Satellite (Name, Launch\_Date, Launch\_Rocket, PositionDegree, PositionDirection, Region)

**PK**

**PK**

Channel (SatName, ChannelName, Frequency, VideoEncoding, Website, Beam,

**FK(Satellite)**

VideoCompression, SR, FEC, EIRP)

**PK**

ChannelCountries (SatName, ChannelName, Frequency, VideoEncoding, Countries)

**FK(Channel)**

**PK**

ChannelSystems (SatName, ChannelName, Frequency, VideoEncoding, Systems)

**FK(Channel)**

**PK**

ChannelLanguages (SatName, ChannelName, Frequency, VideoEncoding, Languages)

**FK(Channel)**

**PK**

ChannelEncryptions (SatName, ChannelName, Frequency, VideoEncoding, Encryptions)

**FK(Channel)**

**PK**

Network (NetName, SatName, Frequency, Website, Beam, SR, FEC, EIRP)

**PK**

**FK(Satellite)**

NetworkCountries (NetName, SatName, Frequency, Countries)

**FK(Network)**

**PK**

NetworkSystems (NetName, SatName, Frequency, Systems)

**FK(Network)**

**PK**

NetworkedChannels (NetName, SatName, Frequency, NetworkedChannels,

ChannelVideoEncoding)

**FK(Network)**

**PK**

User (Email, Pass, UserName, Gender, Birthdate, country, Region)

**PK**

Favorite (UserEmail, SatName, ChannelName, Frequency, VideoEncoding)

**FK(User)**

**FK(Channel)**

Query 1:

Show all the channels viewable from a certain location (longitude) - (For simplicity, assume the satellites coverage is +/- 10 degrees around the satellite longitude).

SELECT C.\*, S. PositionDegree

FROM Channel C INNER JOIN Satellite S

ON C.SatName = S.Name

WHERE ABS(S. PositionDegree - %s) <= 10 AND S. PositionDirection = %s;

Query2:

Show the user which of his/her favorite list is covered based on the user location along with the satellites and frequencies where s/he can get the channels on, and whether they are free or encrypted.

SELECT F.ChannelName, F.Frequency, CE.Encryptions

FROM Favorite F INNER JOIN User U

ON F.UserEmail = User.Email INNER JOIN Satellite S

ON F.SatName = S.Name INNER JOIN ChannelEncryptions CE

ON F.SatName = CE.SatName

AND F.ChannelName = CE.ChannelName

AND F.Frequency = CE.Frequency

AND F.VideoEncoding = CE.VideoEncoding

WHERE F.UserEmail = %s AND S.Region = U.Region;

Query3:

Show the top 5 TV Networks / Provides by number of channels, and the average number of satellites they each channel is available on.

SELECT PC.NetName, COUNT(\*) AS TotalChannels, COUNT( PC.SatName)/COUNT(DISTINCT(PC.NetworkedChannels)) AS AvgSatellites

FROM NetworkedChannels PC

GROUP BY 1

ORDER BY 2 DESC

LIMIT 5;

Query4:

Show the top 5 rockets in terms of the number of satellites they put in orbit.

SELECT Launch\_Rocket, COUNT(\*) AS SatelliteNum

FROM Satellite

GROUP BY Launch\_Rocket

ORDER BY SatelliteNum DESC

LIMIT 5;

Query5:

Show the top 5 growing satellites using the number of channels they host compared to their launch date.

SELECT S.Name, COUNT(\*) AS TotalChannels, DATEDIFF(CURRENT\_DATE(), S.Launch\_Date) AS NumOfDaysSinceLaunch, COUNT(\*) / DATEDIFF(CURRENT\_DATE(), S.Launch\_Date) AS GrowthRatio

FROM Satellite S INNER JOIN Channel C

ON S.Name = C.SatName

GROUP BY S.Name

ORDER BY GrowthRatio DESC

LIMIT 5;

Query6:

Show the top 5 channels for language chosen by the user, ordered by the number of satellites they are hosted on.

Place this at start of execution of code to populate languages list:

SELECT DISTINCT Languages FROM ChannelLanguages;

SELECT CL.ChannelName, COUNT(DISTINCT C.SatName) AS NumberOfSatellites

FROM ChannelLanguages CL

INNER JOIN Channel C ON CL.ChannelName = C.ChannelName

WHERE CL.Languages = %s

GROUP BY CL.ChannelName

ORDER BY NumberOfSatellites DESC

LIMIT 5;

Query7:

Show the list of channels, filtered by region, satellite, HD/SD and/or language.

Base\_query:

SELECT S.Name AS SatName, S.Region AS Region, C.ChannelName, C.Frequency, C.VideoEncoding, CL.Languages

FROM Channel C INNER JOIN Satellite S

ON C.SatName = S.Name INNER JOIN ChannelLanguages CL

ON C.SatName = CL.SatName

AND C.ChannelName = CL.ChannelName

AND C.Frequency = CL.Frequency

AND C.VideoEncoding = CL.VideoEncoding

WHERE 1=1;

Region:

base\_query += " AND S.Region IN ({})".format(', '.join(['%s'] \* len(regions)));

SatName:

base\_query += " AND S.Name IN ({})".format(', '.join(['%s'] \* len(satellite\_names)));

VideoEncoding:

base\_query += " AND C.VideoEncoding IN ({})".format(', '.join(['%s'] \* len(video\_encodings)));

Languages:

base\_query += " AND CL.Languages IN ({})".format(', '.join(['%s'] \* len(languages)));