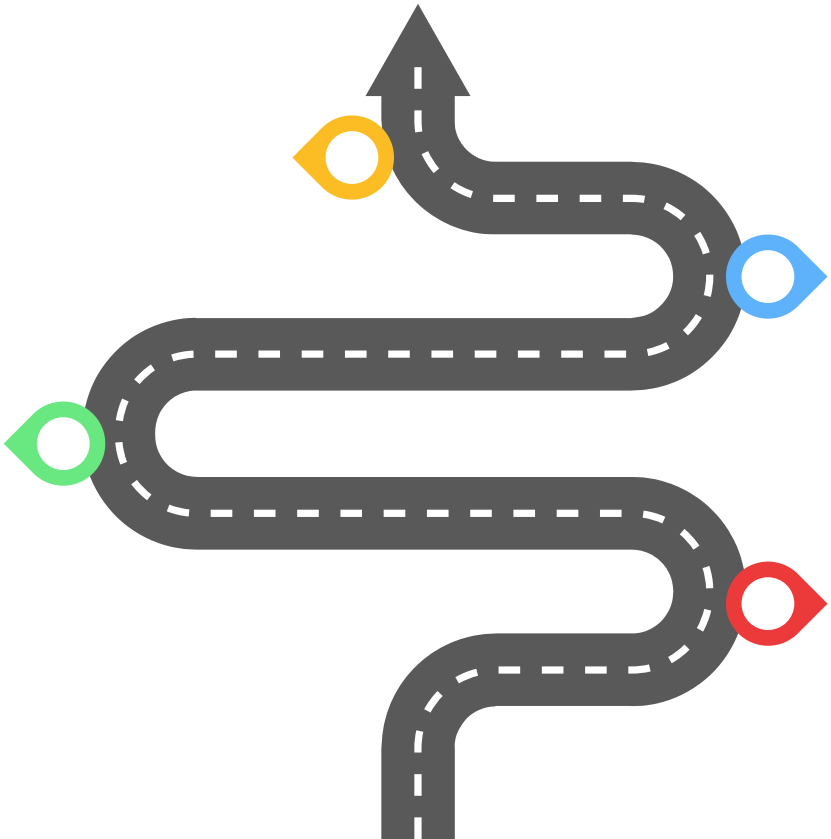
Riyadh Bus System



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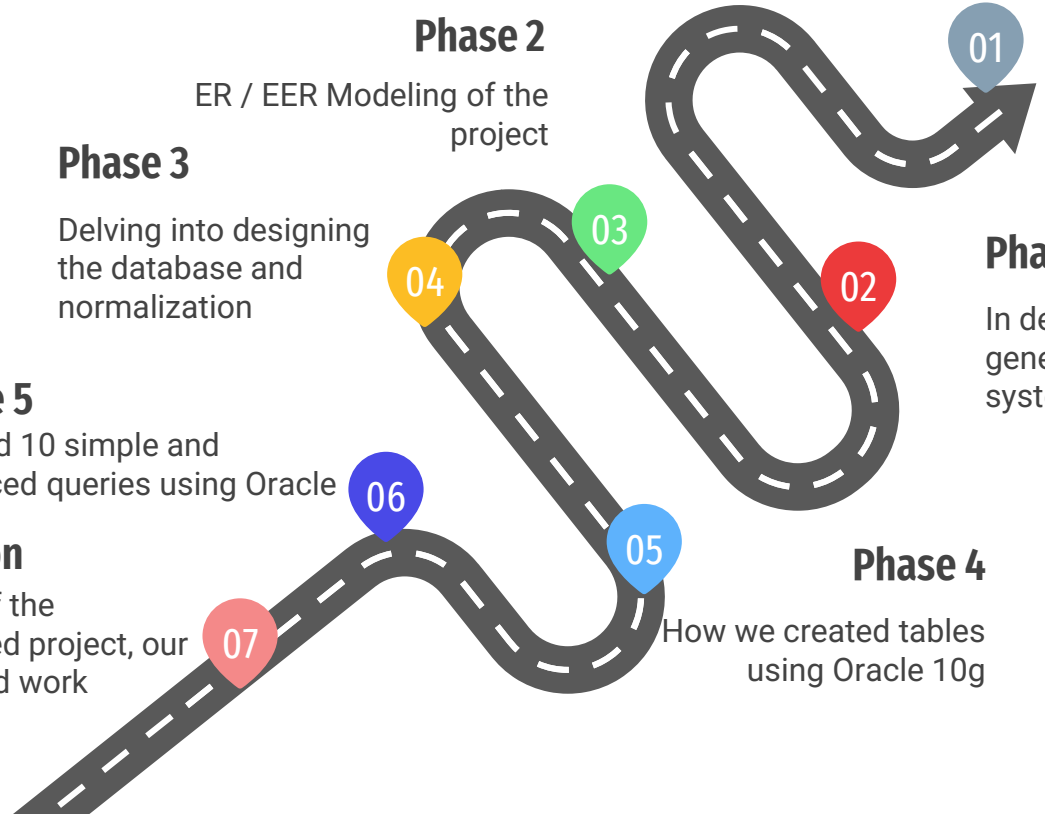


Introduction

General introductions into the project and its phases

Phase 1

In depth talk about the general information system to be developed

Phase 2

ER / EER Modeling of the project

Phase 3

Delving into designing the database and normalization

Phase 4

How we created tables using Oracle 10g

Phase 5

Created 10 simple and advanced queries using Oracle

Conclusion

Overview of the implemented project, our strategy and work division

01 Introduction

Phase 5:

Creating simple and advanced queries using Oracle

Phase 4:

Creating tables and inserting data

Phase 3:

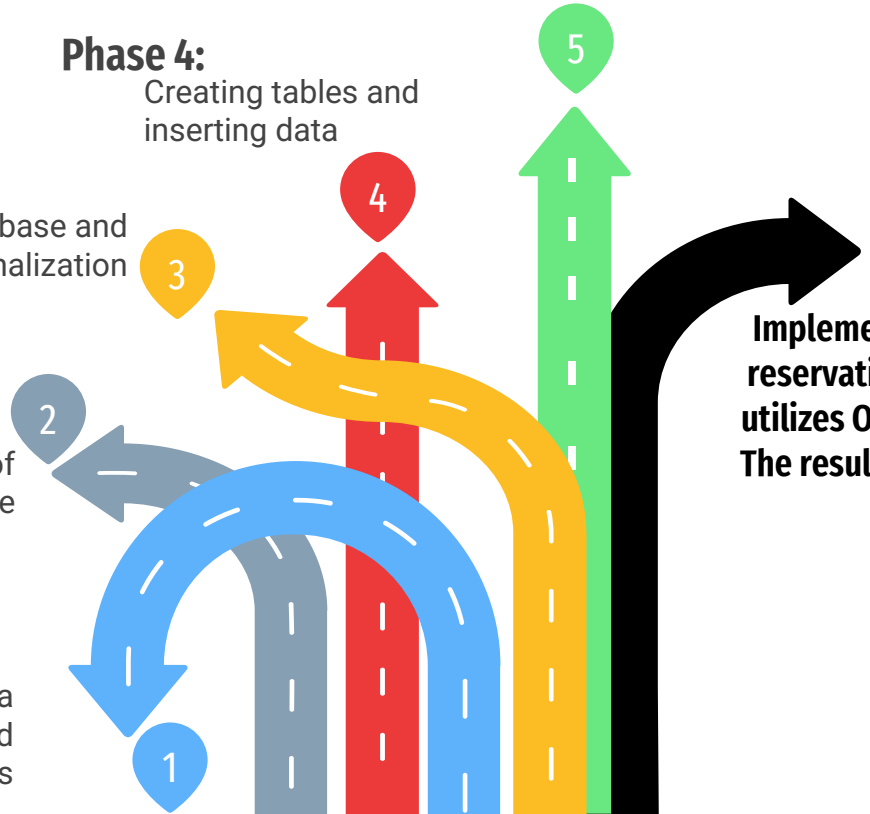
Designing database and normalization

Phase 2:

ER and EER modeling of our database

Phase 1:

Project scope, data entity requirments, and system requirements



Riyadh Bus System Database

Implementing Riyadh's public transportation reservation system in five phases, our project utilizes Oracle technology for implementation. The result is heightened operational efficiency and improved services.

02

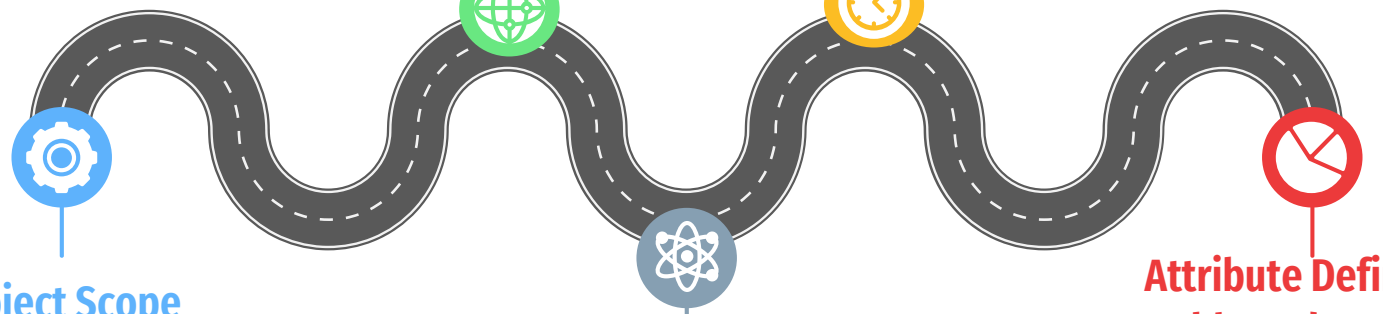
Phase 1

Data and Entity Requirments

Defined different entities (9) and explained their identifiers, attributes, description and the relationships between them.

System Requirments

Defined different functional and nonfunctional system requirments that ensure a smooth implementation of the system.



Project Scope

Its primary purpose is to improve all aspects of bus reservation, from consumer booking to operational management.

System Scenarios

Placed user scenarios for every step that could be taken and initiated by users in the Riyadh Bus System database.

Attribute Definition Table and Codes of Ethics

Gathered IEEE and AMC codes of Ethics that applies to each phase to help allign us on the correct path while implementing the system.

03 Phase 2

EER Diagram Model

The EER diagram is provided in the next slide.

Business Rules

Placed rules that apply to the business side of the system that works in hand with the functional system requirements.

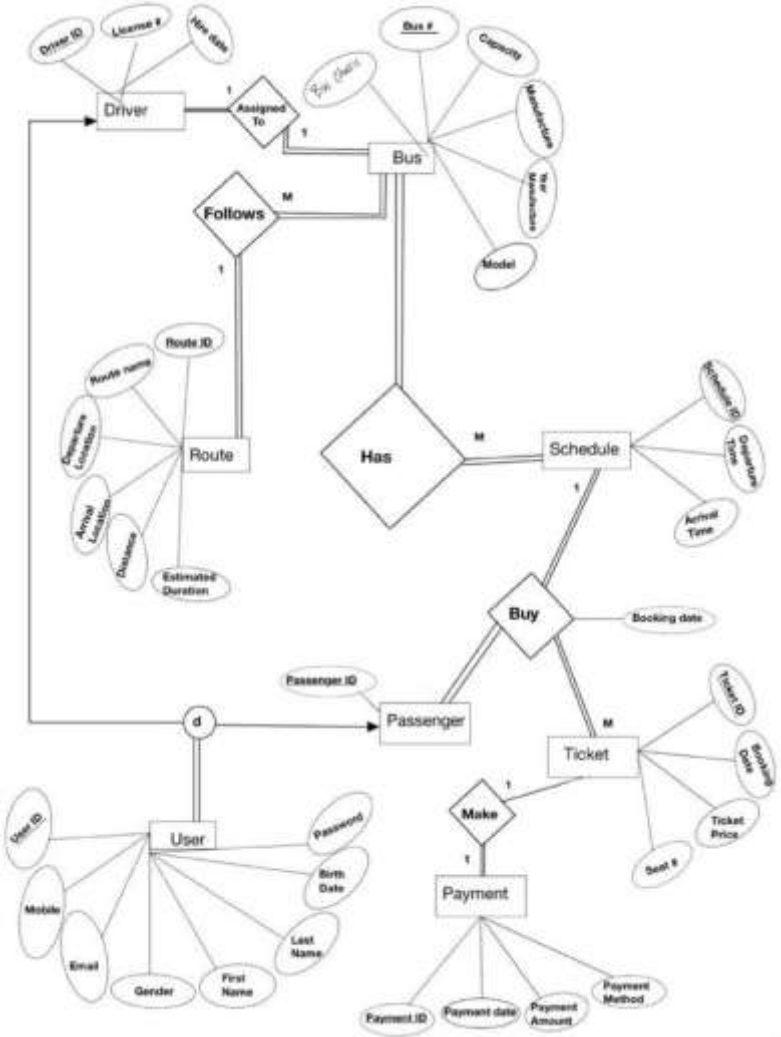
ER Diagram Model

A ER diagram model was designed and worked on as an initial step to designing an EER diagram

Codes of Ethics

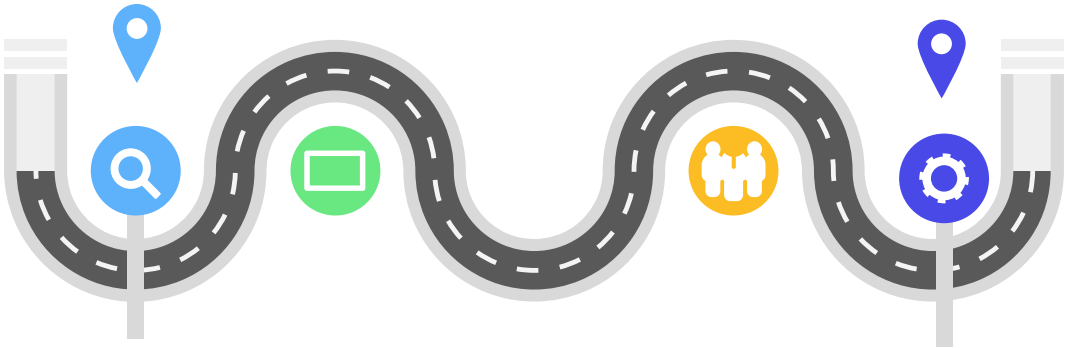
The entity definition and entity relationship table were placed again along side the IEEE and ACM code of ethics that apply to this phase of the project.

EER Diagram


Driver ID
License #
Hire date
Driver
1
Assigned To
1
Bus #
Capacity
Manufacturer
Bus Manufacturer
Model
Bus
M
Follows
1
Route ID
Route name
Departure Location
Arrival Location
Distance
Estimated Duration
Route
M
Has
Schedule
Schedule ID
Departure Time
Arrival Time
1
Buy
Booking date
Passenger ID
Passenger
d
M
Ticket
Ticket ID
Booking Date
Ticket Price
Seat #
1
Make
1
Payment
Payment ID
Payment date
Payment Amount
Payment Method
User ID
User
password
Birth Date
Last Name
First Name
Gender
Email
Mobile

*The relational model is inserted in the next slide.

04 Phase 3



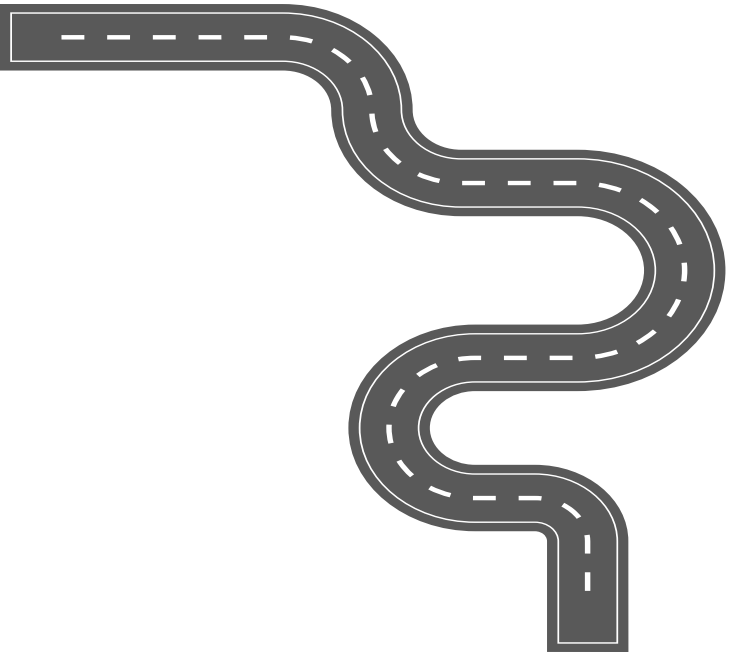
Data Dictionary

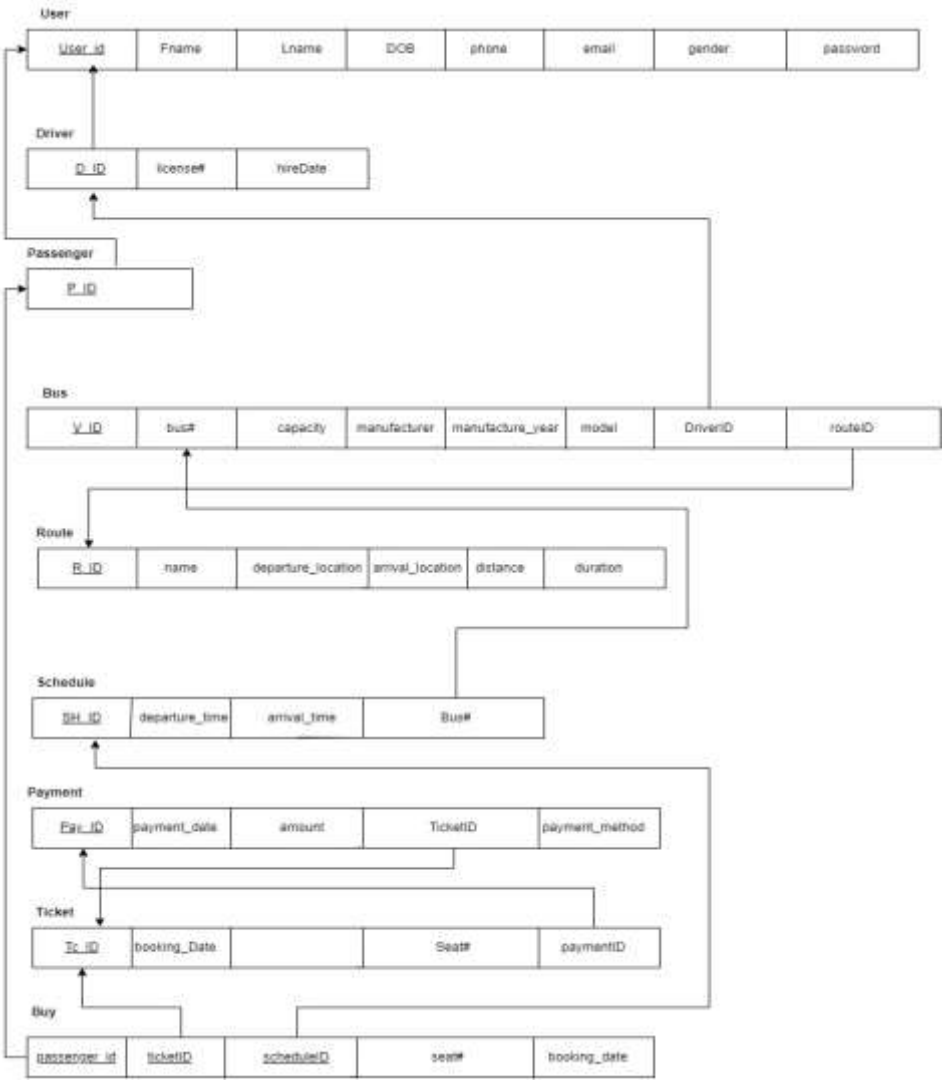
We defined each entity attributes (key type, constraints, data type, and length) into a table for each of the 8 attributes.

Relational Model

RM was used to put the information and data about the entities, its attributes, and their relationships into a more visually understandable diagram.

Relational Model





05 Phase 4

*Images of created tables and inserted data are in the next slide.

39%

10%

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9 Different tables were created on Oracle to represent the 9 different entities.

And 10 rows of data were inserted into each table, according to its attribute's requirements (using SQL).

74%

23%

Bus Table and Inserted Data

SQL Commands

Language: SQL | Rows: 10 | Clear Command | Find Tables

```
CREATE TABLE Bus (
    VehicleID VARCHAR(9) ,
    busNum NUMBER(4) PRIMARY KEY,
    capacity1 VARCHAR(10),
    manufacture VARCHAR(10),
    manufactureYear DATE,
    model1 VARCHAR(10),
    DriverID VARCHAR(9) NOT NULL,
    RouteID VARCHAR(9) NOT NULL,
  CONSTRAINTS con_id3_fk FOREIGN KEY(DriverID) REFERENCES Driver(DRIVER_ID) ON DELETE SET NULL,
CONSTRAINTS con_id4_fk FOREIGN KEY(RouteID) REFERENCES Route(Route_ID) ON DELETE SET NULL
);
```

Results | Explain | Describe | Saved SQL | History

Table created.

0.06 seconds

```
select *
from bus
```

Results | Explain | Describe | Saved SQL | History

VEHICLEID	BUSNUM	CAPACITY1	MANUFACTURE	MANUFACTUREYEAR	MODEL1	DRIVERID	ROUTEID
345678900	1033	40	MAN	11/01/2021	Lion Coach	726199362	R345678990
123456789	1011	50	Mercedes	11/01/2019	C-Class	174123456	R12345678
567890122	1055	48	Iveco	11/01/2020	Crossway	854936289	R567890122
890123456	1088	50	Van Hool	11/01/2019	TX	337190003	R890123456
012345678	1100	47	Solaris	11/01/2019	InterUrbin	628816390	R012345678
234567899	1022	45	Volvo	11/01/2019	V60	356789012	R234567899
456789011	1044	55	Scania	11/01/2021	Touring	388833820	R456789011
678901234	1066	52	Setra	11/01/2020	S 416 HDH	846200185	R678901234
789012342	1077	45	Neoplan	11/01/2023	Starliner	112936271	R789012342
901234560	1099	42	Temsa	11/01/2019	MD9 LE	936192254	R901234560

10 rows returned in 0.02 seconds | Download

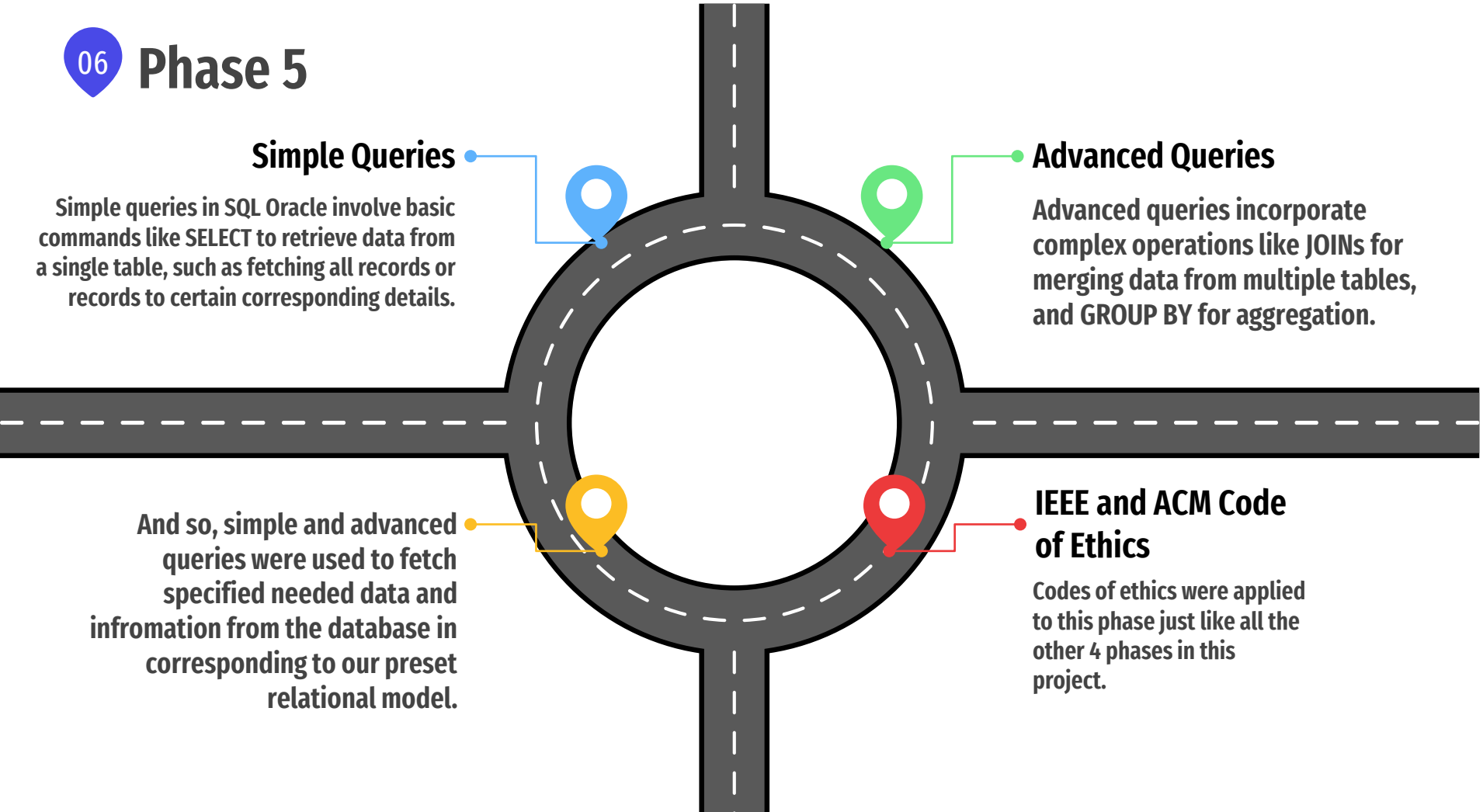
06 Phase 5

Simple Queries

Simple queries in SQL Oracle involve basic commands like SELECT to retrieve data from a single table, such as fetching all records or records to certain corresponding details.

Advanced Queries

Advanced queries incorporate complex operations like JOINs for merging data from multiple tables, and GROUP BY for aggregation.



And so, simple and advanced queries were used to fetch specified needed data and infromation from the database in corresponding to our preset relational model.

IEEE and ACM Code of Ethics

Codes of ethics were applied to this phase just like all the other 4 phases in this project.

07 Conclusion