Testing Plan:

Schema Validation Testing:

- Validate that all primary keys and foreign keys work as expected.

- Test attributes which have NOT NULL reject empty values.

- Confirm that VARCHAR, INT, TEXT, and TIMESTAMP types accept appropriate values.

- Use SHOW CREATE TABLE to verify FK relationships like FKManagerID, FKPackageID, etc.

Data Integrity Testing:

- INSERT INTO coach (`CoachID`, `ManagerID`, `First Name`, `Last Name`, `Gender`, `Phone Number`) VALUES (1, NULL, 'Duplicate', 'Coach', 'M', 12345678); -- This fails because it's a duplicate primary key.

- INSERT INTO client (`Client ID`, `Coach ID`, `Package ID`, `First Name`, `Last Name`, `Gender`, `Phone Number`, `Start Date`, `End Date`) VALUES (100, 999, 1, 'Invalid', 'CoachLink', 'M', 32165498, '2025-05-01', '2025-08-01'); -- This fails because it is trying to assign toa foreign key that does not exist.

- INSERT INTO coach (`CoachID`, `ManagerID`, `First Name`, `Last Name`, `Gender`, `Phone Number`) VALUES (10, NULL, NULL, 'NoName', 'M', 12345678); -- This fails because a coach with a null name is not allowed.

- INSERT INTO client (`Client ID`, `Coach ID`, `Package ID`, `First Name`, `Last Name`, `Gender`, `Phone Number`, `Start Date`, `End Date`) VALUES (101, 1, 1, 'Type', 'Mismatch', 'M', 'ABCDEF', '2025-05-01', '2025-08-01'); --This fails because an incorrect type is given.

Trigger Testing:

- INSERT INTO room_booking VALUES (1, 5, 21052025, '2025-05-05 18:00:00', '2025-05-05 19:00:00'); --Succeeds.

- INSERT INTO room_booking VALUES (1, 6, 21052025, '2025-05-05 16:30:00', '2025-05-05 17:30:00'); --It is overlapping so it fails.

- SELECT `End Date` FROM client WHERE `Client ID` = 1; -- Current Date

- UPDATE client SET `Package ID` = 2 WHERE `Client ID` = 1; -- Update the package

- SELECT `Start Date`, `End Date` FROM client WHERE `Client ID` = 1; -- Verify the new date.

View Verification:

- SELECT * FROM v_sessions_per_client;

Client ID	First Name	Last Name	Total_Sessions
1	Yousif	Abuzuhaira	2
2	Ahmed	Adel	1
3	Farah	Majdi	2
4	Walaa	Majdi	1
5	Ali	Mohamed	2

- SELECT * FROM v_coach_clients;

←T→				CoachID	Coach_First_Name	Coach_Last_Name	Client ID	Client_First_Name	Client_Last_Name
☐	Edit	Copy	Delete	1	Murtadha	Shakhbozi	1	Yousif	Abuzuhaira
☐	Edit	Copy	Delete	1	Murtadha	Shakhbozi	2	Ahmed	Adel
☐	Edit	Copy	Delete	2	Ghaida	Majdi	3	Farah	Majdi
☐	Edit	Copy	Delete	2	Ghaida	Majdi	4	Walaa	Majdi
☐	Edit	Copy	Delete	3	Husain	AlEkri	5	Ali	Mohamed

- SELECT * FROM v_room_utilization;

Room ID	Location	Total_Bookings
1	Main	1
2	Upstairs	1