9	1	185	3	28	(null)	(null)	(null)	(null)	(null)		C1301
10	10	1	107	3	0	(null)	(null)	(null)	(null)	(null)		C1301



5) Anonymize the data:-

Data anonymizing is the process of protecting the personal data information so that when data is exchanged or shared, no personal information is revealed. The data is altered in such a way so that the integrity of the data is maintained. It is necessary to anonymize data when we work with data containing confidential information and when collaborating with other people or sharing data.

Few methods are 1) Masking i.e. hiding data with altered values 2) Pseudonymization i.e. data de-identification that substitutes private identifiers 3) Generalization i.e. excluding some data purposely to make it less identifiable 4) Data swapping i.e. rearranges dataset attribute values so that they do not amount to the original information.

We need to anoymize the tables that contain the personal data, in our case we need to be anonymize Judge, Athlete, Observer tables, as these tables containing personal details. Here we can use the easiest method of anonymining i.e. masking.

Tables to anonymize:

Event Table anonymized :-

Rename the "IDEvent" attribute to "EventID"

Replace the actual event names, cities, and countries with generic names or codes.

Anonymized Event Table:

EventID	EventName	City	Country
1	Event1	City1	Country1

```
ALTER TABLE Event  RENAME COLUMN IDEvent  TO EventID;
UPDATE  TABLE Event  SET (EventName = EventName & EventID, City = City & EventID, Country = Country & EventID);
```

Race Table anonymized :-

Rename the "IDRace" attribute to "RaceID"

Anonymized table

RaceID	EventID	RaceDate	StartTime	Distance	DistanceUnits	Gender
1	1	2023-08-04	7:00 AM	35	km	MF
2	1	2023-08-19	10:50 AM	20	km	M
3	1	2023-08-20	7:15 AM	20	km	F

```
ALTER TABLE Race  RENAME COLUMN IDEvent  TO EventID;
ALTER TABLE Race  RENAME COLUMN IDRace  TO  RaceID;
```

Anonymization of Other Tables (Athlete, Judge, Observer):

For tables referencing the Event and Race tables, similar steps to anonymize can be used..

Renaming foreign keys (EventID, RaceID) in these tables to maintain consistency with the anonymized Event and Race tables.

Anonymized Example (Athlete Table):

AthleteID	RaceID	Name	Age	Gender
1	1	Athlete1	25	M
2	2	Athlete2	28	F

```
ALTER TABLE Athlete  RENAME COLUMN IDAthlete  TO  IDAthlete;
ALTER TABLE Athlete  RENAME COLUMN IDRace     TO  RaceID;
UPDATE  TABLE Athlete  SET (Name = Athlete & AthleteID);
```