



Ministry of Transportation

DRIVING TEST APPLICATION

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Introduction

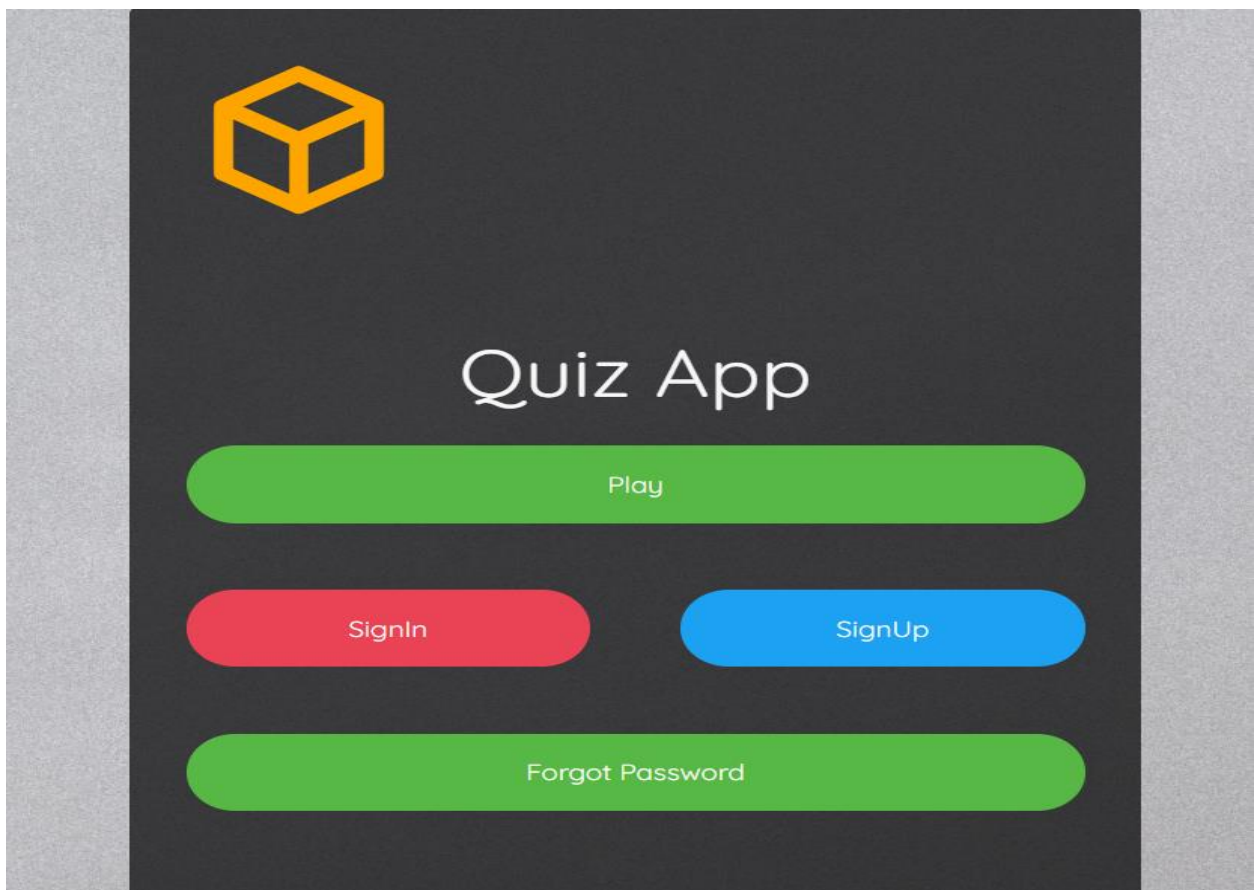
Ministry of Transportation (MTO) application is the application linked to the new candidates who want to get selected in the MTO department. Before being hired in the ministry, the drivers are asked to pass the quiz. The application consists of the main page which is related to the starting of the quiz with signing up or signing in for the quiz. This quiz is divided into two categories that are sign quiz and rule quiz. Each category quiz comprises 15 questions each with four options out of which only one is the correct option.

The quiz is built by installing Android Studio using API 23 synced with gradle 5.4.1 version with backend coding in Java. In the building process, there are few images used to make it look attractive with readable fonts and styles in questions and answer options. The application is further, connected to the database system where the candidate's information is stored after the candidate signs up. This helps the candidate to login anytime to start the quiz.

Process of Quiz

Home Page

The working of the app is such that it starts with the main page which shows the picture in the background with four options which are styled by using different colors and fonts.

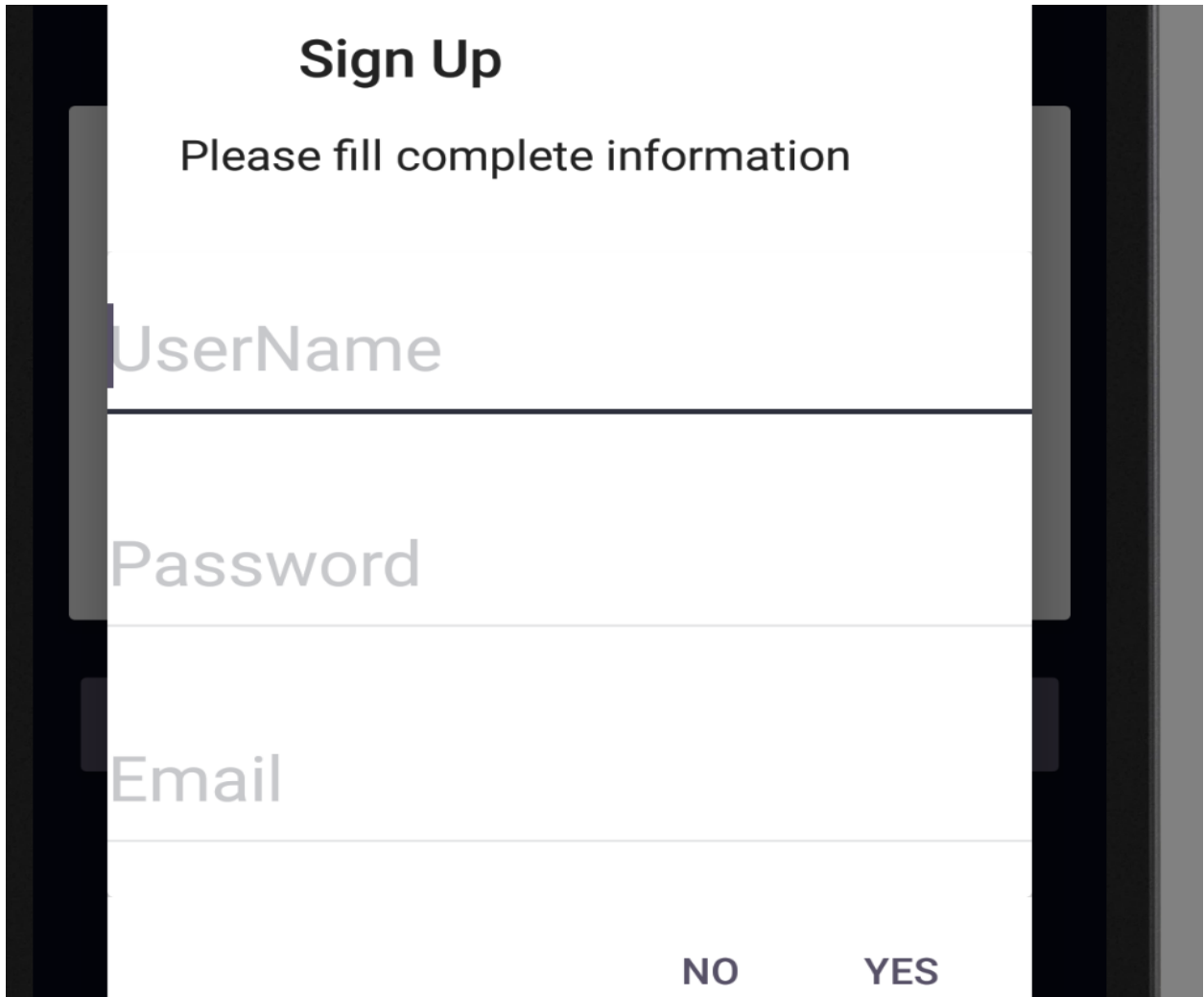


Here, the title of the app is Quiz App along with four options that are play, login, signup, and Forgot Password.

When we login to the quiz, the quiz starts with 30 questions in it as the user is identified by the database of the ministry. As the candidate is added to the database of the ministry, the candidate can start the quiz after entering a few details. Otherwise, the candidate can sign up its account on the app as this would allow the candidate to be added to the database system.

Sign Up Page

A Signup page (also known as a registration page) enables users to independently register and gain access to the application.



Sign Up

Please fill complete information

UserName

Password

Email

NO YES

- Click on the **Sign-up** button.
- Fill the complete information such as **username, password, and email address**.
- If you want to complete your registration process then click on the **yes** button.

Login Page

The **login page** allows a user to gain access to an application by entering their username and password or by authenticating using a social media **login**.

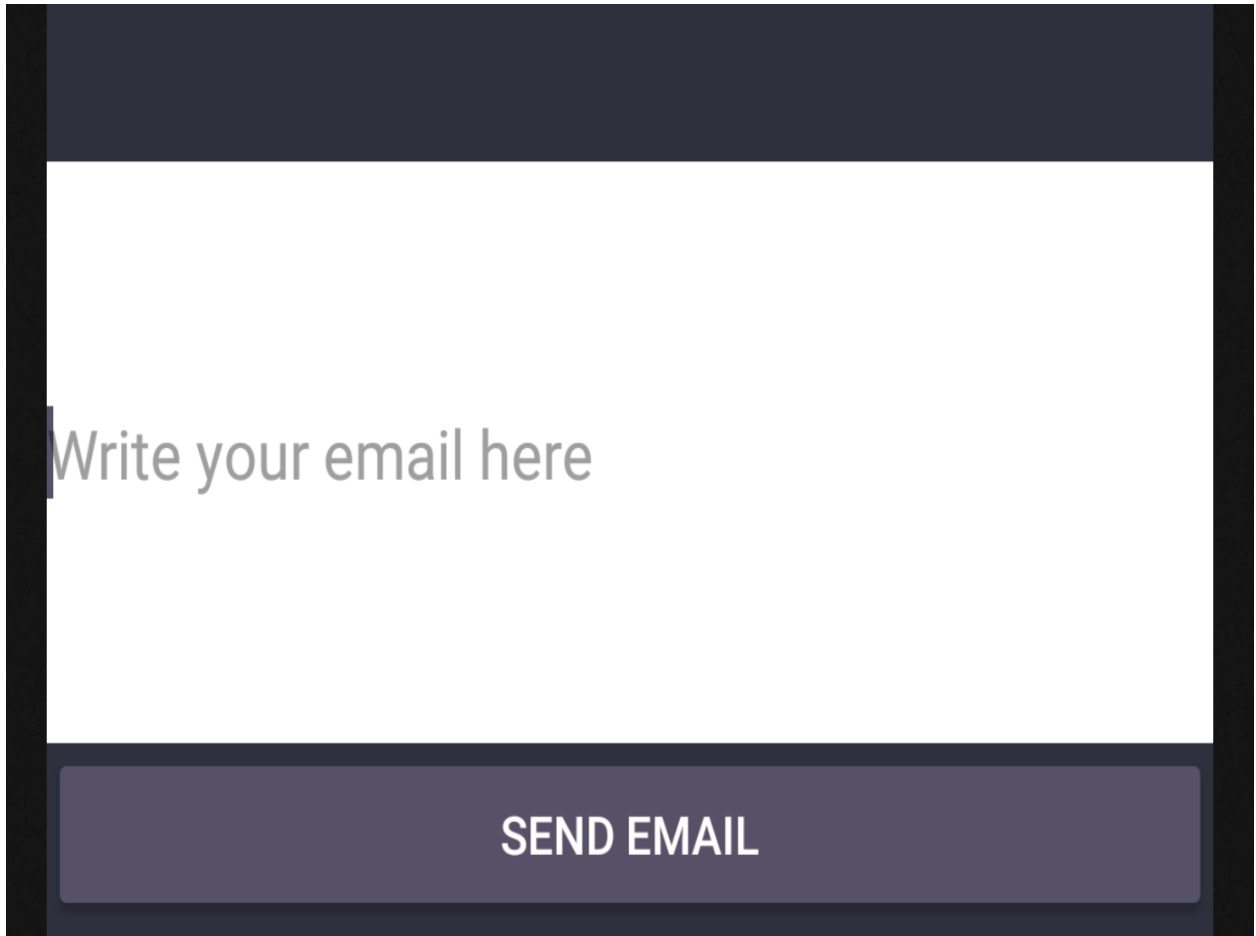
The image shows a login form on a dark blue background. The form has a white rectangular area containing two input fields. The first field is labeled 'UserName' and contains the text 'raman'. The second field is labeled 'Password' and contains three dots. Below the input fields are two buttons: 'SIGN UP' and 'SIGN IN'. At the bottom of the form, there is a virtual keyboard with two rows of letters. The first row contains the letters q, w, e, r, t, y, u, i, o, p. The second row contains the letters a, s, d, f, g, h, j, k, l.

After completing the Sign-Up form, you have to login on the **SignIn Page**.

- Complete the information required for the Login. For example, **Username**, and **Password**.
- Click on the **SignIn button**.

Forgot Password

If you need help resetting your password, we can help by sending you a link to reset it.

A screenshot of a web form for password recovery. The form has a dark blue header bar. Below it is a large white input field with the placeholder text "Write your email here" in a light gray font. At the bottom of the form is a dark blue button with the text "SEND EMAIL" in white capital letters.

Write your email here

SEND EMAIL

- Visit **Forgot Password button**.
- Enter the email address on the account.
- Select **SEND EMAIL**.
- Check your inbox for a **password reset** email.
- Click on the URL provided in the email and enter a new **password**.

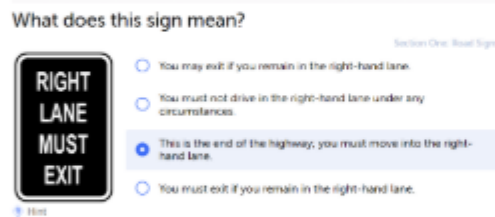
Instruction page

When the candidate clicks on the play button to play the quiz, the candidate lands on the quiz instructions page which is related to all the details regarding how to attempt the quiz where the question numbers are given and the number of options to each question. There is a demo question pic with a sign and a candidate is asked to select one option out of four options. Moreover, there are two options in the end which are linked with going to the previous page that is a home page if the candidate selects the button with 'No, take me back' option, whereas, the other option button 'okay, let's do it!' links to the start page of the quiz page.

How to Play the Game.

Ensure you read this guide from start to finish.

- The game has a duration of 30 minutes and ends as soon as your time elapses.
- Quiz consist of 30 questions.
- Every question contains 4 options.



- Select the option which best answers the questions by clicking (or selecting) it.
- Feel free to quit the quiz at any time. In that case, your score will be revealed afterwards.
- The timer starts as soon as the game loads.
- Let's do this if you think you've got what it takes.

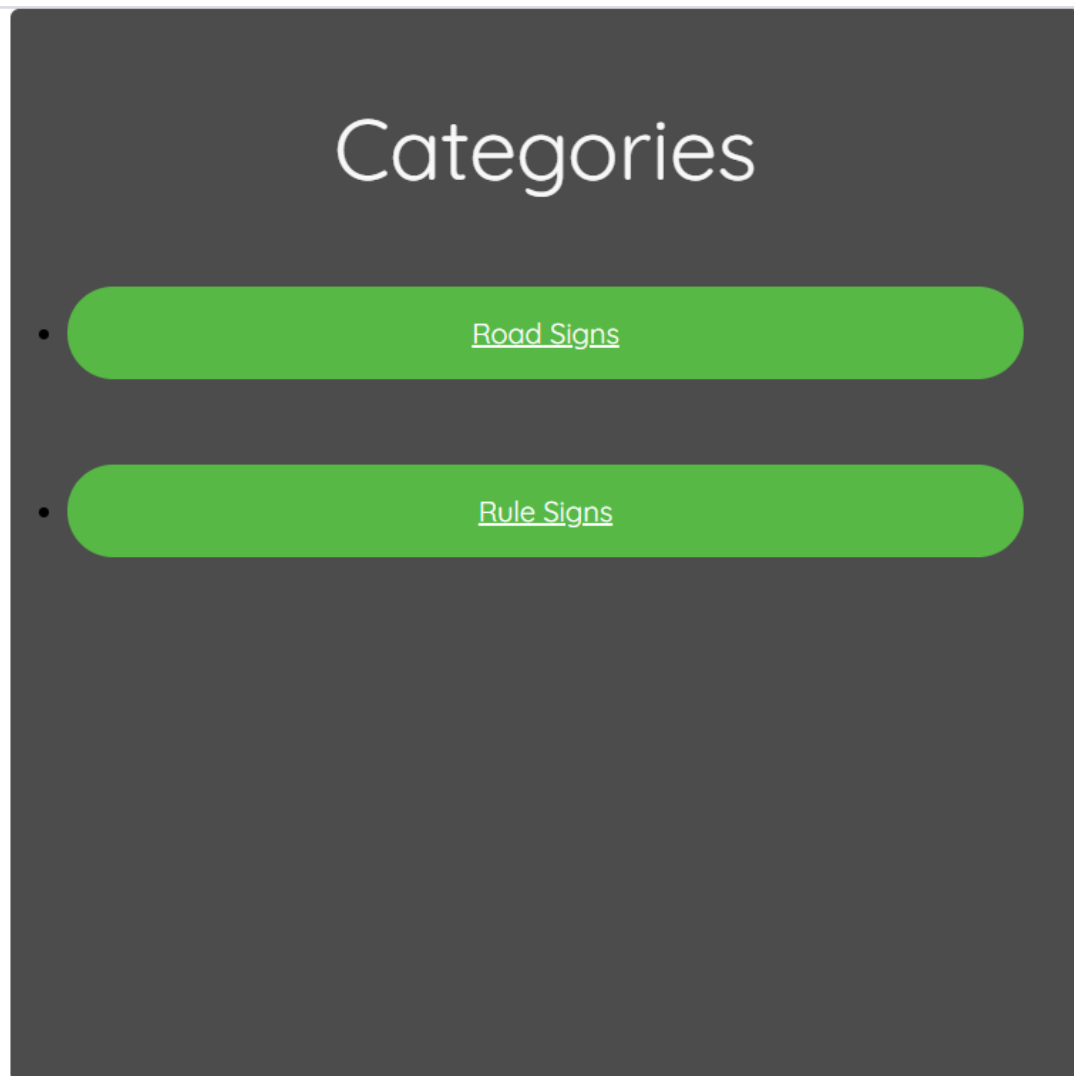
[No take me back](#)

[Okay, Let's do this!](#)

Categories

When the candidate starts the quiz, there is a title called Category. Then, the category shown two buttons called rules and road signs. According to the categories, the questions are divided.

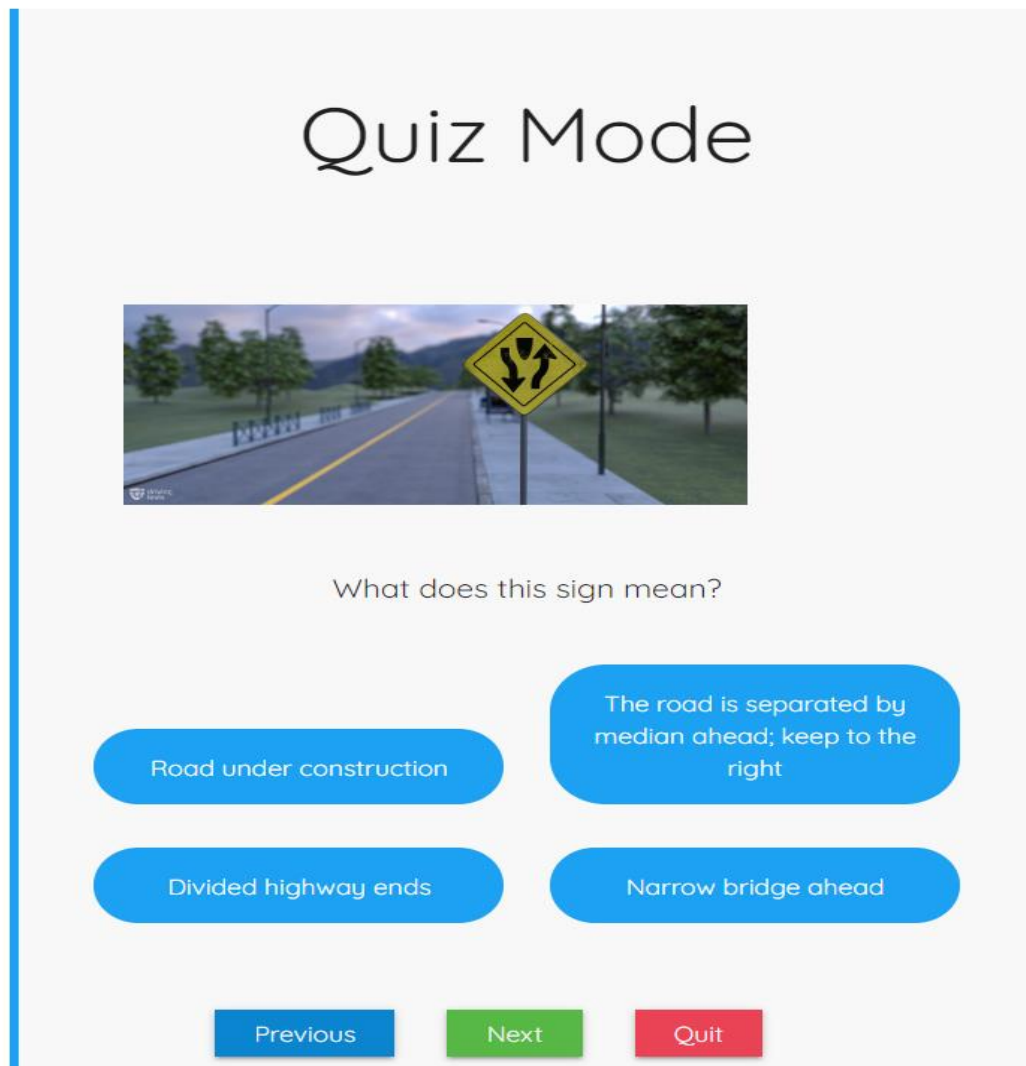
- Each category contains 15 questions
- The total questions are 30.



When the candidate starts the quiz, there is a title called Quiz mode. Then, the question is shown as an image with a question and four options to it. Below the options, three buttons are Previous, Next, and Quit options.

Road Signs

- Click on the road sign button
- Start quiz related to the road signs.




- The **previous button** on click goes back to the previous question.
- The **next button** on click goes to the next question.
- When the candidate clicks on the **Quit button**, there is a dialogue box with the question if the candidate wants to quit or not. If the candidate selects ok, it sends the candidate to the main page. Otherwise, the candidate stays on the quiz page.

localhost:3000/play/quiz

localhost:3000 says
Are you sure you want to quit?

OK Cancel



What you cannot see in your vehicle rear and side view mirrors is said to be in your...?

Dark area Danger zone

Safe Zone Blind spot

Previous Next Quit

Rule Sign

- Click on the rule sign button
- Start quiz related to the rules of the driving.



Hydroplaning can cause your vehicle to skid. It is caused by...?

Flat tires

Ice on roadway

Your tires riding on top of the water

Overinflated tires

Previous

Next

Quit

- The **previous button** on click goes back to the previous question.
- The **next button** on click goes to the next question.
- The **Quit button** on click goes back to the main page.

Database

A database is a systematic collection of data. They support electronic storage and manipulation of data. Databases make data management easy.

SQL

SQL is the standard language for dealing with Relational Databases. SQL can be used to insert, search, update, and delete database records.

We use SQL to collect the records of the driving test candidates with the help of the logical model, relational model, and queries.

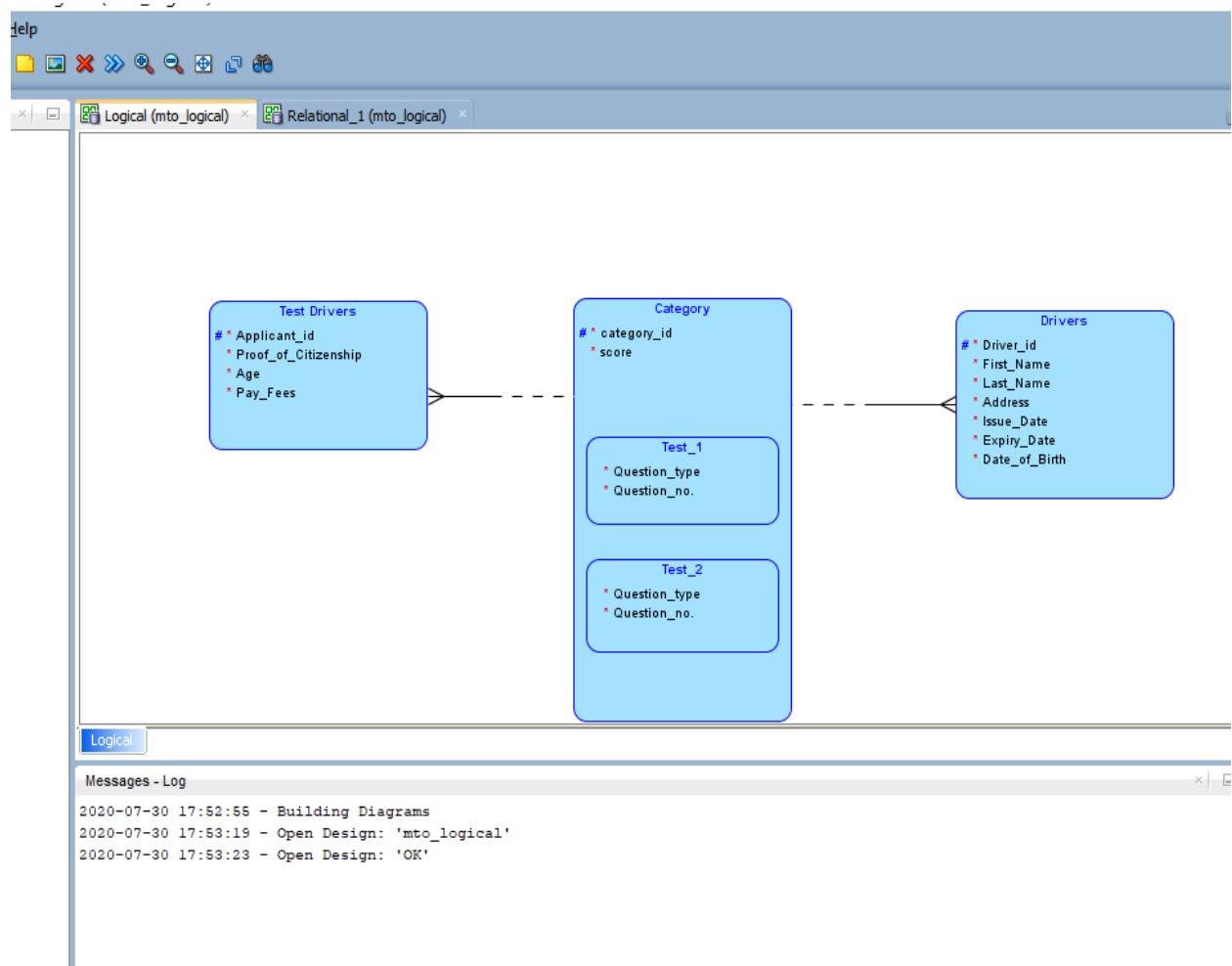
Advantages of SQL :

SQL has many advantages which makes it popular and highly demanded. It is a reliable and efficient language used for communicating with the database. Some advantages of SQL are as follows:

1. **Faster Query Processing –**
A large amount of data is retrieved quickly and efficiently. Operations like Insertion, deletion, manipulation of data is also done in almost no time.
2. **No Coding Skills –**
For data retrieval, the large number of lines of code is not required. All basic keywords such as SELECT, INSERT INTO, UPDATE, etc. are used, and also the syntactical rules are not complex in SQL, which makes it a user-friendly language.
3. **Standardized Language –**
Due to documentation and long establishment over the years, it provides a uniform platform worldwide to all its users.
4. **Portable –**
It can be used in programs in PCs, servers, laptops independent of any platform (Operating System, etc.). Also, it can be embedded with other applications as per need/requirement/use.
5. **Interactive Language –**
Easy to learn and understand, answers to complex queries can be received in seconds.
6. **Multiple data views**

Logical Data Model

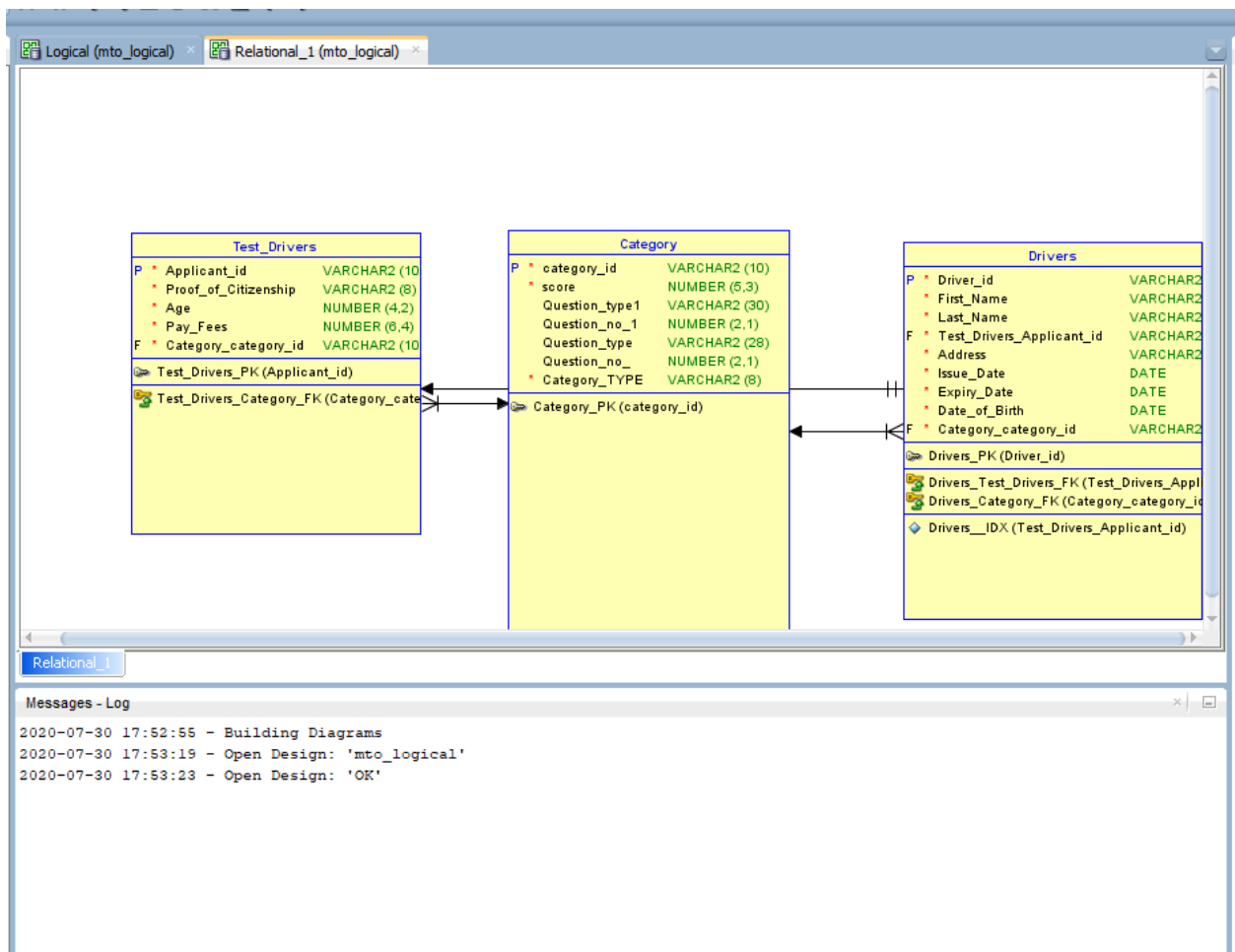
Logical data model includes all required entities, **attributes**, key groups, and **relationships** that represent business information and define business rules. In the example, we have identified the **entity** names, attribute names, and relationships. For detailed explanation, refer to relational data modeling.



Relational Data Model

A **relational data model** involves the use of **data** tables that collect groups of elements into relations. These **models** work based on the idea that each table setup will include a primary key or identifier. Other tables use that identifier to provide "**relational**" **data** links and results.

Advantages of the relational model are **simplicity**, structural **independence**, **ease** of use, query capability, data **independence**, **scalability**. Few relational databases have limits on field lengths which can't be exceeded.



SQL Queries

Queries are simply question against a set of data. A **database query** is a request for data from a **database**. Usually, the request is to retrieve data; however, data can also be manipulated using **queries**. The data can come from one or more tables or even other **queries**.

Some of the most important SQL commands

- **SELECT** - extracts data from a database
- **UPDATE** - updates data in a database
- **DELETE** - deletes data from a database
- **INSERT INTO** - inserts new data into a database
- **CREATE DATABASE** - creates a new database
- **ALTER DATABASE** - modifies a database
- **CREATE TABLE** - creates a new table
- **ALTER TABLE** - modifies a table
- **DROP TABLE** - deletes a table
- **CREATE INDEX** - creates an index (search key)
- **DROP INDEX** - deletes an index

Oracle Database 11g	Relational_1	Generate	Clear
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```

1  -- Generated by Oracle SQL Developer Data Modeler 19.4.0.350.1424
2  -- at:      2020-07-30 18:07:16 EDT
3  -- site:    Oracle Database 11g
4  -- type:    Oracle Database 11g
5
6
7
8  CREATE TABLE category (
9      category_id    VARCHAR2(10) NOT NULL,
10     score           NUMBER(5, 3) NOT NULL,
11     question_type1  VARCHAR2(30),
12     question_no_1   NUMBER(2, 1),
13     question_type   VARCHAR2(28),
14     question_no_    NUMBER(2, 1),
15     category_type   VARCHAR2(8) NOT NULL
16 );
17
18 ALTER TABLE category
19     ADD CONSTRAINT ch_inh_category CHECK ( category_type IN (
20         'Category',
21         'Test_1',
22         'Test_2'
23     ) );
24
25 ALTER TABLE category
26     ADD CONSTRAINT category_exdep CHECK ( ( category_type = 'Category'
27         AND question_type1 IS NULL
28         AND question_no_1 IS NULL
29         AND question_type IS NULL
30         AND question_no_ IS NULL )
31     OR ( category_type = 'Test_1'
32         AND question_type1 IS NOT NULL
33         AND question_no_1 IS NOT NULL
34         AND question_type IS NULL
35         AND question_no_ IS NULL )
36     OR ( category_type = 'Test_2'
37         AND question_type1 IS NULL
38         AND question_no_1 IS NULL
39         AND question_type IS NOT NULL
40         AND question_no_ IS NOT NULL ) );
41
42 ALTER TABLE category ADD CONSTRAINT category_pk PRIMARY KEY ( category_id );
43
44 CREATE TABLE drivers (
45     driver_id          VARCHAR2(10) NOT NULL,
46     first_name         VARCHAR2(8) NOT NULL,
47     last_name          VARCHAR2(6) NOT NULL,
48     test_drivers_applicant_id VARCHAR2(10) NOT NULL,
49     address            VARCHAR2(20) NOT NULL,
50     issue_date         DATE NOT NULL,
51     expiry_date        DATE NOT NULL,
52     date_of_birth      DATE NOT NULL,
53     category_category_id VARCHAR2(10) NOT NULL
54 );

```

```

54 );
55
56 CREATE UNIQUE INDEX drivers_idx ON
57     drivers (
58         test_drivers_applicant_id
59     ASC );
60
61 ALTER TABLE drivers ADD CONSTRAINT drivers_pk PRIMARY KEY ( driver_id );
62
63 CREATE TABLE test_drivers (
64     applicant_id          VARCHAR2(10) NOT NULL,
65     proof_of_citizenship  VARCHAR2(8)  NOT NULL,
66     age                   NUMBER(4, 2) NOT NULL,
67     pay_fees              NUMBER(6, 4)  NOT NULL,
68     category_category_id  VARCHAR2(10) NOT NULL
69 );
70
71 ALTER TABLE test_drivers ADD CONSTRAINT test_drivers_pk PRIMARY KEY ( applicant_id );
72
73 ALTER TABLE drivers
74     ADD CONSTRAINT drivers_category_fk FOREIGN KEY ( category_category_id )
75     REFERENCES category ( category_id );
76
77 ALTER TABLE drivers
78     ADD CONSTRAINT drivers_test_drivers_fk FOREIGN KEY ( test_drivers_applicant_id )
79     REFERENCES test_drivers ( applicant_id );
80
81 ALTER TABLE test_drivers
82     ADD CONSTRAINT test_drivers_category_fk FOREIGN KEY ( category_category_id )
83     REFERENCES category ( category_id );
84
85
86
87 -- Oracle SQL Developer Data Modeler Summary Report:
88 --
89 -- CREATE TABLE                      3
90 -- CREATE INDEX                       1
91 -- ALTER TABLE                       8
92 -- CREATE VIEW                        0
93 -- ALTER VIEW                         0
94 -- CREATE PACKAGE                     0
95 -- CREATE PACKAGE BODY                 0
96 -- CREATE PROCEDURE                    0
97 -- CREATE FUNCTION                     0
98 -- CREATE TRIGGER                      0
99 -- ALTER TRIGGER                      0
100 -- CREATE COLLECTION TYPE              0
101 -- CREATE STRUCTURED TYPE              0
102 -- CREATE STRUCTURED TYPE BODY         0
103 -- CREATE CLUSTER                      0
104 -- CREATE CONTEXT                      0
105 -- CREATE DATABASE                     0
106 -- CREATE DIMENSION                    0
107 -- CREATE DIRECTORY                    0
108 -- CREATE DISK GROUP                    0

```

Conclusion

The free availability of the app helps the users to download the app and pass the driving test easily. Moreover, the app is fast, responsive, and delivers the well-received user experience as this application has access to inbuilt hardware, as well as support for any interface interaction with any operating system. Due to the high standard performance and functionality of the application, it ensures a candidate to pass the driving test without any troubleshoots in between the quiz time.