

User Table

- R = (user_id, username, first_name, last_name, email, date_of_birth, gender_code)
- FD = {user_id -> username, user_id -> first_name, user_id -> last_name, user_id -> email, user_id -> date_of_birth, user_id -> gender_code} (p->n.p.)
- Conclusion: No violations; already in 3NF.

Subscription Table

- R = (subscription_id, interval_unit, plan)
- FD = {subscription_id -> interval_unit, subscription_id -> plan} (p->n.p.)
- Conclusion: No violations; already in 3NF.

Workspace Table

- R = (workspace_id, workspace_name, subscription_id, owner_id, created_at, deleted_at)
- FD = {workspace_id -> workspace_name, workspace_id -> subscription_id, workspace_id -> owner_id, workspace_id -> created_at, workspace_id -> deleted_at} (p->n.p.)
- Conclusion: No violations; already in 3NF.

Invoice Table

- R = (invoice_id, workspace_id, status, payment_method, amount, currency)
- FD = {invoice_id -> workspace_id, invoice_id -> status, invoice_id -> payment_method, invoice_id -> amount, invoice_id -> currency} (p->n.p.)
- Conclusion: No violations; already in 3NF.

User Workspace Mapping Table

- R = (user_id, workspace_id, joined_at, left_at, status, role)
- FD = {(user_id, workspace_id) -> joined_at, (user_id, workspace_id) -> left_at, (user_id, workspace_id) -> status, (user_id, workspace_id) -> role} (Composite p->n.p.)
- Conclusion: No violations; already in 3NF.

Project Table

- R = (project_id, project_name, saved_status, created_at, updated_at, deleted_at, workspace_id)
- FD = {project_id -> project_name, project_id -> saved_status, project_id -> created_at, project_id -> updated_at, project_id -> deleted_at, project_id -> workspace_id} (p->n.p.)
- Conclusion: No violations; already in 3NF.

Album Table

- R = (album_id, album_name, cover_photo_url, published_at, unpublished_at, published_status)
- FD = {album_id -> album_name, album_id -> cover_photo_url, album_id -> published_at, album_id -> unpublished_at, album_id -> published_status} (p->n.p.)
- Conclusion: No violations; already in 3NF.

Track Table

- R = (track_id, track_name, project_id, album_id, cover_photo_url, published_at, unpublished_at, published_status)
- FD = {track_id -> track_name, track_id -> project_id, track_id -> album_id, track_id -> cover_photo_url, track_id -> published_at, track_id -> unpublished_at, track_id -> published_status} (p->n.p.)
- Conclusion: No violations; already in 3NF.

Album User Mapping Table

- $R = (\text{album_id}, \text{user_id})$
- $FD = \{(\text{album_id}, \text{user_id})\}$ (Composite $p \rightarrow n.p.$, but no non-primary attributes)
- Conclusion: No violations; already in 3NF.

Recording Table

- $R = (\text{recording_id}, \text{recording_name}, \text{recording_status}, \text{recording_url}, \text{project_id}, \text{start_time}, \text{end_time}, \text{volume})$
- $FD = \{\text{recording_id} \rightarrow \text{recording_name}, \text{recording_id} \rightarrow \text{recording_status}, \text{recording_id} \rightarrow \text{recording_url}, \text{recording_id} \rightarrow \text{project_id}, \text{recording_id} \rightarrow \text{start_time}, \text{recording_id} \rightarrow \text{end_time}, \text{recording_id} \rightarrow \text{volume}\}$ ($p \rightarrow n.p.$)
- Conclusion: No violations; already in 3NF.

Effect Table

- $R = (\text{effect_id}, \text{effect_name})$
- $FD = \{\text{effect_id} \rightarrow \text{effect_name}\}$ ($p \rightarrow n.p.$)
- Conclusion: No violations; already in 3NF.

Recording Effect Mapping Table

- $R = (\text{recording_id}, \text{effect_id})$
- $FD = \{(\text{recording_id}, \text{effect_id})\}$ (Composite $p \rightarrow n.p.$, but no non-primary attributes)
- Conclusion: No violations; already in 3NF.

Each table in this database schema is already in 3NF. There are no transitive dependencies, and each non-primary attribute is fully functionally dependent

Since we know that 3NF is lossless and dependency-preserving \Rightarrow there is no need to check.