

НАЦІОНАЛЬНИЙ ТЕХНІЧНИЙ УНІВЕРСИТЕТ УКРАЇНИ
«КИЇВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ
ІМЕНІ ІГОРЯ СІКОРСЬКОГО»
ФАКУЛЬТЕТ ІНФОРМАТИКИ ТА ОБЧИСЛЮВАЛЬНОЇ ТЕХНІКИ
(повна назва інституту/факультету)

КАФЕДРА інформатики та програмної інженерії
(повна назва кафедри)

КУРСОВА РОБОТА

з дисципліни «Бази даних»
(назва дисципліни)

на тему: База даних для збереження даних про футбольні чемпіонати

Студента (ки) 2 курсу ІТ-01 групи
спеціальності 121 «Інженерія програмного
забезпечення»

_____ Нікітченко Н. О. _____
(прізвище та ініціали)

Керівник _____ Марченко О. І. _____
(посада, вчене звання, науковий ступінь, прізвище та ініціали)

Національна шкала _____

Кількість балів: _____ Оцінка ECTS

Члени комісії

_____ (підпис) _____ (вчене звання, науковий ступінь, прізвище та ініціали)

_____ (підпис) _____ (вчене звання, науковий ступінь, прізвище та ініціали)

_____ (підпис) _____ (вчене звання, науковий ступінь, прізвище та ініціали)

ЗАВДАННЯ

Завданням курсової роботи є розробка бази даних з забезпеченням роботи всіх бізнес правил та можливість її подальшого використання. При розробці проекту потрібно врахувати певні вимоги:

- вимоги до функціональності (наявність усіх функцій, які необхідні для реалізації поставленої задачі);
- вимоги до цілісності даних;
- вимоги до мінімізації об'єму даних, що зберігаються;
- наявність багатокористувацького режиму; - вимоги до швидкодії.

Це необхідно для створення ефективної та зручної системи зберігання користувацьких даних. Також потрібно чітко враховувати предметну область поставленої цілі для чого варто створити ER – модель, що дозволить краще зрозуміти всі бізнес правила та особливості поставленої задачі. Для її створення необхідно:

- детально проаналізувати предметне середовище;
- сформулювати бізнес-правила, які будуть основою завдання обмежень при проектуванні та реалізації бази даних;
- виявити необхідний набір сутностей;
- визначити необхідний набір атрибутів для кожної сутності;
- визначити зв'язки між об'єктами;
- описати отриману ER-модель в одній з відомих нотацій;
- розробити модель користувачів бази даних з описом їх прав;

Після аналізу предметної області необхідно:

- побудувати реляційну схему з ER-моделі;
- створити базу даних, що була спроектована, у форматі обраної системи управління базою даних (СУБД);
- створити користувачів бази даних, реалізувавши розроблену багатокористувацьку модель;
- імпортувати дані з використанням засобів СУБД в створену базу даних;
- мовою SQL написати запити для визначених на етапі аналізу предметного середовища потреб користувачів;
- оптимізувати роботу запитів (продемонструвати роботу до і після оптимізації).

Обов'язкові вимоги до проєкту:

- кількість таблиць бази даних не менше 10;
- реалізація створених бізнес-правил;
- забезпечення цілісності бази даних;
- використання збережених процедур/функцій;
- використання тригерів;
- використання генераторів;
- використання представлень;
- створення не менше 20 DML-запитів типу SELECT (не включаючи insert, delete, update);
- кількість таблиць, атрибути яких використовуються у запиті не менше двох.

ЗМІСТ

ВСТУП

РОЗДІЛИ ОСНОВНОЇ ЧАСТИНИ РОБОТИ

2.1 ОПИС ПРЕДМЕТНОГО СЕРЕДОВИЩА

2.2 КОНЦЕПТУАЛЬНА МОДЕЛЬ БАЗИ ДАНИХ

2.4 ЛОГІЧНА МОДЕЛЬ БАЗИ ДАНИХ

2.5 ПРОГРАМНА РЕАЛІЗАЦІЯ

2.5.1 Створення бази даних

2.5.2 Наповнення схеми даними

2.5.3 Створення запитів

2.5.4 Використання процедури

2.5.5 Використання тригера

2.5.6 Використання представлення

2.5.7 Використання функції

ВИСНОВКИ

СПИСОК ВИКОРИСТАНОЇ ЛІТЕРАТУРИ

ДОДАТКИ

ДОДАТОК А

..... 33

ДОДАТОК Б

..... 38

ДОДАТОК В

..... 49

ВСТУП

В нашому житті напевне кожна людина бачила футбол в тому чи іншому вигляді. Сучасний спорт нездатний обійтися без його головної частини. Футбольні чемпіонати завжди були цікаві різним людям, тому й важливо розробити базу даних, яка надасть можливість зручно зберігати дані і забезпечить зручний доступ до них.

Перед реалізацією бази даних було необхідно обрати СУБД. Зваживши всі за і проти вибір впав на PostgreSQL за її широкий функціонал і відкриті джерела коду.

РОЗДІЛИ ОСНОВНОЇ ЧАСТИНИ РОБОТИ

2.1 ОПИС ПРЕДМЕТНОГО СЕРЕДОВИЩА

Загалом першим кроком у розробці бази даних є опис предметного середовища обраної теми. Без чіткого аналізу теми неможливо розробити базу даних, яка б задовольнила потреби користувачів. В даному випадку цією темою є збереження даних про футбольні чемпіонати.

Футбольні чемпіонати мають місце проведення. Тому реалізована база даних має містити в собі дані про те, де проводиться чемпіонат. Основою чемпіонатів являються гравці і команди, тож база даних має містити в собі дані і про них. Також в команд є тренери, і матчі в яких є рефері і асистенти рефері. З огляду на ці дані ми маємо реалізувати можливість збереження їх даних в базі даних.

2.2 КОНЦЕПТУАЛЬНА МОДЕЛЬ БАЗИ ДАНИХ

Після аналізу предметної області було необхідно розробити концептуальну модель бази даних.

Було виділено такі сутності:

футбольна країна;

футбольне місто;

футбольний майданчик;

футбольна команда;

ігрове положення;

гравець;

рефері;

матч;

тренер;

помічник арбітра;

деталі матчу;

деталі голу;

серія пенальті;

гравець в грі;

гравець поза грою;

капітан матчу;

тренер команд;

пенальті воротар.

Далі було необхідно визначити атрибути сутностей і їх типи даних.

Вказані в порядку наведеному вище сутності є таблицями з атрибутами:

Таблиця:			
	<i>football_country</i>		
Атрибути:		Тип даних:	
	pk_country_id		NUMERIC
	country_abbreviation		VARCHAR(4)
	country_name		VARCHAR(40)
Таблиця:			
	<i>football_city</i>		
Атрибути:		Тип даних:	
	pk_city_id		NUMERIC
	city		VARCHAR(25)
	fk_country_id		NUMERIC
Таблиця:			
	<i>football_venue</i>		
Атрибути:		Тип даних:	
	pk_venue_id		NUMERIC
	venue_name		VARCHAR(30)
	fk_city_id		NUMERIC
	audience_capacity		NUMERIC
Таблиця:			
	<i>football_team</i>		
Атрибути:		Тип даних:	
	fk_team_id		NUMERIC

	team_group		CHARACTER(1)
	match_played		NUMERIC
	won		NUMERIC
	draw		NUMERIC
	lost		NUMERIC
	goal_for		NUMERIC
	goal_against		NUMERIC
	goal_difference		NUMERIC
	points		NUMERIC
	group_position		NUMERIC
Таблиця:			
	<i>playing_position</i>		
Атрибути:		Тип даних:	
	pk_position_id		VARCHAR(2)
	position_description		VARCHAR(15)
Таблиця:			
	<i>player_mast</i>		
Атрибути:		Тип даних:	
	pk_player_id		NUMERIC
	fk_team_id		NUMERIC
	jersey_number		NUMERIC
	player_name		VARCHAR(40)
	fk_position_to_play		CHARACTER(2)
	date_of_birth		DATE
	age		NUMERIC
	playing_club		VARCHAR(40)
Таблиця:			

	<i>referee_mast</i>		
Атрибути:		Тип даних:	
	pk_referee_id		NUMERIC
	referee_name		VARCHAR(40)
	fk_country_id		NUMERIC
Таблиця:			
	<i>match_mast</i>		
Атрибути:		Тип даних:	
	pk_match_number		NUMERIC
	play_stage		CHARACTER(1)
	play_date		DATE
	results		CHARACTER(5)
	decided_by		CHARACTER(1)
	goal_score		CHARACTER(5)
	fk_venue_id		NUMERIC
	fk_referee_id		NUMERIC
	audence		NUMERIC
	fk_player_of_match		NUMERIC
	stop1_second		NUMERIC
	stop2_second		NUMERIC
Таблиця:			
	<i>coach_mast</i>		
Атрибути:		Тип даних:	
	pk_coach_id		NUMERIC
	coach_name		VARCHAR(40)
Таблиця:			

	<i>assistant_referee_mast</i>		
Атрибути:		Тип даних:	
	pk_assistant_referee_id		NUMERIC
	assistant_referee_name		VARCHAR(40)
	fk_country_id		NUMERIC
Таблиця:			
	<i>match_details</i>		
Атрибути:		Тип даних:	
	fk_match_number		NUMERIC
	play_stage		VARCHAR(1)
	fk_team_id		NUMERIC
	win_lose		VARCHAR(1)
	decided_by		VARCHAR(1)
	goal_score		NUMERIC
	penalty_score		NUMERIC
	fk_assistant_referee		NUMERIC
	fk_player_goal_keeper		NUMERIC
Таблиця:			
	<i>goal_details</i>		
Атрибути:		Тип даних:	
	pk_goal_id		NUMERIC
	fk_match_number		NUMERIC
	fk_player_id		NUMERIC
	fk_team_id		NUMERIC
	goal_time		NUMERIC
	goal_type		CHARACTER(1)

	play_stage		CHARACTER(1)
	goal_schedule		CHARACTER(2)
	goal_half		NUMERIC
Таблиця:			
	<i>penalty_shootout</i>		
Атрибути:		Тип даних:	
	pk_kick_id		NUMERIC
	fk_match_number		NUMERIC
	fk_team_id		NUMERIC
	fk_player_id		NUMERIC
	score_goal		VARCHAR(1)
	kick_number		NUMERIC
Таблиця:			
	<i>player_booked</i>		
Атрибути:		Тип даних:	
	fk_match_number		NUMERIC
	fk_team_id		NUMERIC
	fk_player_id		NUMERIC
	booking_time		VARCHAR(40)
	sent_off		CHARACTER(1)
	play_schedule		CHARACTER(2)
	play_half		NUMERIC
Таблиця:			
	<i>player_in_out</i>		
Атрибути:		Тип даних:	
	fk_match_number		NUMERIC

	fk_team_id		NUMERIC
	fk_player_id		NUMERIC
	in_out		CHARACTER(1)
	time_in_out		NUMERIC
	play_schedule		CHARACTER(2)
	play_half		NUMERIC
Таблиця:			
	<i>match_captain</i>		
Атрибути:		Тип даних:	
	fk_match_number		NUMERIC
	fk_team_id		NUMERIC
	fk_player_captain		NUMERIC
Таблиця:			
	<i>team_coaches</i>		
Атрибути:		Тип даних:	
	fk_team_id		NUMERIC
	fk_coach_id		NUMERIC
Таблиця:			
	<i>penalty_goal_keeper</i>		
Атрибути:		Тип даних:	
	fk_match_number		NUMERIC
	fk_team_id		NUMERIC
	fk_player_goal_keeper		NUMERIC

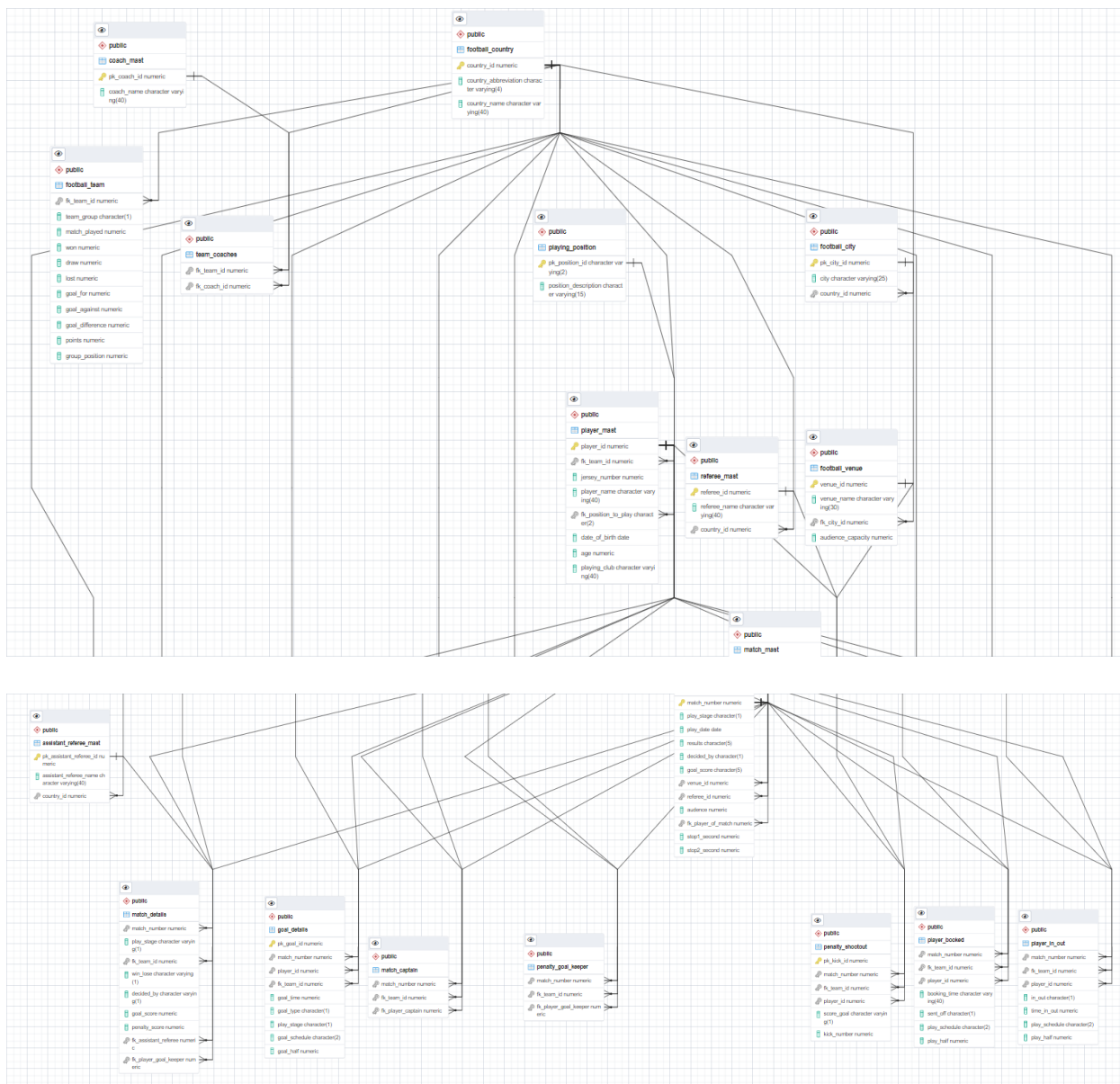
Наступним важливим кроком у розробці бази даних є створення зв'язків між таблицями. Без зв'язків у базі даних таблиці не можуть взаємодіяти. Для того аби представити розроблені зв'язки ми візуалізували їх у вигляді ER-діаграми представленої нижче:



Де “1” – один, а “*” багато.

2.3 ЛОГІЧНА МОДЕЛЬ БАЗИ ДАНИХ

Логічна модель бази даних згенерована з допомогою СУБД
представлена нижче:



2.5 ПРОГРАМНА РЕАЛІЗАЦІЯ

2.5.1 Створення бази даних

Створення бази даних та користувачів наступним скриптом:

-- Створення бази даних та користувачів

```
CREATE USER "FootballChampionshipOwner" WITH PASSWORD  
'Football_Championship_Owner';
```

```
CREATE DATABASE "FootballChampionshipDB" OWNER  
"FootballChampionshipOwner";
```

```
ALTER DATABASE "FootballChampionshipDB" SET TIMEZONE = 'UTC';
```

```
GRANT ALL PRIVILEGES ON DATABASE "FootballChampionshipDB" TO  
"FootballChampionshipOwner";
```

```
CREATE USER "FootballChampionshipReader" WITH PASSWORD  
'Football_Championship_Reader';
```

```
GRANT CONNECT ON DATABASE "FootballChampionshipDB" TO  
"FootballChampionshipReader";
```

```
GRANT USAGE ON SCHEMA public TO "FootballChampionshipReader";
```

```
GRANT SELECT ON ALL TABLES IN SCHEMA public TO  
"FootballChampionshipReader";
```

Створення таблиць наступним скриптом:

-- Створення таблиць

--

```
CREATE TABLE IF NOT EXISTS football_country
```

```
(  
    country_id NUMERIC PRIMARY KEY,  
    country_abbreviation VARCHAR(4),  
    country_name VARCHAR(40)  
);
```

```
--
```

```
CREATE TABLE IF NOT EXISTS football_city
```

```
(  
    pk_city_id NUMERIC PRIMARY KEY,  
    city VARCHAR(25),  
    country_id NUMERIC REFERENCES football_country(country_id)  
);
```

```
--
```

```
CREATE TABLE IF NOT EXISTS football_venue
```

```
(  
    venue_id NUMERIC PRIMARY KEY,  
    venue_name VARCHAR(30),  
    fk_city_id NUMERIC REFERENCES football_city(pk_city_id),  
    audience_capacity NUMERIC  
);
```

```
--
```

```
CREATE TABLE IF NOT EXISTS football_team
```

```
(  
  
    fk_team_id NUMERIC REFERENCES football_country(country_id),  
  
    team_group CHARACTER(1),  
  
    match_played NUMERIC,  
  
    won NUMERIC,  
  
    draw NUMERIC,  
  
    lost NUMERIC,  
  
    goal_for NUMERIC,  
  
    goal_against NUMERIC,  
  
    goal_difference NUMERIC,  
  
    points NUMERIC,  
  
    group_position NUMERIC  
  
);
```

--

CREATE TABLE IF NOT EXISTS playing_position

```
(  
  
    pk_position_id VARCHAR(2) PRIMARY KEY,  
  
    position_description VARCHAR(15)  
  
);
```

--

CREATE TABLE IF NOT EXISTS player_mast

```
(  
  
    player_id NUMERIC PRIMARY KEY,
```

```
fk_team_id NUMERIC REFERENCES football_country(country_id),  
  
jersey_number NUMERIC,  
  
player_name VARCHAR(40),  
  
fk_position_to_play CHARACTER(2) REFERENCES  
playing_position(pk_position_id),  
  
date_of_birth DATE,  
  
age NUMERIC,  
  
playing_club VARCHAR(40)  
  
);
```

--

```
CREATE TABLE IF NOT EXISTS referee_mast
```

```
(
```

```
referee_id NUMERIC PRIMARY KEY,  
  
referee_name VARCHAR(40),  
  
country_id NUMERIC REFERENCES football_country(country_id)
```

```
);
```

--

```
CREATE TABLE IF NOT EXISTS match_mast
```

```
(
```

```
match_number NUMERIC PRIMARY KEY,  
  
play_stage CHARACTER(1),  
  
play_date DATE,  
  
results CHARACTER(5),
```

```

    decided_by CHARACTER(1),

    goal_score CHARACTER(5),

    venue_id NUMERIC REFERENCES football_venue(venue_id),

    referee_id NUMERIC REFERENCES referee_mast(referee_id),

    audience NUMERIC,

    fk_player_of_match NUMERIC REFERENCES player_mast(player_id),

    stop1_second NUMERIC,

    stop2_second NUMERIC

);

--

CREATE TABLE IF NOT EXISTS coach_mast

(

    pk_coach_id NUMERIC PRIMARY KEY,

    coach_name VARCHAR(40)

);

--

CREATE TABLE IF NOT EXISTS assistant_referee_mast

(

    pk_assistant_referee_id NUMERIC PRIMARY KEY,

    assistant_referee_name VARCHAR(40),

    country_id NUMERIC REFERENCES football_country(country_id)

);

--

```

CREATE TABLE IF NOT EXISTS match_details

```
(
    match_number NUMERIC REFERENCES match_mast(match_number),
    play_stage VARCHAR(1),
    fk_team_id NUMERIC REFERENCES football_country(country_id),
    win_lose VARCHAR(1),
    decided_by VARCHAR(1),
    goal_score NUMERIC,
    penalty_score NUMERIC,
    fk_assistant_referee NUMERIC REFERENCES
assistant_referee_mast(pk_assistant_referee_id),
    fk_player_goal_keeper NUMERIC REFERENCES player_mast(player_id)
);
```

--

CREATE TABLE IF NOT EXISTS goal_details

```
(
    pk_goal_id NUMERIC PRIMARY KEY,
    match_number NUMERIC REFERENCES match_mast(match_number),
    player_id NUMERIC REFERENCES player_mast(player_id),
    fk_team_id NUMERIC REFERENCES football_country(country_id),
    goal_time NUMERIC,
    goal_type CHARACTER(1),
    play_stage CHARACTER(1),
```

```

    goal_schedule CHARACTER(2),

    goal_half NUMERIC

);

--

CREATE TABLE IF NOT EXISTS penalty_shootout

(

    pk_kick_id NUMERIC PRIMARY KEY,

    match_number NUMERIC REFERENCES match_mast(match_number),

    fk_team_id NUMERIC REFERENCES football_country(country_id),

    player_id NUMERIC REFERENCES player_mast(player_id),

    score_goal VARCHAR(1),

    kick_number NUMERIC

);

--

CREATE TABLE IF NOT EXISTS player_booked

(

    match_number NUMERIC REFERENCES match_mast(match_number),

    fk_team_id NUMERIC REFERENCES football_country(country_id),

    player_id NUMERIC REFERENCES player_mast(player_id),

    booking_time VARCHAR(40),

    sent_off CHARACTER(1),

    play_schedule CHARACTER(2),

    play_half NUMERIC

```

);

--

CREATE TABLE IF NOT EXISTS player_in_out

(

match_number NUMERIC REFERENCES match_mast(match_number),

fk_team_id NUMERIC REFERENCES football_country(country_id),

player_id NUMERIC REFERENCES player_mast(player_id),

in_out CHARACTER(1),

time_in_out NUMERIC,

play_schedule CHARACTER(2),

play_half NUMERIC

);

--

CREATE TABLE IF NOT EXISTS match_captain

(

match_number NUMERIC REFERENCES match_mast(match_number),

fk_team_id NUMERIC REFERENCES football_country(country_id),

fk_player_captain NUMERIC REFERENCES player_mast(player_id)

);

--

CREATE TABLE IF NOT EXISTS team_coaches

(

fk_team_id NUMERIC REFERENCES football_country(country_id),


```

fk_coach_id NUMERIC REFERENCES coach_mast(pk_coach_id)

);

--

CREATE TABLE IF NOT EXISTS penalty_goal_keeper

(

    match_number NUMERIC REFERENCES match_mast(match_number),

    fk_team_id NUMERIC REFERENCES football_country(country_id),

    fk_player_goal_keeper NUMERIC REFERENCES player_mast(player_id)

);

```

2.5.2 Наповнення таблиць даними

Наповнення таблиць даними наступними командами:

-- Втавлення даних в таблиці

```
\copy football_country FROM
```

```
'C:\Users\User\Desktop\CourseWork\CSV\football_country.csv' DELIMITER ';'

```

```
CSV

```

```
\copy football_city FROM
```

```
'C:\Users\User\Desktop\CourseWork\CSV\football_city.csv' DELIMITER ';' CSV

```

```
\copy football_venue FROM
```

```
'C:\Users\User\Desktop\CourseWork\CSV\football_venue.csv' DELIMITER ';'

```

```
CSV

```

```
\copy football_team FROM
```

```
'C:\Users\User\Desktop\CourseWork\CSV\football_team.csv' DELIMITER ';' CSV

```

```
\copy referee_mast FROM
```

```
'C:\Users\User\Desktop\CourseWork\CSV\referee_mast.csv' DELIMITER ';' CSV

```

\copy coach_mast FROM

'C:\Users\User\Desktop\CourseWork\CSV\coach_mast.csv' DELIMITER ';' CSV

\copy assistant_referee_mast FROM

'C:\Users\User\Desktop\CourseWork\CSV\assistant_referee_mast.csv'

DELIMITER ';' CSV

\copy team_coaches FROM

'C:\Users\User\Desktop\CourseWork\CSV\team_coaches.csv' DELIMITER ';' CSV

\copy playing_position FROM

'C:\Users\User\Desktop\CourseWork\CSV\playing_position.csv' DELIMITER ';' CSV

\copy player_mast FROM

'C:\Users\User\Desktop\CourseWork\CSV\player_mast.csv' DELIMITER ';' CSV

\copy match_mast FROM

'C:\Users\User\Desktop\CourseWork\CSV\match_mast.csv' DELIMITER ';' CSV

\copy match_details FROM

'C:\Users\User\Desktop\CourseWork\CSV\match_details.csv' DELIMITER ';' CSV

\copy penalty_shootout FROM

'C:\Users\User\Desktop\CourseWork\CSV\penalty_shootout.csv' DELIMITER ';' CSV

\copy player_booked FROM

'C:\Users\User\Desktop\CourseWork\CSV\player_booked.csv' DELIMITER ';' CSV

\copy player_in_out FROM

'C:\Users\User\Desktop\CourseWork\CSV\player_in_out.csv' DELIMITER ';' CSV

```
\copy match_captain FROM
```

```
'C:\Users\User\Desktop\CourseWork\CSV\match_captain.csv' DELIMITER ';'
CSV
```

```
\copy penalty_goal_keeper FROM
```

```
'C:\Users\User\Desktop\CourseWork\CSV\penalty_goal_keeper.csv' DELIMITER
',' CSV
```

```
\copy goal_details FROM
```

```
'C:\Users\User\Desktop\CourseWork\CSV\goal_details.csv' DELIMITER ',' CSV
```

```
FootballChampionshipDB=# -- Втавлення даних в таблиці
FootballChampionshipDB=# \copy football_country FROM 'C:\Users\User\Desktop\CourseWork\CSV\football_country.csv' DELIMITER ';' CSV
COPY 29
FootballChampionshipDB=# \copy football_city FROM 'C:\Users\User\Desktop\CourseWork\CSV\football_city.csv' DELIMITER ';' CSV
COPY 10
FootballChampionshipDB=# \copy football_venue FROM 'C:\Users\User\Desktop\CourseWork\CSV\football_venue.csv' DELIMITER ';' CSV
COPY 10
FootballChampionshipDB=# \copy football_team FROM 'C:\Users\User\Desktop\CourseWork\CSV\football_team.csv' DELIMITER ';' CSV
COPY 24
FootballChampionshipDB=# \copy referee_mast FROM 'C:\Users\User\Desktop\CourseWork\CSV\referee_mast.csv' DELIMITER ';' CSV
COPY 18
FootballChampionshipDB=# \copy coach_mast FROM 'C:\Users\User\Desktop\CourseWork\CSV\coach_mast.csv' DELIMITER ';' CSV
COPY 25
FootballChampionshipDB=# \copy assistant_referee_mast FROM 'C:\Users\User\Desktop\CourseWork\CSV\assistant_referee_mast.csv' DELIMITER ';' CSV
COPY 38
FootballChampionshipDB=# \copy team_coaches FROM 'C:\Users\User\Desktop\CourseWork\CSV\team_coaches.csv' DELIMITER ';' CSV
COPY 25
FootballChampionshipDB=# \copy playing_position FROM 'C:\Users\User\Desktop\CourseWork\CSV\playing_position.csv' DELIMITER ';' CSV
COPY 4
FootballChampionshipDB=# \copy player_mast FROM 'C:\Users\User\Desktop\CourseWork\CSV\player_mast.csv' DELIMITER ';' CSV
COPY 552
FootballChampionshipDB=# \copy match_mast FROM 'C:\Users\User\Desktop\CourseWork\CSV\match_mast.csv' DELIMITER ';' CSV
COPY 51
FootballChampionshipDB=# \copy match_details FROM 'C:\Users\User\Desktop\CourseWork\CSV\match_details.csv' DELIMITER ';' CSV
COPY 102
FootballChampionshipDB=# \copy penalty_shootout FROM 'C:\Users\User\Desktop\CourseWork\CSV\penalty_shootout.csv' DELIMITER ';' CSV
COPY 37
FootballChampionshipDB=# \copy player_booked FROM 'C:\Users\User\Desktop\CourseWork\CSV\player_booked.csv' DELIMITER ';' CSV
COPY 201
FootballChampionshipDB=# \copy player_in_out FROM 'C:\Users\User\Desktop\CourseWork\CSV\player_in_out.csv' DELIMITER ';' CSV
COPY 586
FootballChampionshipDB=# \copy match_captain FROM 'C:\Users\User\Desktop\CourseWork\CSV\match_captain.csv' DELIMITER ';' CSV
COPY 102
FootballChampionshipDB=# \copy penalty_goal_keeper FROM 'C:\Users\User\Desktop\CourseWork\CSV\penalty_goal_keeper.csv' DELIMITER ';' CSV
COPY 6
FootballChampionshipDB=# \copy goal_details FROM 'C:\Users\User\Desktop\CourseWork\CSV\goal_details.csv' DELIMITER ';' CSV
COPY 108
```

Файли з яких читають дані було додано до ГітХаб.

2.5.3 Створення запитів

Нижче наведено скрипти для вибірки даних:

```
-- Запити для вибірки даних
```

```
--
```

```
SELECT c.match_number,a.country_name AS "Team",
```

```
b.player_name, b.jersey_number, c.score_goal ,c.kick_number
```

```
FROM football_country a, penalty_shootout c, player_mast b  
WHERE c.fk_team_id=a.country_id  
AND c.player_id=b.player_id;
```

--

```
SELECT a.country_name, COUNT(b.*) as "Number of Shots"  
FROM football_country a, penalty_shootout b  
WHERE b.fk_team_id=a.country_id  
GROUP BY a.country_name;
```

--

```
SELECT play_half,play_schedule,COUNT(*)  
FROM player_booked  
WHERE play_schedule='NT'  
GROUP BY play_half,play_schedule;
```

--

```
SELECT play_half,play_schedule,COUNT(*)  
FROM player_in_out  
WHERE in_out='I'  
GROUP BY play_half,play_schedule  
ORDER BY play_half,play_schedule,count(*) DESC;
```

--

```
SELECT COUNT(goal_score)  
FROM match_details  
WHERE win_lose='W'
```

AND decided_by<>'P'

AND goal_score=1;

-- Запити з підзапитами для вибірки даних

--

SELECT match_number,country_name, player_name, COUNT(match_number)

FROM goal_details a, football_country b, player_mast c

WHERE a.fk_team_id=b.country_id

AND a.player_id=c.player_id

GROUP BY match_number,country_name,player_name

ORDER BY match_number;

--

SELECT country_name

FROM football_country

WHERE country_id IN(

SELECT fk_team_id

FROM goal_details

WHERE match_number=(

SELECT match_number

FROM match_mast

WHERE audience=(

SELECT max(audience)

FROM match_mast)

ORDER BY audience DESC));

--

```
SELECT player_name, jersey_number
FROM player_mast
WHERE player_id=(
SELECT player_id
FROM goal_details
WHERE goal_type='P' AND match_number=(
SELECT MIN(match_number)
FROM goal_details
WHERE goal_type='P' AND play_stage='G'));
```

--

```
SELECT MAX(stop2_second)
FROM match_mast
WHERE stop2_second<>(
SELECT MAX(stop2_second)
FROM match_mast);
```

--

```
SELECT country_name
FROM football_country
WHERE country_id IN(
SELECT fk_team_id
FROM match_details
WHERE match_number IN(
```

```
SELECT match_number  
  
FROM match_mast  
  
WHERE stop2_second=(  
  
SELECT max(stop2_second)  
  
FROM match_mast  
  
WHERE stop2_second<>(  
  
SELECT max(stop2_second)  
  
FROM match_mast))));
```

-- Запити з JOIN для вибірки даних

--

```
SELECT match_details.match_number, football_country.country_name  
  
FROM match_mast  
  
JOIN match_details  
  
ON match_mast.match_number=match_details.match_number  
  
JOIN football_country  
  
ON match_details.fk_team_id=football_country.country_id  
  
WHERE stop1_second=0;
```

--

```
SELECT country_name,team_group,match_played,  
  
won,lost,goal_for,goal_against  
  
FROM football_team  
  
JOIN football_country  
  
ON football_team.fk_team_id=football_country.country_id
```

```

WHERE goal_against=(

SELECT MAX(goal_against)

FROM football_team);

--

SELECT match_details.match_number, football_country.country_name,

match_mast.stop2_second as "Stoppage Time(sec.)"

FROM match_mast

JOIN match_details

ON match_mast.match_number=match_details.match_number

JOIN football_country

ON match_details.fk_team_id=football_country.country_id

WHERE stop2_second IN (

SELECT MAX(stop2_second)

FROM match_mast);

--

SELECT match_number,country_name

FROM match_details

JOIN football_country ON football_country.country_id=match_details.fk_team_id

WHERE win_lose='D' AND goal_score=0 AND play_stage='G'

ORDER BY match_number;

--

SELECT a.match_number, c.country_name, a.stop2_second

FROM match_mast a

```


JOIN match_details b ON a.match_number=b.match_number

JOIN football_country c ON b.fk_team_id=c.country_id

WHERE (2-1) = (

SELECT COUNT(DISTINCT(b.stop2_second))

FROM match_mast b

WHERE b.stop2_second > a.stop2_second);

--

SELECT b.country_name,c.player_name,COUNT(a.fk_player_goal_keeper)
count_gk

FROM match_details a

JOIN football_country b ON a.fk_team_id=b.country_id

JOIN player_mast c ON a.fk_player_goal_keeper=c.player_id

GROUP BY b.country_name,c.player_name

ORDER BY country_name,player_name,count_gk DESC;

--

SELECT venue_name, count(venue_name)

FROM goal_details

JOIN football_country

ON goal_details.fk_team_id=football_country.country_id

JOIN match_mast ON goal_details.match_number=match_mast.match_number

JOIN football_venue ON match_mast.venue_id=football_venue.venue_id

GROUP BY venue_name

HAVING COUNT (venue_name)=(

```

SELECT MAX(mycount)

FROM (

SELECT venue_name, COUNT(venue_name) mycount

FROM goal_details

JOIN football_country

ON goal_details.fk_team_id=football_country.country_id

JOIN match_mast ON goal_details.match_number=match_mast.match_number

JOIN football_venue ON match_mast.venue_id=football_venue.venue_id

GROUP BY venue_name) gd);

--

SELECT a.country_name,b.player_name,b.jersey_number,b.age

FROM football_country a

JOIN player_mast b

ON a.country_id=b.fk_team_id

WHERE b.age IN (

SELECT MAX(age)

FROM player_mast);

--

SELECT match_number,country_name

FROM match_details a

JOIN football_country b

ON a.fk_team_id=b.country_id

WHERE goal_score=3 AND win_lose='D';

```

--

```
SELECT a.country_name as Team , b.team_group,b.match_played,  
b.goal_against, b.group_position  
FROM football_country a  
JOIN football_team b  
ON a.country_id=b.fk_team_id  
WHERE goal_against=4 AND group_position=4  
ORDER BY team_group;
```

Нижче в додаток А додано результати виконання всіх запитів.

2.5.4 Використання процедури

Нижче наведено приклад створення і використання процедури:

-- Створення процедури

```
CREATE OR REPLACE PROCEDURE create_temp_table_football_country()  
AS  
$$  
BEGIN  
    CREATE TEMP TABLE IF NOT EXISTS temp_table_football_country AS  
    SELECT concat(FC.country_abbreviation, ' ', FC.country_name)  
    FROM football_country AS FC;  
END;  
$$ LANGUAGE plpgsql;  
  
CALL create_temp_table_football_country();
```

```
SELECT *  
  
FROM temp_table_football_country;  
  
DROP TABLE IF EXISTS temp_table_football_country;
```

Нижче в додаток Б додано результат використання процедури.

2.5.5 Використання тригера

Нижче наведено приклад створення тригера:

-- Створення тригера

```
CREATE TRIGGER person_validate_insert  
  
    BEFORE INSERT  
  
    ON penalty_shootout  
  
    FOR EACH ROW  
  
BEGIN  
  
    IF NEW.score_goal NOT LIKE 'Y' OR 'N' THEN  
  
        SIGNAL SQLSTATE VALUE '45000'  
  
        SET MESSAGE_TEXT = '[table:penalty_shootout] -  
score_goal column is not valid';  
  
    END IF;  
  
END;
```

2.5.6 Використання представлення

Нижче наведено приклад створення і використання представлення:

-- Створення представлення

--

```
CREATE VIEW "Number of matches played by Germany" AS
```

```

SELECT match_number,
       country_name
FROM penalty_shootout a
JOIN football_country c ON a.fk_team_id=c.country_id
WHERE match_number=
       (SELECT match_number
        FROM penalty_shootout
        WHERE pk_kick_id=26)
AND country_name<>
       (SELECT country_name
        FROM football_country
        WHERE country_id=
          (SELECT fk_team_id
           FROM penalty_shootout
           WHERE pk_kick_id=26))
GROUP BY match_number,
       country_name;

```

-- Отримання даних з представлення

```
SELECT * FROM "Number of matches played by Germany";
```

Нижче в додаток Б додано результат використання представлення.

2.5.7 Використання функції

Нижче наведено приклад створення і використання функції:

-- Створення функції

```
CREATE OR REPLACE FUNCTION check_if_table_exists(schema_name
VARCHAR, _table_name VARCHAR)

    RETURNS BOOLEAN

AS

$$

SELECT EXISTS(

    SELECT

    FROM information_schema.tables

    WHERE table_schema = schema_name

    AND table_name = _table_name

);

$$ LANGUAGE sql;

-- Перевірка роботи функції

SELECT check_if_table_exists('public', 'football_country');
```

Нижче в додаток Б додано результат використання функції.

ВИСНОВКИ

Метою даної курсової роботи була реалізація бази даних для футбольних чемпіонатів. База даних була успішно протестована з допомогою запитів для вибірки даних, процедур функцій, представлень. Дана база даних є актуальною і зможе знайти широке застосування. Вона є відкритою до покращень та розширень.

Завдання курсової роботи було виконане в повній мірі:

створено користувачів бази даних;

реалізовано більше десяти таблиць: 18;

імпортовано дані;

реалізовано більше двадцяти запитів: 123, в роботі наведено виконання лише двадцяти, але нижче в додатку В наведено скрипти усіх;

створено і використано процедуру;

створено тригер;

створено і використано представлення;

створено і використано функцію.

СПИСОК ВИКОРИСТАНОЇ ЛІТЕРАТУРИ

1. SQL. Повне керівництво. Джеймс Р. Грофф, Пол Н. Вайнберг, Ендрю Дж. Оппель. Видавництво «Вільямс» – 2015.
2. SQL та реляційна теорія. К. Дж. Дейт. Видавництво «Вільямс» – 2010.
3. github.com – [Електронний ресурс] – 2021. Режим доступу до ресурсу: https://github.com/iamnno/CourseWork_DB
4. dbdiagram.io – [Електронний ресурс] – 2021. Режим доступу до ресурсу: <https://dbdiagram.io/embed/61c28fa73205b45b73c8246c>

ДОДАТКИ

ДОДАТОК А

```
FootballChampionshipDB=# -- Запити для вибірки даних
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT c.match_number,a.country_name AS "Team",
FootballChampionshipDB=# b.player_name, b.jersey_number, c.score_goal ,c.kick_number
FootballChampionshipDB=# FROM football_country a, penalty_shootout c, player_mast b
FootballChampionshipDB=# WHERE c.fk_team_id=a.country_id
FootballChampionshipDB=# AND c.player_id=b.player_id;
```

match_number	Team	player_name	jersey_number	score_goal	kick_number
37	Switzerland	Stephan Lichtsteiner	2	Y	1
37	Poland	Robert Lewandowski	9	Y	2
37	Switzerland	Granit Xhaka	10	N	3
37	Poland	Arkadiusz Milik	7	Y	4
37	Switzerland	Xherdan Shaqiri	23	Y	5
37	Poland	Kamil Glik	15	Y	6
37	Switzerland	Fabian Schar	22	Y	7
37	Poland	Jakub Blaszczykowski	16	Y	8
37	Switzerland	Ricardo Rodriguez	13	Y	9
37	Poland	Grzegorz Krychowiak	10	Y	10
45	Portugal	Cristiano Ronaldo	7	Y	1
45	Poland	Robert Lewandowski	9	Y	2
45	Portugal	Renato Sanches	16	Y	3
45	Poland	Arkadiusz Milik	7	Y	4
45	Portugal	Joao Moutinho	8	Y	5
45	Poland	Kamil Glik	15	Y	6
45	Portugal	Nani	17	Y	7
45	Poland	Jakub Blaszczykowski	16	N	8
45	Portugal	Ricardo Quaresma	20	Y	9
47	Italy	Lorenzo Insigne	20	Y	1
47	Germany	Toni Kroos	18	Y	2
47	Italy	Simone Zaza	7	N	3
47	Germany	Thomas Muller	13	N	4
47	Italy	Andrea Barzagli	15	Y	5
47	Germany	Mesut ozil	8	N	6
47	Italy	Graziano Pelle	9	N	7
47	Germany	Julian Draxler	11	Y	8
47	Italy	Leonardo Bonucci	19	N	9
47	Germany	Bastian Schweinsteiger	7	N	10
47	Italy	Emanuele Giaccherini	23	Y	11
47	Germany	Mats Hummels	5	Y	12
47	Italy	Marco Parolo	18	Y	13
47	Germany	Joshua Kimmich	21	Y	14
47	Italy	Mattia De Sciglio	2	Y	15
47	Germany	Jerome Boateng	17	Y	16
47	Italy	Matteo Darmian	4	N	17
47	Germany	Jonas Hector	3	Y	18

(37 rows)

```
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT a.country_name, COUNT(b.*) as "Number of Shots"
FootballChampionshipDB=# FROM football_country a, penalty_shootout b
FootballChampionshipDB=# WHERE b.fk_team_id=a.country_id
FootballChampionshipDB=# GROUP BY a.country_name;
 country_name | Number of Shots
-----+-----
Portugal      |                5
Italy         |                9
Germany       |                9
Switzerland   |                5
Poland        |                9
(5 rows)
```

```
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT play_half,play_schedule,COUNT(*)
FootballChampionshipDB=# FROM player_booked
FootballChampionshipDB=# WHERE play_schedule='NT'
FootballChampionshipDB=# GROUP BY play_half,play_schedule;
 play_half | play_schedule | count
-----+-----+-----
          2 | NT           |    123
          1 | NT           |     61
(2 rows)
```

```
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT play_half,play_schedule,COUNT(*)
FootballChampionshipDB=# FROM player_in_out
FootballChampionshipDB=# WHERE in_out='I'
FootballChampionshipDB=# GROUP BY play_half,play_schedule
FootballChampionshipDB=# ORDER BY play_half,play_schedule,count(*) DESC;
 play_half | play_schedule | count
-----+-----+-----
          1 | ET           |      4
          1 | NT           |      3
          2 | ET           |      5
          2 | NT           |    272
          2 | ST           |      9
(5 rows)
```

```
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT COUNT(goal_score)
FootballChampionshipDB=# FROM match_details
FootballChampionshipDB=# WHERE win_lose='W'
FootballChampionshipDB=# AND decided_by<>'P'
FootballChampionshipDB=# AND goal_score=1;
 count
-----
     13
(1 row)
```

```

FootballChampionshipDB=# -- Запити з підзапитами для вибірки даних
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT match_number, country_name, player_name, COUNT(match_number)
FootballChampionshipDB=# FROM goal_details a, football_country b, player_mast c
FootballChampionshipDB=# WHERE a.fk_team_id=b.country_id
FootballChampionshipDB=# AND a.player_id=c.player_id
FootballChampionshipDB=# GROUP BY match_number, country_name, player_name
FootballChampionshipDB=# ORDER BY match_number;

```

match_number	country_name	player_name	count
1	France	Dimitri Payet	1
1	France	Olivier Giroud	1
1	Romania	Bogdan Stancu	1
2	Switzerland	Fabian Schar	1
3	Slovakia	Ondrej Duda	1
3	Wales	Gareth Bale	1
3	Wales	Hal Robson-Kanu	1
4	England	Eric Dier	1
4	Russia	Vasili Berezutski	1
5	Croatia	Luka Modric	1
6	Poland	Arkadiusz Milik	1
7	Germany	Bastian Schweinsteiger	1
7	Germany	Thomas Muller	1
8	Spain	Gerard Pique	1
9	Republic of Ireland	Ciaran Clark	1
9	Republic of Ireland	Wes Hoolahan	1
10	Italy	Emanuele Giaccherini	1
10	Italy	Graziano Pelle	1
11	Hungary	Adam Szalai	1
11	Hungary	Zoltan Stieber	1
12	Iceland	Birkir Bjarnason	1
12	Portugal	Nani	1
13	Russia	Denis Glushakov	1
13	Slovakia	Marek Hamsik	1
13	Slovakia	Vladimir Weiss	1
14	Romania	Bogdan Stancu	1
14	Switzerland	Admir Mehmedi	1
15	France	Antoine Griezmann	1

В запиті вище результатом є сто рядків

```

FootballChampionshipDB=# SELECT country_name
FootballChampionshipDB=# FROM football_country
FootballChampionshipDB=# WHERE country_id IN(
FootballChampionshipDB(# SELECT fk_team_id
FootballChampionshipDB(# FROM goal_details
FootballChampionshipDB(# WHERE match_number=(
FootballChampionshipDB(# SELECT match_number
FootballChampionshipDB(# FROM match_mast
FootballChampionshipDB(# WHERE audience=(
FootballChampionshipDB(# SELECT max(audience)
FootballChampionshipDB(# FROM match_mast)
FootballChampionshipDB(# ORDER BY audience DESC));
country_name
-----
France
Iceland
(2 rows)

```

```

FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT player_name, jersey_number
FootballChampionshipDB=# FROM player_mast
FootballChampionshipDB=# WHERE player_id=(
FootballChampionshipDB(# SELECT player_id
FootballChampionshipDB(# FROM goal_details
FootballChampionshipDB(# WHERE goal_type='P' AND match_number=(
FootballChampionshipDB(# SELECT MIN(match_number)
FootballChampionshipDB(# FROM goal_details
FootballChampionshipDB(# WHERE goal_type='P' AND play_stage='G'));
player_name | jersey_number
-----+-----
Bogdan Stancu | 19
(1 row)

```

```

FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT MAX(stop2_second)
FootballChampionshipDB=# FROM match_mast
FootballChampionshipDB=# WHERE stop2_second<>(
FootballChampionshipDB(# SELECT MAX(stop2_second)
FootballChampionshipDB(# FROM match_mast);
max
-----
374
(1 row)

```

```
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT country_name
FootballChampionshipDB=# FROM football_country
FootballChampionshipDB=# WHERE country_id IN(
FootballChampionshipDB=# SELECT fk_team_id
FootballChampionshipDB=# FROM match_details
FootballChampionshipDB=# WHERE match_number IN(
FootballChampionshipDB=# SELECT match_number
FootballChampionshipDB=# FROM match_mast
FootballChampionshipDB=# WHERE stop2_second=(
FootballChampionshipDB=# SELECT max(stop2_second)
FootballChampionshipDB=# FROM match_mast
FootballChampionshipDB=# WHERE stop2_second<>(
FootballChampionshipDB=# SELECT max(stop2_second)
FootballChampionshipDB=# FROM match_mast)))));
 country_name
-----
Albania
France
(2 rows)
```

```
FootballChampionshipDB=# -- Запити з JOIN для вибірки даних
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT match_details.match_number, football_country.country_name
FootballChampionshipDB=# FROM match_mast
FootballChampionshipDB=# JOIN match_details
FootballChampionshipDB=# ON match_mast.match_number=match_details.match_number
FootballChampionshipDB=# JOIN football_country
FootballChampionshipDB=# ON match_details.fk_team_id=football_country.country_id
FootballChampionshipDB=# WHERE stop1_second=0;
 match_number | country_name
-----+-----
            4 | England
            4 | Russia
(2 rows)
```

```
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT country_name,team_group,match_played,
FootballChampionshipDB=# won,lost,goal_for,goal_against
FootballChampionshipDB=# FROM football_team
FootballChampionshipDB=# JOIN football_country
FootballChampionshipDB=# ON football_team.fk_team_id=football_country.country_id
FootballChampionshipDB=# WHERE goal_against=(
FootballChampionshipDB=# SELECT MAX(goal_against)
FootballChampionshipDB=# FROM football_team);
 country_name | team_group | match_played | won | lost | goal_for | goal_against
-----+-----+-----+-----+-----+-----+-----
Russia       | B          | 3            | 0   | 2    | 2         | 6
(1 row)
```

```
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT match_details.match_number, football_country.country_name,
FootballChampionshipDB=# match_mast.stop2_second as "Stoppage Time(sec.)"
FootballChampionshipDB=# FROM match_mast
FootballChampionshipDB=# JOIN match_details
FootballChampionshipDB=# ON match_mast.match_number=match_details.match_number
FootballChampionshipDB=# JOIN football_country
FootballChampionshipDB=# ON match_details.fk_team_id=football_country.country_id
FootballChampionshipDB=# WHERE stop2_second IN (
FootballChampionshipDB=# SELECT MAX(stop2_second)
FootballChampionshipDB=# FROM match_mast);
 match_number | country_name | Stoppage Time(sec.)
-----+-----+-----
          17 | Ukraine     |          411
          17 | Northern Ireland |          411
(2 rows)
```

```
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT match_number,country_name
FootballChampionshipDB=# FROM match_details
FootballChampionshipDB=# JOIN football_country ON football_country.country_id=match_details.fk_team_id
FootballChampionshipDB=# WHERE win_lose='D' AND goal_score=0 AND play_stage='G'
FootballChampionshipDB=# ORDER BY match_number;
 match_number | country_name
-----+-----
          18 | Germany
          18 | Poland
          24 | Austria
          24 | Portugal
          26 | Switzerland
          26 | France
          28 | England
          28 | Slovakia
(8 rows)
```

```
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT a.match_number, c.country_name, a.stop2_second
FootballChampionshipDB=# FROM match_mast a
FootballChampionshipDB=# JOIN match_details b ON a.match_number=b.match_number
FootballChampionshipDB=# JOIN football_country c ON b.fk_team_id=c.country_id
FootballChampionshipDB=# WHERE (2-1) = (
FootballChampionshipDB=# SELECT COUNT(DISTINCT(b.stop2_second))
FootballChampionshipDB=# FROM match_mast b
FootballChampionshipDB=# WHERE b.stop2_second > a.stop2_second);
 match_number | country_name | stop2_second
-----+-----+-----
          15 | France     |          374
          15 | Albania    |          374
(2 rows)
```



```

FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT b.country_name,c.player_name,COUNT(a.fk_player_goal_keeper) count_gk
FootballChampionshipDB=# FROM match_details a
FootballChampionshipDB=# JOIN football_country b ON a.fk_team_id=b.country_id
FootballChampionshipDB=# JOIN player_mast c ON a.fk_player_goal_keeper=c.player_id
FootballChampionshipDB=# GROUP BY b.country_name,c.player_name
FootballChampionshipDB=# ORDER BY country_name,player_name,count_gk DESC;

```

country_name	player_name	count_gk
Albania	Etrit Berisha	3
Austria	Robert Almer	3
Belgium	Thibaut Courtois	5
Croatia	Danijel SubaŠić	4
Czech Republic	Petr Čech	3
England	Joe Hart	4
France	Hugo Lloris	7
Germany	Manuel Neuer	6
Hungary	Gabor Kiraly	4
Iceland	Hannes Halldorsson	5
Italy	Gianluigi Buffon	4
Italy	Salvatore Sirigu	1
Northern Ireland	Michael McGovern	4
Poland	Lukasz Fabianski	4
Poland	Wojciech Szczesny	1
Portugal	Rui Patrício	7
Republic of Ireland	Darren Randolph	4
Romania	Ciprian Tatarusanu	3
Russia	Igor Akinfeev	3
Slovakia	MatusKozacik	4
Spain	David de Gea	4
Sweden	Andreas Isaksson	3
Switzerland	Yann Sommer	4
Turkey	Volkan Babacan	3
Ukraine	Andriy Pyatov	3
Wales	Danny Ward	1
Wales	Wayne Hennessey	5

(27 rows)

```

FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT venue_name, count(venue_name)
FootballChampionshipDB=# FROM goal_details
FootballChampionshipDB=# JOIN football_country
FootballChampionshipDB=# ON goal_details.fk_team_id=football_country.country_id
FootballChampionshipDB=# JOIN match_mast ON goal_details.match_number=match_mast.match_number
FootballChampionshipDB=# JOIN football_venue ON match_mast.venue_id=football_venue.venue_id
FootballChampionshipDB=# GROUP BY venue_name
FootballChampionshipDB=# HAVING COUNT (venue_name)=(
FootballChampionshipDB=# SELECT MAX(mycount)
FootballChampionshipDB=# FROM (
FootballChampionshipDB=# SELECT venue_name, COUNT(venue_name) mycount
FootballChampionshipDB=# FROM goal_details
FootballChampionshipDB=# JOIN football_country
FootballChampionshipDB=# ON goal_details.fk_team_id=football_country.country_id
FootballChampionshipDB=# JOIN match_mast ON goal_details.match_number=match_mast.match_number
FootballChampionshipDB=# JOIN football_venue ON match_mast.venue_id=football_venue.venue_id
FootballChampionshipDB=# GROUP BY venue_name) gd);

```

venue_name	count
Stade de France	18

(1 row)

```
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT a.country_name,b.player_name,b.jersey_number,b.age
FootballChampionshipDB=# FROM football_country a
FootballChampionshipDB=# JOIN player_mast b
FootballChampionshipDB=# ON a.country_id=b.fk_team_id
FootballChampionshipDB=# WHERE b.age IN (
FootballChampionshipDB=# SELECT MAX(age)
FootballChampionshipDB=# FROM player_mast);
```

country_name	player_name	jersey_number	age
Hungary	Gabor Kiraly	1	40
Republic of Ireland	Shay Given	16	40

(2 rows)

```
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT match_number,country_name
FootballChampionshipDB=# FROM match_details a
FootballChampionshipDB=# JOIN football_country b
FootballChampionshipDB=# ON a.fk_team_id=b.country_id
FootballChampionshipDB=# WHERE goal_score=3 AND win_lose='D';
```

match_number	country_name
34	Hungary
34	Portugal

(2 rows)

```
FootballChampionshipDB=# --
FootballChampionshipDB=# SELECT a.country_name as Team , b.team_group,b.match_played,
FootballChampionshipDB=# b.goal_against, b.group_position
FootballChampionshipDB=# FROM football_country a
FootballChampionshipDB=# JOIN football_team b
FootballChampionshipDB=# ON a.country_id=b.fk_team_id
FootballChampionshipDB=# WHERE goal_against=4 AND group_position=4
FootballChampionshipDB=# ORDER BY team_group;
```

team	team_group	match_played	goal_against	group_position
Romania	A	3	4	4
Austria	F	3	4	4

(2 rows)

ДОДАТОК Б

Процедура:


```

FootballChampionshipDB=# -- Створення процедури
FootballChampionshipDB=# CREATE OR REPLACE PROCEDURE create_temp_table_football_country()
FootballChampionshipDB=# AS
FootballChampionshipDB=# $$
FootballChampionshipDB$$ BEGIN
FootballChampionshipDB$$     CREATE TEMP TABLE IF NOT EXISTS temp_table_football_country AS
FootballChampionshipDB$$     SELECT concat(FC.country_abbreviation, ' ', FC.country_name)
FootballChampionshipDB$$     FROM football_country AS FC;
FootballChampionshipDB$$ END;
FootballChampionshipDB$$ $$ LANGUAGE plpgsql;
CREATE PROCEDURE
FootballChampionshipDB=#
FootballChampionshipDB=# CALL create_temp_table_football_country();
CALL
FootballChampionshipDB=# SELECT *
FootballChampionshipDB=# FROM temp_table_football_country;
      concat
-----
ALB Albania
AUT Austria
BEL Belgium
CRO Croatia
CZE Czech Republic
ENG England
FRA France
GER Germany
HUN Hungary
ISL Iceland
ITA Italy
NIR Northern Ireland
POL Poland
POR Portugal
IRL Republic of Ireland
ROU Romania
RUS Russia
SVK Slovakia
ESP Spain
SWE Sweden
SUI Switzerland
TUR Turkey
UKR Ukraine
WAL Wales
SLO Slovenia
NED Netherlands
SRB Serbia
SCO Scotland
NOR Norway
(29 rows)

```

```

FootballChampionshipDB=# DROP TABLE IF EXISTS temp_table_football_country;
DROP TABLE

```

Представлення:

```

FootballChampionshipDB=# -- Створення представлення
FootballChampionshipDB=# --
FootballChampionshipDB=# CREATE VIEW "Number of matches played by Germany" AS
FootballChampionshipDB=# SELECT match_number,
FootballChampionshipDB=#         country_name
FootballChampionshipDB=# FROM penalty_shootout a
FootballChampionshipDB=# JOIN football_country c ON a.fk_team_id=c.country_id
FootballChampionshipDB=# WHERE match_number=
FootballChampionshipDB=#         (SELECT match_number
FootballChampionshipDB=#         FROM penalty_shootout
FootballChampionshipDB=#         WHERE pk_kick_id=26)
FootballChampionshipDB=# AND country_name<>
FootballChampionshipDB=#         (SELECT country_name
FootballChampionshipDB=#         FROM football_country
FootballChampionshipDB=#         WHERE country_id=
FootballChampionshipDB=#         (SELECT fk_team_id
FootballChampionshipDB=#         FROM penalty_shootout
FootballChampionshipDB=#         WHERE pk_kick_id=26))
FootballChampionshipDB=# GROUP BY match_number,
FootballChampionshipDB=#         country_name;
CREATE VIEW
FootballChampionshipDB=# -- Отримання даних з представлення
FootballChampionshipDB=# SELECT * FROM "Number of matches played by Germany";
 match_number | country_name
-----+-----
          47 | Germany
(1 row)

```

Функція:

```

FootballChampionshipDB=# -- Створення функції
FootballChampionshipDB=# CREATE OR REPLACE FUNCTION check_if_table_exists(schema_name VARCHAR, _table_name VARCHAR)
FootballChampionshipDB=# RETURNS BOOLEAN
FootballChampionshipDB=# AS
FootballChampionshipDB=# $$
FootballChampionshipDB$$ SELECT EXISTS(
FootballChampionshipDB$$ SELECT
FootballChampionshipDB$$ FROM information_schema.tables
FootballChampionshipDB$$ WHERE table_schema = schema_name
FootballChampionshipDB$$ AND table_name = _table_name
FootballChampionshipDB$$ );
FootballChampionshipDB$$ $$ LANGUAGE sql;
CREATE FUNCTION
FootballChampionshipDB=# -- Перевірка роботи функції
FootballChampionshipDB=# SELECT check_if_table_exists('public', 'football_country');
 check_if_table_exists
-----
t
(1 row)

```

ДОДАТОК В

-- Запити для вибірки даних

--

SELECT COUNT(*)

FROM football_venue;

--

SELECT COUNT(DISTINCT fk_team_id)

FROM player_mast;

--

SELECT COUNT(*)

FROM goal_details;

--

SELECT COUNT(*)

FROM match_mast

WHERE results='WIN';

--

SELECT COUNT(*)

FROM match_mast

WHERE results='DRAW';

--

SELECT play_date "Beginning Date"

FROM match_mast

WHERE match_number=1;

--

SELECT COUNT(*)

FROM goal_details

WHERE goal_type='O';

--

```
SELECT COUNT(*)
```

```
FROM match_mast
```

```
WHERE results='WIN'
```

```
AND play_stage='G';
```

```
--
```

```
SELECT COUNT(DISTINCT match_number)
```

```
FROM penalty_shootout;
```

```
--
```

```
SELECT COUNT(*)
```

```
FROM match_mast
```

```
WHERE decided_by='P' AND play_stage='R';
```

```
--
```

```
SELECT match_number,COUNT(*)
```

```
FROM goal_details
```

```
GROUP BY match_number
```

```
ORDER BY match_number;
```

```
--
```

```
SELECT match_number, play_date, goal_score
```

```
FROM match_mast
```

```
WHERE stop1_second=0;
```

```
--
```

```
SELECT COUNT(DISTINCT(match_number))
```

```
FROM match_details
```

```

WHERE win_lose='D'

AND goal_score=0 AND play_stage='G';

--

SELECT COUNT(goal_score)

FROM match_details

WHERE win_lose='W'

AND decided_by<>'P'

AND goal_score=1;

--

SELECT COUNT(*) as "Player Replaced"

FROM player_in_out

WHERE in_out='I';

--

SELECT COUNT(*) as "Player Replaced"

FROM player_in_out

WHERE in_out='I'

AND play_schedule='NT';

--

SELECT COUNT(*) as "Player Replaced"

FROM player_in_out

WHERE in_out='I'

AND play_schedule='ST';

--

```

```
SELECT COUNT(*) as "Player Replaced"
```

```
FROM player_in_out
```

```
WHERE in_out='I'
```

```
AND play_schedule='NT'
```

```
AND play_half=1;
```

```
--
```

```
SELECT COUNT(DISTINCT match_number)
```

```
FROM match_details
```

```
WHERE win_lose='D'
```

```
AND goal_score=0;
```

```
--
```

```
SELECT COUNT(*)
```

```
FROM player_in_out
```

```
WHERE play_schedule='ET'
```

```
AND in_out='I';
```

```
--
```

```
SELECT play_half,play_schedule,COUNT(*)
```

```
FROM player_in_out
```

```
WHERE in_out='I'
```

```
GROUP BY play_half,play_schedule
```

```
ORDER BY play_half,play_schedule,count(*) DESC;
```

```
--
```

```
SELECT COUNT(*) AS "Number of Penalty Kicks"
```

```
FROM penalty_shootout;
```

```
--
```

```
SELECT COUNT(*) AS "Goal Scored by Penalty Kicks"
```

```
FROM penalty_shootout
```

```
WHERE score_goal='Y';
```

```
--
```

```
SELECT COUNT(*) AS "Goal missed or saved by Penalty Kicks"
```

```
FROM penalty_shootout
```

```
WHERE score_goal='N';
```

```
--
```

```
SELECT c.match_number,a.country_name AS "Team",
```

```
b.player_name, b.jersey_number, c.score_goal ,c.kick_number
```

```
FROM football_country a, penalty_shootout c, player_mast b
```

```
WHERE c.fk_team_id=a.country_id
```

```
AND c.player_id=b.player_id;
```

```
--
```

```
SELECT a.country_name, COUNT(b.*) as "Number of Shots"
```

```
FROM football_country a, penalty_shootout b
```

```
WHERE b.fk_team_id=a.country_id
```

```
GROUP BY a.country_name;
```

```
--
```

```
SELECT play_half,play_schedule,COUNT(*)
```

```
FROM player_booked
```

```
WHERE play_schedule='NT'
```

```
GROUP BY play_half,play_schedule;
```

```
--
```

```
SELECT COUNT(*)
```

```
FROM player_booked
```

```
WHERE play_schedule='ST';
```

```
--
```

```
SELECT COUNT(*)
```

```
FROM player_booked
```

```
WHERE play_schedule='ET';
```

```
-- Запити з підзапитами для вибірки даних
```

```
--
```

```
SELECT match_number,country_name
```

```
FROM match_details a, football_country b
```

```
WHERE a.fk_team_id=b.country_id
```

```
AND a.match_number=1;
```

```
--
```

```
SELECT country_name as Team
```

```
FROM football_country
```

```
WHERE country_id in (
```

```
SELECT fk_team_id
```

```
FROM match_details
```

```
WHERE play_stage='F' and win_lose='W');
```


--

```
SELECT match_number, play_stage, goal_score, audience
FROM match_mast
WHERE audience=(
SELECT max(attendance)
FROM match_mast);
```

--

```
SELECT match_number
FROM match_details
WHERE fk_team_id=(
SELECT country_id
FROM football_country
WHERE country_name='Germany')
OR fk_team_id=(
SELECT country_id
FROM football_country
WHERE country_name='Poland')
GROUP BY match_number
HAVING COUNT(DISTINCT fk_team_id)=2;
```

--

```
SELECT match_number, play_stage, play_date, results, goal_score
FROM match_mast
WHERE match_number
```

```

IN(

SELECT match_number

FROM match_details

WHERE fk_team_id=(

    SELECT country_id

    FROM football_country

    WHERE country_name='Portugal') OR fk_team_id=(

        SELECT country_id

        FROM football_country

        WHERE country_name='Hungary')

GROUP BY match_number

HAVING COUNT(DISTINCT fk_team_id)=2);

--

SELECT match_number,country_name, player_name, COUNT(match_number)

FROM goal_details a, football_country b, player_mast c

WHERE a.fk_team_id=b.country_id

AND a.player_id=c.player_id

GROUP BY match_number,country_name,player_name

ORDER BY match_number;

--

SELECT country_name

FROM football_country

WHERE country_id IN(

```

```

SELECT fk_team_id

FROM goal_details

WHERE match_number=(

    SELECT match_number

    FROM match_mast

    WHERE audience=(

        SELECT max(audience)

        FROM match_mast)

ORDER BY audience DESC));

--

SELECT player_name

FROM player_mast

WHERE player_id=(

    SELECT player_id

    FROM goal_details

    where match_number=(SELECT match_number FROM match_details

WHERE fk_team_id=(

SELECT country_id FROM football_country

WHERE country_name='Hungary')

or fk_team_id=(SELECT country_id FROM football_country

WHERE country_name='Portugal')

GROUP BY match_number HAVING COUNT(DISTINCT fk_team_id)=2)

AND fk_team_id=(SELECT fk_team_id

```

```

FROM football_country a, football_team b

WHERE a.country_id=b.fk_team_id AND country_name='Portugal')

    AND goal_time=(

        SELECT max(goal_time)

        FROM goal_details

            WHERE match_number=(SELECT match_number FROM match_details

WHERE fk_team_id=(

SELECT country_id FROM football_country

WHERE country_name='Hungary')

or fk_team_id=(SELECT country_id FROM football_country

WHERE country_name='Portugal')

GROUP BY match_number HAVING COUNT(DISTINCT fk_team_id)=2) AND

fk_team_id=(

SELECT fk_team_id

FROM football_country a, football_team b

WHERE a.country_id=b.fk_team_id AND country_name='Portugal'))

    );

--

SELECT MAX(stop2_second)

FROM match_mast

WHERE stop2_second<>(

SELECT MAX(stop2_second)

FROM match_mast);

```

--

```
SELECT country_name
FROM football_country
WHERE country_id IN(
SELECT fk_team_id
FROM match_details
WHERE match_number IN(
SELECT match_number
FROM match_mast
WHERE stop2_second=(
SELECT max(stop2_second)
FROM match_mast
WHERE stop2_second<>(
SELECT max(stop2_second)
FROM match_mast))));
```

--

```
SELECT match_number,play_date,stop2_second
FROM match_mast a
WHERE (2-1) = (
SELECT COUNT(DISTINCT(b.stop2_second))
FROM match_mast b
WHERE b.stop2_second > a.stop2_second);
```

--

```
SELECT country_name
FROM football_country
WHERE country_id=(
SELECT fk_team_id
FROM match_details
WHERE play_stage='F'
AND fk_team_id<>(
SELECT country_id
FROM football_country
WHERE country_name='Portugal'));
```

--

```
SELECT playing_club, COUNT(playing_club)
FROM player_mast GROUP BY playing_club
HAVING COUNT (playing_club)=(
SELECT MAX(mycount)
FROM (
SELECT playing_club, COUNT(playing_club) mycount
FROM player_mast
GROUP BY playing_club) pm);
```

--

```
SELECT player_name,jersey_number
FROM player_mast
WHERE player_id=(
```

```

SELECT player_id

FROM goal_details

WHERE goal_type='P' AND match_number=(

SELECT MIN(match_number)

FROM goal_details

WHERE goal_type='P' AND play_stage='G'));

--

SELECT a.player_name,a.jersey_number,d.country_name

FROM player_mast a, goal_details b, goal_details c, football_country d

WHERE a.player_id=b.player_id AND a.fk_team_id=d.country_id AND

a.player_id=(

SELECT b.player_id

FROM goal_details b

WHERE b.goal_type='P' AND b.match_number=(

SELECT MIN(c.match_number)

FROM goal_details c

WHERE c.goal_type='P' AND c.play_stage='G'))

GROUP BY player_name,jersey_number,country_name;

--

SELECT player_name

FROM player_mast

WHERE player_id=(

SELECT fk_player_goal_keeper

```

```
FROM penalty_goal_keeper

WHERE match_number=(

SELECT match_number

FROM penalty_goal_keeper

WHERE fk_team_id=(

SELECT country_id

FROM football_country

WHERE country_name='Italy')

OR fk_team_id=(

SELECT country_id

FROM football_country

WHERE country_name='Germany')

GROUP BY match_number

HAVING COUNT(DISTINCT fk_team_id)=2

)

AND fk_team_id=(

SELECT country_id

FROM football_country

WHERE country_name='Italy')

);

--

SELECT COUNT(player_id)

FROM goal_details
```



```

WHERE fk_team_id=

(

SELECT country_id

FROM football_country

WHERE country_name='Germany'

);

--

SELECT player_name, jersey_number, playing_club

FROM player_mast

WHERE fk_position_to_play='GK' AND fk_team_id=(

SELECT country_id

FROM football_country

WHERE country_name='England');

--

SELECT player_name, jersey_number, fk_position_to_play, age

FROM player_mast

WHERE playing_club='Liverpool'

AND fk_team_id=(

SELECT country_id

FROM football_country

WHERE country_name='England'

);

--

```

```
SELECT a.player_name, b.goal_time, b.goal_half, c.country_name
FROM player_mast a, goal_details b, football_country c
WHERE a.player_id=b.player_id
AND b.fk_team_id=c.country_id
AND match_number=50
AND goal_time= (
SELECT MAX(goal_time)
FROM goal_details
WHERE match_number=50);
```

--

```
SELECT player_name
FROM player_mast
WHERE player_id IN (
SELECT fk_player_captain
FROM match_captain
WHERE fk_team_id=(
SELECT fk_team_id
FROM match_details
WHERE play_stage='F' AND win_lose='W'));
```

--

```
SELECT COUNT(*)+11 as "Number of players shared fields"
FROM player_in_out
WHERE match_number=(
```

```

SELECT match_number

FROM match_mast

WHERE play_stage='F')

AND in_out='I'

AND fk_team_id=(

SELECT country_id

FROM football_country

WHERE country_name='France');

--

SELECT player_name, jersey_number

FROM player_mast

WHERE player_id IN(

SELECT fk_player_goal_keeper

FROM match_details

WHERE play_stage='G' and fk_team_id IN(

SELECT country_id

FROM football_country

WHERE country_name='Germany'));

--

SELECT country_name

FROM football_country

WHERE country_id=(

SELECT fk_team_id

```

```
FROM match_details

WHERE play_stage='F' AND win_lose='L'

AND fk_team_id<>(

SELECT country_id

FROM football_country

WHERE country_name='Portugal'));
```

--

```
SELECT a.country_name, COUNT(b.*) shots

FROM football_country a, penalty_shootout b

WHERE b.fk_team_id=a.country_id

GROUP BY a.country_name

having COUNT(b.*)=(

SELECT MAX(shots) FROM (

SELECT COUNT(*) shots

FROM penalty_shootout

GROUP BY fk_team_id) inner_result);
```

--

```
SELECT c.country_name,a.player_name, a.jersey_number,COUNT(b.*) shots

FROM player_mast a, penalty_shootout b, football_country c

WHERE b.player_id=a.player_id

AND b.fk_team_id=c.country_id

GROUP BY c.country_name,a.player_name,a.jersey_number

HAVING COUNT(b.*)=(
```

```
SELECT MAX(shots) FROM (
```

```
SELECT COUNT(*) shots
```

```
FROM penalty_shootout
```

```
GROUP BY player_id) inner_result);
```

```
--
```

```
SELECT match_number,
```

```
    COUNT(*) shots
```

```
FROM penalty_shootout
```

```
GROUP BY match_number
```

```
HAVING COUNT(*)=
```

```
(SELECT MAX(shots)
```

```
FROM
```

```
(SELECT COUNT(*) shots
```

```
FROM penalty_shootout
```

```
GROUP BY match_number) inner_result);
```

```
--
```

```
SELECT b.match_number,
```

```
    a.country_name
```

```
FROM penalty_shootout b,
```

```
    football_country a
```

```
WHERE b.fk_team_id=a.country_id
```

```
AND match_number=
```

```
(SELECT match_number
```

```

FROM penalty_shootout

GROUP BY match_number

HAVING COUNT(*)=

(SELECT MAX(shots)

FROM

(SELECT COUNT(*) shots

FROM penalty_shootout

GROUP BY match_number) inner_result))

GROUP BY b.match_number,

a.country_name;

--

SELECT a.match_number,

b.player_name,

a.kick_number

FROM penalty_shootout a,

player_mast b

WHERE a.player_id=b.player_id

AND kick_number=7

AND match_number=

(SELECT match_number

FROM penalty_shootout

WHERE fk_team_id =

(SELECT country_id

```

```

        FROM football_country

        WHERE country_name='Portugal' )

    GROUP BY match_number)

GROUP BY match_number,

        player_name,

        pk_kick_id;

--

SELECT match_number,

        play_stage

FROM match_mast

WHERE match_number=

    (SELECT match_number

        FROM penalty_shootout

        WHERE pk_kick_id=23);

--

SELECT venue_name

FROM football_venue

WHERE venue_id IN

    (SELECT venue_id

        FROM match_mast

        WHERE match_number IN

            (SELECT DISTINCT match_number

                FROM penalty_shootout));

```

--

```
SELECT play_date
FROM match_mast
WHERE match_number IN
    (SELECT DISTINCT match_number
     FROM penalty_shootout);
```

--

```
SELECT min(goal_time) AS "Most quickest goal after 5 minutes"
FROM
    (SELECT match_number,
           goal_time
     FROM goal_details
    WHERE goal_time>5
    GROUP BY match_number,
           goal_time
    ORDER BY goal_time) hh;
```

-- Запити з JOIN для вибірки даних

--

```
SELECT venue_name, city
FROM football_venue a
JOIN football_city b ON a.pk_city_id=b.pk_city_id
JOIN match_mast d ON d.venue_id=a.venue_id
AND d.play_stage='F';
```


--

SELECT match_number,country_name,goal_score

FROM match_details a

JOIN football_country b

ON a.fk_team_id=b.country_id

WHERE decided_by='N'

ORDER BY match_number;

--

SELECT player_name,count(*),country_name

FROM goal_details a

JOIN player_mast b ON a.player_id=b.player_id

JOIN football_country c ON a.fk_team_id=c.country_id

WHERE goal_schedule = 'NT'

GROUP BY player_name,country_name

ORDER BY count(*) DESC;

--

SELECT player_name,country_name,count(player_name)

FROM goal_details gd

JOIN player_mast pm ON gd.player_id =pm.player_id

JOIN football_country sc ON pm.fk_team_id = sc.country_id

GROUP BY country_name,player_name HAVING COUNT(player_name) >=

ALL

(SELECT COUNT(player_name)

```

FROM goal_details gd

JOIN player_mast pm ON gd.player_id =pm.player_id

JOIN football_country sc ON pm.fk_team_id = sc.country_id

GROUP BY country_name,player_name);

--

SELECT player_name,jersey_number,country_name

FROM goal_details a

JOIN player_mast b ON a.player_id=b.player_id

JOIN football_country c ON a.fk_team_id=c.country_id

WHERE play_stage='F';

--

SELECT country_name

FROM football_country a

JOIN football_city b ON a.country_id=b.country_id

JOIN football_venue c ON b.pk_city_id=c.pk_city_id

GROUP BY country_name;

--

SELECT a.player_name,a.jersey_number,b.country_name,c.goal_time,

c.play_stage,c.goal_schedule, c.goal_half

FROM player_mast a

JOIN football_country b

ON a.fk_team_id=b.country_id

JOIN goal_details c

```

ON c.player_id=a.player_id

WHERE pk_goal_id=1;

--

SELECT b.referee_name, c.country_name

FROM match_mast a

NATURAL JOIN referee_mast b

NATURAL JOIN football_country c

WHERE match_number=1;

--

SELECT b.referee_name, c.country_name

FROM match_mast a

NATURAL JOIN referee_mast b

NATURAL JOIN football_country c

WHERE play_stage='F';

--

SELECT assistant_referee_name, country_name

FROM assistant_referee_mast a

JOIN football_country b

ON a.country_id=b.country_id

JOIN match_details c

ON a.pk_assistant_referee_id=c.fk_assistant_referee

WHERE match_number=1;

--

```
SELECT assistant_referee_name, country_name
FROM assistant_referee_mast a
JOIN football_country b
ON a.country_id=b.country_id
JOIN match_details c
ON a.pk_assistant_referee_id=c.fk_assistant_referee
WHERE play_stage='F';
```

--

```
SELECT a.venue_name, b.city
FROM football_venue a
JOIN football_city b ON a.pk_city_id=b.pk_city_id
JOIN match_mast c ON a.venue_id=c.venue_id
WHERE match_number=1;
```

--

```
SELECT a.venue_name, b.city, a.aud_capacity, c.audience
FROM football_venue a
JOIN football_city b ON a.pk_city_id=b.pk_city_id
JOIN match_mast c ON a.venue_id=c.venue_id
WHERE play_stage='F';
```

--

```
SELECT a.venue_name, b.city, count(c.match_number)
FROM football_venue a
JOIN football_city b ON a.pk_city_id=b.pk_city_id
```

```

JOIN match_mast c ON a.venue_id=c.venue_id

GROUP BY venue_name,city

ORDER BY venue_name;

--

SELECT match_number, country_name, player_name,
booking_time as "sent_off_time", play_schedule, jersey_number
FROM player_booked a

JOIN player_mast b

ON a.player_id=b.player_id

JOIN football_country c

ON a.fk_team_id=c.country_id

AND a.sent_off='Y'

AND match_number=(

    SELECT MIN(match_number)

    from player_booked)

ORDER BY match_number,play_schedule,play_half,booking_time;

--

SELECT country_name as "Team" ,team_group, goal_for

FROM football_team

JOIN football_country

ON football_team.fk_team_id=football_country.country_id

AND goal_for=1;

--

```

```
SELECT country_name, COUNT(*)
```

```
FROM football_country
```

```
JOIN player_booked
```

```
ON football_country.country_id=player_booked.fk_team_id
```

```
GROUP BY country_name
```

```
ORDER BY COUNT(*) DESC;
```

```
--
```

```
SELECT venue_name, count(venue_name)
```

```
FROM goal_details
```

```
JOIN football_country
```

```
ON goal_details.fk_team_id=football_country.country_id
```

```
JOIN match_mast ON goal_details.match_number=match_mast.match_number
```

```
JOIN football_venue ON match_mast.venue_id=football_venue.venue_id
```

```
GROUP BY venue_name
```

```
ORDER BY COUNT(venue_name) DESC;
```

```
--
```

```
SELECT match_details.match_number, football_country.country_name
```

```
FROM match_mast
```

```
JOIN match_details
```

```
ON match_mast.match_number=match_details.match_number
```

```
JOIN football_country
```

```
ON match_details.fk_team_id=football_country.country_id
```

```
WHERE stop1_second=0;
```

--

```
SELECT country_name,team_group,match_played,
won,lost,goal_for,goal_against
FROM football_team
JOIN football_country
ON football_team.fk_team_id=football_country.country_id
WHERE goal_against=(
SELECT MAX(goal_against)
FROM football_team);
```

--

```
SELECT match_details.match_number, football_country.country_name,
match_mast.stop2_second as "Stoppage Time(sec.)"
FROM match_mast
JOIN match_details
ON match_mast.match_number=match_details.match_number
JOIN football_country
ON match_details.fk_team_id=football_country.country_id
WHERE stop2_second IN (
SELECT MAX(stop2_second)
FROM match_mast);
```

--

```
SELECT match_number,country_name
FROM match_details
```

```
JOIN football_country ON football_country.country_id=match_details.fk_team_id  
WHERE win_lose='D' AND goal_score=0 AND play_stage='G'  
ORDER BY match_number;
```

--

```
SELECT a.match_number, c.country_name, a.stop2_second  
FROM match_mast a  
JOIN match_details b ON a.match_number=b.match_number  
JOIN football_country c ON b.fk_team_id=c.country_id  
WHERE (2-1) = (  
SELECT COUNT(DISTINCT(b.stop2_second))  
FROM match_mast b  
WHERE b.stop2_second > a.stop2_second);
```

--

```
SELECT b.country_name,c.player_name,COUNT(a.fk_player_goal_keeper)  
count_gk  
FROM match_details a  
JOIN football_country b ON a.fk_team_id=b.country_id  
JOIN player_mast c ON a.fk_player_goal_keeper=c.player_id  
GROUP BY b.country_name,c.player_name  
ORDER BY country_name,player_name,count_gk DESC;
```

--

```
SELECT venue_name, count(venue_name)  
FROM goal_details
```



```

JOIN football_country
ON goal_details.fk_team_id=football_country.country_id
JOIN match_mast ON goal_details.match_number=match_mast.match_number
JOIN football_venue ON match_mast.venue_id=football_venue.venue_id
GROUP BY venue_name
HAVING COUNT (venue_name)=(
SELECT MAX(mycount)
FROM (
SELECT venue_name, COUNT(venue_name) mycount
FROM goal_details
JOIN football_country
ON goal_details.fk_team_id=football_country.country_id
JOIN match_mast ON goal_details.match_number=match_mast.match_number
JOIN football_venue ON match_mast.venue_id=football_venue.venue_id
GROUP BY venue_name) gd);
--
SELECT a.country_name,b.player_name,b.jersey_number,b.age
FROM football_country a
JOIN player_mast b
ON a.country_id=b.fk_team_id
WHERE b.age IN (
SELECT MAX(age)
FROM player_mast);

```

--

```
SELECT match_number,country_name  
  
FROM match_details a  
  
JOIN football_country b  
  
ON a.fk_team_id=b.country_id  
  
WHERE goal_score=3 AND win_lose='D';
```

--

```
SELECT a.country_name as Team , b.team_group,b.match_played,  
  
b.goal_against, b.group_position  
  
FROM football_country a  
  
JOIN football_team b  
  
ON a.country_id=b.fk_team_id  
  
WHERE goal_against=4 AND group_position=4  
  
ORDER BY team_group;
```

--

```
SELECT a.player_name, a.jersey_number, a.fk_position_to_play, a.age,  
b.country_name  
  
FROM player_mast a  
  
JOIN football_country b  
  
ON a.fk_team_id=b.country_id  
  
WHERE a.playing_club='Lyon'  
  
AND a.fk_team_id IN (  
  
SELECT b.country_id
```

FROM football_country b

WHERE b.country_id IN (

SELECT c.fk_team_id

FROM match_details c

WHERE c.play_stage='F'

));

--

SELECT country_name

FROM match_details a

JOIN football_country b

ON a.fk_team_id=b.country_id

WHERE play_stage='S';

--

SELECT country_name, player_name, jersey_number, fk_position_to_play

FROM match_captain a

JOIN football_country b ON a.fk_team_id=b.country_id

JOIN player_mast c ON a.fk_player_captain=c.player_id

WHERE match_number IN(48,49);

--

SELECT match_number, country_name, player_name, jersey_number,

fk_position_to_play

FROM match_captain a

JOIN football_country b ON a.fk_team_id=b.country_id

```

JOIN player_mast c ON a.fk_player_captain=c.player_id

ORDER BY match_number;

--

SELECT a.match_number,c.player_name as "Captain",
d.player_name as "Goal Keeper",e.country_name

FROM match_captain a

NATURAL JOIN match_details b

JOIN football_country e ON b.fk_team_id=e.country_id

JOIN player_mast c ON a.fk_player_captain=c.player_id

JOIN player_mast d ON b.fk_player_goal_keeper=d.player_id;

--

SELECT a.player_name, b.country_name

FROM player_mast a

JOIN match_mast c ON c.fk_player_of_match=a.player_id

AND c.play_stage='F'

JOIN football_country b

ON a.fk_team_id=b.country_id;

--

SELECT match_number,country_name,player_name,jersey_number,time_in_out

FROM player_in_out a

JOIN player_mast b ON a.player_id=b.player_id

JOIN football_country c ON b.fk_team_id=c.country_id

WHERE a.in_out='I'

```

```

AND a.play_schedule='NT'

AND a.play_half=1

ORDER BY match_number;

--

SELECT match_number,play_date,country_name,

player_name AS "Player of the Match",jersey_number

FROM match_mast a

JOIN player_mast b ON

a.fk_player_of_match=b.player_id

JOIN football_country c ON

b.fk_team_id=c.country_id;

--

SELECT match_number,

        country_name,

        player_name

FROM penalty_shootout a

JOIN player_mast b ON a.player_id=b.player_id

JOIN football_country c ON b.fk_team_id=c.country_id

WHERE pk_kick_id=26;

--

SELECT match_number,

        country_name

FROM penalty_shootout a

```

JOIN football_country c ON a.fk_team_id=c.country_id

WHERE match_number=

(SELECT match_number

FROM penalty_shootout

WHERE pk_kick_id=26)

AND country_name<>

(SELECT country_name

FROM football_country

WHERE country_id=

(SELECT fk_team_id

FROM penalty_shootout

WHERE pk_kick_id=26))

GROUP BY match_number,

country_name;

--

SELECT match_number,

country_name,

player_name,

jersey_number

FROM match_captain a

JOIN football_country b ON a.fk_team_id=b.country_id

JOIN player_mast c ON a.fk_player_captain=c.player_id

AND fk_position_to_play='GK'

```
ORDER BY match_number;
```

```
--
```

```
SELECT count(DISTINCT player_name)
```

```
FROM match_captain a
```

```
JOIN football_country b ON a.fk_team_id=b.country_id
```

```
JOIN player_mast c ON a.fk_player_captain=c.player_id
```

```
AND fk_position_to_play='GK';
```

```
--
```

```
SELECT a.country_name,c.player_name,COUNT(b.*) Booked
```

```
FROM football_country a
```

```
JOIN player_booked b ON a.country_id=b.fk_team_id
```

```
JOIN player_mast c ON b.player_id=c.player_id
```

```
GROUP BY a.country_name,c.player_name
```

```
ORDER BY a.country_name,Booked DESC;
```

```
--
```

```
SELECT c.player_name,COUNT(b.*) Booked
```

```
FROM football_country a
```

```
JOIN player_booked b ON a.country_id=b.fk_team_id
```

```
JOIN player_mast c ON b.player_id=c.player_id
```

```
GROUP BY c.player_name
```

```
having COUNT(b.*)<=
```

```
SELECT MAX(mm) FROM (
```

```
SELECT COUNT(*) mm
```

```

FROM player_booked

GROUP BY player_id) inner_result);

--

SELECT a.country_name,COUNT(b.*) Booked

FROM football_country a

JOIN player_booked b ON a.country_id=b.fk_team_id

GROUP BY a.country_name

ORDER BY Booked DESC;

--

SELECT match_number, Booked FROM (

SELECT match_number,COUNT(*) Booked

FROM player_booked

GROUP BY match_number) M1 where Booked=(

SELECT MAX(MX1)

FROM (SELECT match_number,COUNT(*) MX1

FROM player_booked

GROUP BY match_number) M2);

--

SELECT a.match_number,

       b.country_name,

       c.assistant_referee_name

FROM match_details a

```



```
JOIN assistant_referee_mast c ON
a.fk_assistant_referee=c.pk_assistant_referee_id

JOIN football_country b ON c.country_id=b.country_id

ORDER BY a.match_number;
```

--

```
SELECT country_name,

       count(DISTINCT match_number)
```

```
FROM match_details a
```

```
JOIN assistant_referee_mast c ON
a.fk_assistant_referee=c.pk_assistant_referee_id

JOIN football_country b ON c.country_id=b.country_id
```

```
GROUP BY country_name
```

```
ORDER BY count(*) DESC;
```

--

```
SELECT country_name,

       count(DISTINCT match_number)
```

```
FROM match_details a
```

```
JOIN assistant_referee_mast c ON
a.fk_assistant_referee=c.pk_assistant_referee_id

JOIN football_country b ON c.country_id=b.country_id
```

```
GROUP BY country_name
```

```
HAVING count(DISTINCT match_number)=

       (SELECT max(mm)
```

FROM

(SELECT count(DISTINCT match_number) mm

FROM match_details a

JOIN assistant_referee_mast c ON

a.fk_assistant_referee=c.pk_assistant_referee_id

JOIN football_country b ON c.country_id=b.country_id

GROUP BY country_name) hh);

--

SELECT a.match_number,

b.country_name,

c.referee_name

FROM match_mast a

JOIN referee_mast c ON a.referee_id=c.referee_id

JOIN football_country b ON c.country_id=b.country_id

ORDER BY a.match_number;

--

SELECT country_name,

count(match_number)

FROM match_mast a

JOIN referee_mast c ON a.referee_id=c.referee_id

JOIN football_country b ON c.country_id=b.country_id

GROUP BY country_name

ORDER BY count(match_number) DESC;

--

```
SELECT country_name,
       count(match_number)
FROM match_mast a
JOIN referee_mast c ON a.referee_id=c.referee_id
JOIN football_country b ON c.country_id=b.country_id
GROUP BY country_name
HAVING count(match_number)=
       (SELECT max(mm)
        FROM
        (SELECT count(match_number) mm
         FROM match_mast a
         JOIN referee_mast c ON a.referee_id=c.referee_id
         JOIN football_country b ON c.country_id=b.country_id
         GROUP BY country_name) hh);
```

--

```
SELECT c.referee_name,
       b.country_name,
       count(a.match_number)
FROM match_mast a
JOIN referee_mast c ON a.referee_id=c.referee_id
JOIN football_country b ON c.country_id=b.country_id
GROUP BY c.referee_name,
```

```

        b.country_name;

--

SELECT c.referee_name,

        b.country_name,

        count(a.match_number)

FROM match_mast a

JOIN referee_mast c ON a.referee_id=c.referee_id

JOIN football_country b ON c.country_id=b.country_id

GROUP BY c.referee_name,

        b.country_name

HAVING count(a.match_number) =

(SELECT max(mm)

FROM

        (SELECT count(a.match_number) mm

FROM match_mast a

JOIN referee_mast c ON a.referee_id=c.referee_id

JOIN football_country b ON c.country_id=b.country_id

GROUP BY c.referee_name,

        b.country_name) hh);

--

SELECT c.referee_name,

        b.country_name,

        d.venue_name,

```

```

        count(a.match_number)

FROM match_mast a

JOIN referee_mast c ON a.referee_id=c.referee_id

JOIN football_country b ON c.country_id=b.country_id

JOIN football_venue d ON a.venue_id=d.venue_id

GROUP BY c.referee_name,

        country_name,

        venue_name

ORDER BY referee_name;

--

SELECT c.referee_name,

        count(b.match_number)

FROM player_booked a

JOIN match_mast b ON a.match_number=b.match_number

JOIN referee_mast c ON b.referee_id=c.referee_id

GROUP BY referee_name

ORDER BY count(b.match_number) DESC;

--

SELECT c.referee_name,

        count(b.match_number)

FROM player_booked a

JOIN match_mast b ON a.match_number=b.match_number

JOIN referee_mast c ON b.referee_id=c.referee_id

```

```

GROUP BY referee_name

HAVING count(b.match_number)=

(SELECT max(mm)

FROM

(SELECT count(b.match_number) mm

FROM player_booked a

JOIN match_mast b ON a.match_number=b.match_number

JOIN referee_mast c ON b.referee_id=c.referee_id

GROUP BY referee_name) hh);

--

SELECT country_name,

       player_name,

       fk_position_to_play,

       age,

       playing_club

FROM player_mast a

JOIN football_country b ON a.fk_team_id=b.country_id

WHERE jersey_number=10

ORDER BY country_name;

--

SELECT player_name,

       jersey_number,

       country_name,

```

```
    age,

    playing_club

FROM goal_details a

JOIN player_mast b ON a.player_id=b.player_id

JOIN football_country c ON a.fk_team_id=c.country_id

WHERE fk_position_to_play='DF'

ORDER BY player_name;
```

--

```
SELECT player_name,

    jersey_number,

    country_name,

    age,

    fk_position_to_play,

    playing_club

FROM goal_details a

JOIN player_mast b ON a.player_id=b.player_id

JOIN football_country c ON a.fk_team_id=c.country_id

WHERE goal_type='O'

ORDER BY player_name;
```

--

```
SELECT match_number,

    play_stage,

    country_name,
```

```

        penalty_score

FROM match_details a

JOIN football_country b ON a.fk_team_id=b.country_id

WHERE decided_by='P'

ORDER BY match_number;

--

SELECT country_name,

        fk_position_to_play,

        count(*) AS "Number of goals"

FROM goal_details a

JOIN player_mast b ON a.player_id=b.player_id

JOIN football_country c ON a.fk_team_id=c.country_id

GROUP BY country_name,

        fk_position_to_play

ORDER BY country_name;

--

SELECT match_number,

        country_name,

        player_name,

        jersey_number,

        time_in_out

FROM player_in_out a

JOIN player_mast b ON a.player_id=b.player_id

```


JOIN football_country c ON a.fk_team_id=c.country_id

WHERE time_in_out=

(SELECT max(time_in_out)

FROM player_in_out)

AND in_out='T';