2. Given functional dependencies:

1. MemberID → MemberType
2. MemberID, GymID → JoinDate, Visits
3. MemberType → Fee

The candidate key is {MemberID, GymID}.

Step 1: FD Violation

1. MemberID → MemberType (Does Not Violate)
2. MemberID, GymID → JoinDate, Visits (Does Not Violate)
3. MemberType → Fee (Does Not Violate)

Step2 : Decomposing

GYMMEMBER1(MemberID, MemberType)

GYMMEMBER2(MemberID, GymID, JoinDate, Visits)

GYMMEMBER2(MemberID, GymID, Fee)

Step 3 : Checks violation in the new relation

GYMMEMBER1(MemberID, MemberType) (Does Not Violate)

GYMMEMBER2(MemberID, GymID, JoinDate, Visits) (Violates - The FD MemberID → MemberType is a partial dependency since MemberType is functionally dependent on a proper subset of the candidate key. To resolve this violation, we create a new relation.)

GYMMEMBER2(MemberID, GymID, Fee) (Violates - )