**Cycling Club Database**

**Patrick Dillon Ryan 17340382**

# Table of Contents

[Table of Contents 1](#_Toc25927936)

[Introduction 2](#_Toc25927937)

[Constraints 3](#_Toc25927938)

[Foreign Keys 3](#_Toc25927939)

[Views 3](#_Toc25927940)

[Triggers 3](#_Toc25927941)

[Normalisation 3](#_Toc25927942)

[Entity Relationship Diagram 4](#_Toc25927943)

[Relational Schema Diagram 5](#_Toc25927944)

[Functional Dependency 6](#_Toc25927945)

[Appendix 7](#_Toc25927946)

# Introduction

For this project I am going to model and design an SQL database on a cycling club. I’ve been a keen cyclist from a young age so I felt it was something I could model in a effective way. I have made 6 relational tables, they are : Members, Coaches, Races, Training, Equipment and Registration. Within each relation, each one has a primary key. For each of my relational tables I decided to have 5 attributes for each relation as I felt like it accurately displayed the relational table

Members contains the attributes Members\_ID, Members\_Name, Email, Speciality and Phone\_Number. The primary key is the members Email as it is unique to the member, no two members can have the same email.

Coach contains the attributes Coaches\_ID, Coaches\_Name, Email, Position and Phone\_Number. Once again the primary key is the Email as it is unique to each coach, no two coaches can have the same email.

Races contains the attributes Race\_ID, Race\_Name, Distance\_KM, Terrain and Race\_Organisers. The primary keep in this table is the Race\_ID as it is unique to each race.

Training contain the attributes Date, Location, Training\_Distance, Terrain, Coaches\_ID and id each training session has to have one coach on it and each coach has a coach ID. The primary key for this is the id as each training sessions has its own id unique to that training

Equipment contains the attributes Name, On\_Loan, Value, How\_Old\_Years and Equipment\_ID. The primary keep for this table is the Equipment\_ID as it is unique to each piece of Equipment.

Registration contains the attributes Member\_Name, Previous\_Member, Registration\_Fee, Members\_Age and Members\_ID and id. The primary key is the id as its unique to each registration.

# Constraints

For this I added two constraints they were an email checker and a phone number checker, these check to make sure that they are normal phone numbers or email address:

CONSTRAINT email\_checker CHECK (email LIKE '%\_\_\_\_\_\_@\_\_\_\_\_%');

CONSTRAINT phone\_Number\_checker CHECK (phone LIKE '08\_\_\_\_\_\_\_\_');

# Foreign Keys

I have added in four foreign keys they are:

ALTER TABLE registration ADD FOREIGN KEY (Member\_Name) REFERENCES Members(Member\_Name);

ALTER TABLE registration ADD FOREIGN KEY (Members\_ID) REFERENCES Members(Member\_ID);

ALTER TABLE training ADD FOREIGN KEY (Coaches\_ID) REFERENCES coach(Coaches\_ID);

ALTER TABLE races ADD FOREIGN KEY (Terrain) REFERENCES Members(Speciality);

# Views

I have also added two views that will show which equipment is out on loan and what members have paid their membership:

CREATE VIEW Equipment\_Loanded AS

SELECT Equipment\_ID,Name

FROM equipment

WHERE onLoan = 1;

CREATE VIEW Previous\_Member AS

SELECT Member\_Name

FROM registration

WHERE Previous\_Member = 1;

# Triggers

I have added one trigger that sets the date to null once the training has occurred

CREATE TRIGGER completedTraining

AFTER INSERT ON training

FOR EACH ROW UPDATE date

SET date = NULL;

# Normalisation

All of my tables are already fully normalized

# Entity Relationship Diagram

A picture containing text

Description automatically generated

# Relational Schema Diagram

**Members**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Members\_ID | Members\_Name | Email | Speciality | Phone\_Number |

**Coach**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Coaches\_ID | Coaches\_Name | Email | Position | Phone\_Number |

**Races**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Race\_ID | Race\_Name | Distance\_KM | Terrain | Race\_Organisers |

**Training**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | Location | Training\_Distance | Terrain | Coaches\_ID | id |

**Equipment**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | On\_Loan | Value | How\_Old\_Years | Equipment\_ID |

**Registration**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Member\_Name | Previous\_Member | Registration\_Fee | Members\_Age | Members\_ID | id |

**A screenshot of a cell phone

Description automatically generated**

# Functional Dependency

A close up of a piece of paper

Description automatically generated

# Appendix

CREATE TABLE IF NOT EXISTS Members (

Member\_ID int(8) NOT NULL,

Member\_Name varchar(30) NOT NULL,

Email varchar(50) NOT NULL,

Speciality varchar(50) NOT NULL,

Phone\_Number int(10) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=latin1;

INSERT INTO Members (Member\_ID, Member\_Name, Email, Speciality, Phone\_Number) VALUES

('7192857', 'Sean Paul', 'seanpaul@cycyling.com', 'Climbing', '0873456555'),

('7167445', 'John Cena', 'JohnCena@cycyling.com','Sprint', '0872574365'),

('7101938', 'Ray Misterio', 'RayMisterio@cycyling.com','TT', '0875457890'),

('7119385', 'Barry Seans', 'BarrySeans@cycyling.com','Sprint', '0873546644'),

('7101834', 'Conor Jupe', 'ConorJupe@cycyling.com','Climb', '0874788764'),

('7138647', 'Liam Manning', 'LiamManning@cycyling.com','Punch', '0875867594');

CREATE TABLE IF NOT EXISTS Coach (

Coaches\_ID int(6) NOT NULL,

Coaches\_Name varchar(30) NOT NULL,

Email varchar(50) NOT NULL,

Position varchar(50) NOT NULL,

Phone\_Number int(13) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=latin1;

INSERT INTO Coach (Coaches\_ID, Coaches\_Name, Email, Position, Phone\_Number) VALUES

('173423', 'John Smith', 'johnsmith@cycylingcoaching.com', 'Endurance Coach', '0877654321'),

('177233', 'Shane Wall', 'ShaneWall@cycylingcoaching.com','Sprint Coach', '0877123456'),

('172344', 'Caolan Foley', 'CaolanFoley@cycylingcoaching.com','Hill Coach', '0875363686'),

('178654', 'Stephen Roche', 'StephenRoche@cycylingcoaching.com','Sprint Coach', '0871236549'),

('179874', 'Sean Kinsella', 'SeanKinsella@cycylingcoaching.com','Endurance Coach', '0879574263'),

('171233', 'Patrick Fenning', 'PatrickFenning@cycylingcoaching.com','Hill Coach', '0871947556');

CREATE TABLE Races (

RaceID INT(6) NOT NULL,

RaceName varchar(30) NOT NULL,

DistanceKM int(50) NOT NULL,

Terrain varchar(50) NOT NULL,

RaceOrganisers varchar(30) NOT NULL

);

INSERT INTO Races (RaceID, RaceName, DistanceKM, Terrain, RaceOrganisers) VALUES

('87654', 'EastSideRR', '120', 'Climbing', 'EastSideCC'),

('34553', 'OverTheHill', '145', 'Sprint', 'KidareCC'),

('34654', 'FlatOut', '180', 'TT', 'LeinsterCC'),

('54543', 'Rás', '200', 'Sprint', 'NorthWestCC'),

('34565', 'Combe\_Connors', '130', 'Climb', 'DublinCC'),

('66544', 'SheepsLeg', '80', 'Punch', 'WestRoadCC');

CREATE TABLE IF NOT EXISTS Training (

id int NOT NULL AUTO\_INCREMENT,

Date date NOT NULL,

Location varchar(30) NOT NULL,

Training\_Distance int(50) NOT NULL,

Terrain varchar(50) NOT NULL,

Coaches\_ID int(6) NOT NULL,

PRIMARY KEY (id)

) ENGINE=InnoDB DEFAULT CHARSET=latin1;

INSERT INTO Training (Date, Location, Training\_Distance, Terrain, Coaches\_ID) VALUES

('2019-04-18', 'Kildare', '90', 'Hilly', '173423'),

('2019-04-27', 'Dublin', '130', 'Flat', '177233'),

('2019-05-01', 'Kildare', '110', 'Rolly', '172344'),

('2019-05-08', 'Dublin', '80', 'Mountainous', '178654'),

('2019-05-16', 'Dublin', '105', 'Hilly', '179874'),

('2019-05-27', 'Kildare', '140', 'Flat', '171233');

CREATE TABLE IF NOT EXISTS Equipment (

Name varchar(50) NOT NULL,

OnLoan boolean NOT NULL,

Value int(7) NOT NULL,

How\_Old\_Years int(2) NOT NULL,

Equipment\_ID int(6) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=latin1;

INSERT INTO Equipment (Name, onLoan, Value, How\_Old\_Years, Equipment\_ID) VALUES

('Race\_Wheels', '1', '800', '1', '432343'),

('Lightweight\_Wheels', '1', '500', '3', '433443'),

('Turbo\_Trainer', '0', '250', '0', '128593'),

('Skinsuit', '1', '420', '4', '448258'),

('Race\_Shoes', '1', '300', '2', '456534'),

('Jersey', '1', '50', '4', '468234'),

('Tyres', '1', '130', '2', '439902');

CREATE TABLE IF NOT EXISTS Registration (

id int NOT NULL AUTO\_INCREMENT,

Member\_Name varchar(50) NOT NULL,

Previous\_Member boolean NOT NULL,

Registration\_Fee int(7) NOT NULL,

Members\_Age int(4) NOT NULL,

Members\_ID int(7) NOT NULL,

PRIMARY KEY (id)

) ENGINE=InnoDB DEFAULT CHARSET=latin1;

INSERT INTO Registration (Member\_Name, Previous\_Member, Registration\_Fee, Members\_Age, Members\_ID) VALUES

('Sean\_Micheals', '1', '80', '22', '7192857'),

('AJ\_Tracey', '1', '120', '34', '7167445'),

('Chris\_Jericho', '0', '120', '28', '7101938'),

('Randy\_Orton', '1', '30', '14', '7119385'),

('David\_Finlay', '0', '120', '42', '7101834'),

('Jeff\_Hardy', '0', '80', '19', '7138647');

ALTER TABLE Coach

ADD primary key (Coaches\_ID);

ALTER TABLE Members

ADD primary key (Member\_ID);

ALTER TABLE Races

ADD primary key (RaceID);

ALTER TABLE Equipment

ADD primary key (Equipment\_ID);

ALTER TABLE registration ADD FOREIGN KEY (Member\_Name) REFERENCES Members(Member\_Name);

ALTER TABLE registration ADD FOREIGN KEY (Members\_ID) REFERENCES Members(Member\_ID);

ALTER TABLE training ADD FOREIGN KEY (Coaches\_ID) REFERENCES coach(Coaches\_ID);

ALTER TABLE races ADD FOREIGN KEY (Terrain) REFERENCES Members(Speciality);

CREATE VIEW Equipment\_Loanded AS

SELECT Equipment\_ID,Name

FROM equipment

WHERE onLoan = 1;

CREATE VIEW Previous\_Member AS

SELECT Member\_Name

FROM registration

WHERE Previous\_Member = 1;

CREATE TRIGGER completedTraining

AFTER INSERT ON training

FOR EACH ROW UPDATE date

SET date = NULL;

CONSTRAINT email\_checker CHECK (email LIKE '%\_\_\_\_\_\_@\_\_\_\_\_%');

CONSTRAINT phone\_Number\_checker CHECK (phone LIKE '08\_\_\_\_\_\_\_\_');