

Fifa World Cup 2022 Analysis Project

Group 3

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Back End:

Summary view page, showing the IP Addresses whitelisted and the SSL Certificates created.

The screenshot shows the Google Cloud console for a MySQL 8.0 instance named 'final-project3'. The 'Connections' tab is selected, displaying the following details:

- Networking:**
 - Connection name: final-project-407505-us-east1-final-project3
 - Private IP connectivity: Disabled
 - Public IP connectivity: Enabled
 - Public IP address: 34.23.225.89
- Security:**
 - Authorized networks: 8 networks (Cloud IP, LaGuardia IP, Hemraj's Home IP, Cloud IP1, Mohamed's Home IP, Static IP)
 - Google Cloud services authorization: Disabled
 - App Engine authorization: Enabled
 - SSL / TLS encryption: Allow only SSL connections (Disabled)
 - Server certificate: Expires Dec 5, 2033, 12:30:15 AM
 - Client certificates (name:expiration): 1 certificate (MAC250: Dec 6, 2033, 12:41:03 PM)

User tab showing the Metabase connection.

The screenshot shows the Google Cloud console for the same MySQL 8.0 instance. The 'Users' tab is selected, displaying the following details:

- Users:**
 - ADD USER ACCOUNT button
 - Table of user accounts:

User name	Host name	Authentication	Password status
metabase	34.73.154.41	Built-in	N/A
root	% (any host)	Built-in	N/A

Showing the construction of the Schema “finals” and the table “Fifa”

```
mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| finals   |
| information_schema |
| mysql    |
| performance_schema |
| sys      |
+-----+
5 rows in set (0.00 sec)

mysql> USE finals;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> SHOW TABLES;
+-----+
| Tables_in_finals |
+-----+
| Fifa              |
| average_goals_per_match_view |
| conversion_rate_view |
| pass_comparison   |
| passes_comparison_view |
| shots_vs_goals_comparison |
| total_goals_by_team_view |
+-----+
7 rows in set (0.01 sec)

mysql>
```

Showing the construction of the fields in the Fifa table

```
mysql> DESCRIBE Fifa;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| team1 | varchar(255) | YES | | NULL | |
| team2 | varchar(255) | YES | | NULL | |
| possession_team1 | decimal(5,2) | YES | | NULL | |
| possession_team2 | decimal(5,2) | YES | | NULL | |
| possession_in_contest | decimal(5,2) | YES | | NULL | |
| goal_team1 | int | YES | | NULL | |
| goal_team2 | int | YES | | NULL | |
| date | date | YES | | NULL | |
| hour | time | YES | | NULL | |
| category | varchar(255) | YES | | NULL | |
| total_attempts_team1 | int | YES | | NULL | |
| total_attempts_team2 | int | YES | | NULL | |
| conceded_team1 | int | YES | | NULL | |
| conceded_team2 | int | YES | | NULL | |
| goal_inside_penalty_area_team1 | int | YES | | NULL | |
| goal_inside_penalty_area_team2 | int | YES | | NULL | |
| goal_outside_penalty_area_team1 | int | YES | | NULL | |
| goal_outside_penalty_area_team2 | int | YES | | NULL | |
| assists_team1 | int | YES | | NULL | |
| assists_team2 | int | YES | | NULL | |
| on_target_attempts_team1 | int | YES | | NULL | |
| on_target_attempts_team2 | int | YES | | NULL | |
| off_target_attempts_team1 | int | YES | | NULL | |
| off_target_attempts_team2 | int | YES | | NULL | |
| attempts_inside_penalty_area_team1 | int | YES | | NULL | |
| attempts_inside_penalty_area_team2 | int | YES | | NULL | |
| attempts_outside_penalty_area_team1 | int | YES | | NULL | |
| attempts_outside_penalty_area_team2 | int | YES | | NULL | |
| left_channel_team1 | int | YES | | NULL | |
| left_channel_team2 | int | YES | | NULL | |
| left_inside_channel_team1 | int | YES | | NULL | |
| left_inside_channel_team2 | int | YES | | NULL | |
| central_channel_team1 | int | YES | | NULL | |
| central_channel_team2 | int | YES | | NULL | |
| right_inside_channel_team1 | int | YES | | NULL | |
| right_inside_channel_team2 | int | YES | | NULL | |
| right_channel_team1 | int | YES | | NULL | |
| right_channel_team2 | int | YES | | NULL | |
| total_offers_to_receive_team1 | int | YES | | NULL | |
| total_offers_to_receive_team2 | int | YES | | NULL | |
| inbehind_offers_to_receive_team1 | int | YES | | NULL | |
| inbehind_offers_to_receive_team2 | int | YES | | NULL | |
| inbetween_offers_to_receive_team1 | int | YES | | NULL | |
| inbetween_offers_to_receive_team2 | int | YES | | NULL | |
| infront_offers_to_receive_team1 | int | YES | | NULL | |
| infront_offers_to_receive_team2 | int | YES | | NULL | |
```

Showing the view created for “average goals per each match”

```
mysql> SELECT * FROM average_goals_per_match_view ;
```

team	total_goals	average_goals_per_match
ENGLAND	13	2.6000
PORTUGAL	12	2.4000
FRANCE	16	2.2857
SPAIN	9	2.2500
ARGENTINA	15	2.1429
GERMANY	6	2.0000
NETHERLANDS	10	2.0000
SERBIA	5	1.6667
GHANA	5	1.6667
BRAZIL	8	1.6000
CAMEROON	4	1.3333
ECUADOR	4	1.3333
IRAN	4	1.3333
SENEGAL	5	1.2500
SWITZERLAND	5	1.2500
JAPAN	5	1.2500
KOREA REPUBLIC	5	1.2500
CROATIA	8	1.1429
COSTA RICA	3	1.0000
SAUDI ARABIA	3	1.0000
AUSTRALIA	4	1.0000
MOROCCO	6	0.8571
UNITED STATES	3	0.7500
POLAND	3	0.7500
MEXICO	2	0.6667
URUGUAY	2	0.6667
CANADA	2	0.6667
TUNISIA	1	0.3333
QATAR	1	0.3333
BELGIUM	1	0.3333
DENMARK	1	0.3333
WALES	1	0.3333

```
32 rows in set (0.00 sec)
```

```
mysql>
```

```
CREATE VIEW average_goals_per_match_view AS
SELECT
    team,
    COALESCE(SUM(goals_team1), 0) + COALESCE(SUM(goals_team2), 0) AS total_goals,
    COALESCE((SUM(goals_team1) + SUM(goals_team2)) / COUNT(*), 0) AS
average_goals_per_match
FROM (
    SELECT team1 AS team, goals_team1, NULL AS goals_team2
    FROM Fifa
    UNION ALL
    SELECT team2 AS team, NULL AS goals_team1, goals_team2
    FROM Fifa
) AS subquery
GROUP BY team
ORDER BY average_goals_per_match DESC;
```

Showing the Second view of the “conversion rate per game”

```
mysql> SELECT * FROM conversion_rate_view;
```

team	conversion_rate
NETHERLANDS	0.6250
SPAIN	0.5625
GHANA	0.5000
SERBIA	0.5000
ENGLAND	0.4815
PORTUGAL	0.4800
FRANCE	0.4571
SWITZERLAND	0.4545
AUSTRALIA	0.4444
COSTA RICA	0.4286
POLAND	0.4286
JAPAN	0.3846
IRAN	0.3636
SENEGAL	0.3571
MOROCCO	0.3529
CANADA	0.3333
ECUADOR	0.3333
SAUDI ARABIA	0.3333
ARGENTINA	0.3125
CAMEROON	0.2857
CROATIA	0.2857
KOREA REPUBLIC	0.2778
GERMANY	0.2500
UNITED STATES	0.2000
URUGUAY	0.2000
BRAZIL	0.1951
QATAR	0.1667
WALES	0.1429
MEXICO	0.1333
TUNISIA	0.1250
DENMARK	0.1111
BELGIUM	0.0909

```
32 rows in set (0.00 sec)
```

```
mysql>
```

```
CREATE VIEW conversion_rate_view AS  
SELECT
```

```

    team,
    COALESCE(SUM(total_goals) / NULLIF(SUM(on_target_attempts), 0), 0) AS
conversion_rate
FROM (
    SELECT team1 AS team, on_target_attempts_team1 AS on_target_attempts,
goals_team1 AS total_goals
    FROM Fifa
    UNION ALL
    SELECT team2 AS team, on_target_attempts_team2 AS on_target_attempts,
goals_team2 AS total_goals
    FROM Fifa
) AS subquery
GROUP BY team
ORDER BY conversion_rate DESC, team;

```

The third view showing the pass accuracy

```

CREATE VIEW passing_accuracy_view AS
SELECT
    team,
    AVG(passing_accuracy) AS avg_passing_accuracy
FROM (
    SELECT
        team1 AS team,
        (SUM(passes_completed_team1) / NULLIF(SUM(passes_team1), 0)) * 100.0 AS
passing_accuracy
    FROM
        Fifa
    GROUP BY
        team1
    UNION
    SELECT
        team2 AS team,
        (SUM(passes_completed_team2) / NULLIF(SUM(passes_team2), 0)) * 100.0 AS
passing_accuracy
    FROM
        Fifa
    GROUP BY
        team2
) AS subquery
GROUP BY
    team
ORDER BY

```

```
avg_passing_accuracy DESC
LIMIT 32;
```

And the fourth view showing the shots vs goal comparison view.

```
CREATE VIEW shots_vs_goals_comparison AS
SELECT
    team,
    COALESCE(SUM(on_target_attempts), 0) AS total_shots_on_target,
    COALESCE(SUM(total_goals), 0) AS total_goals
FROM (
    SELECT team1 AS team, on_target_attempts_team1 AS on_target_attempts,
    goals_team1 AS total_goals
    FROM Fifa
    UNION ALL
    SELECT team2 AS team, on_target_attempts_team2 AS on_target_attempts,
    goals_team2 AS total_goals
    FROM Fifa
) AS subquery
GROUP BY team
ORDER BY total_shots_on_target DESC, team;
```

A view showing the total goals

```
CREATE VIEW total_goals_by_team_view AS
SELECT
    team,
    COALESCE(SUM(goals_team1), 0) + COALESCE(SUM(goals_team2), 0) AS total_goals
FROM (
    SELECT team1 AS team, goals_team1 AS goals_team1, NULL AS goals_team2
    FROM Fifa
    UNION ALL
    SELECT team2 AS team, NULL AS goals_team1, goals_team2 AS goals_team2
    FROM Fifa
) AS subquery
GROUP BY team
ORDER BY total_goals DESC;
```

A view that shows team possession

```
CREATE VIEW possession_analysis_view AS
```

```

SELECT
    team,
    AVG(possession) AS avg_possession
FROM (
    SELECT
        team1 AS team,
        possession_team1 AS possession
    FROM
        Fifa
    UNION
    SELECT
        team2 AS team,
        possession_team2 AS possession
    FROM
        Fifa
) AS subquery
GROUP BY
    team
ORDER BY
    avg_possession DESC;

```

Front End:

```

1- gcloud compute instances create metabase \
2- --image-family ubuntu-2204-lts \
3- --image-project ubuntu-os-cloud \
4- --machine-type n1-standard-1 \
5- --description metabase \
6- --zone us-east1-b \
7- --metadata=startup-script='

```

Creating and setting up the Compute Engine and Metabase software to connect to the CloudSQL database instance.

```
sudo apt install openjdk-8-jdk
```

Installing Java for the metabase software

```
wget https://downloads.metabase.com/v0.47.9metabase.jar
```

Downloading the metabase software

```
gcloud compute \
```

```
--project="double-rigging-404816" firewall-rules create default-allow-metabase \  
--direction=INGRESS \  
--priority=1000 \  
--network=default \  
--action=ALLOW \  
--rules=tcp:3000 \  
--source-ranges="10.142.0.3, 34.70.200.13, 174.204.132.41, 34.139.17.33,  
72.229.230.164, 146.111.144.170, 148.75.50.173, 34.73.154.41" \  
--target-tags=allow-metabase
```

Creating a Firewall rule to allow the metabase connection through 3000 port

```
java -jar /opt/metabase.jar
```

```
http://34.73.154.41/:3000/setup
```

Connecting to the metabase

Using the Views made in the backend to create data visualizations.





