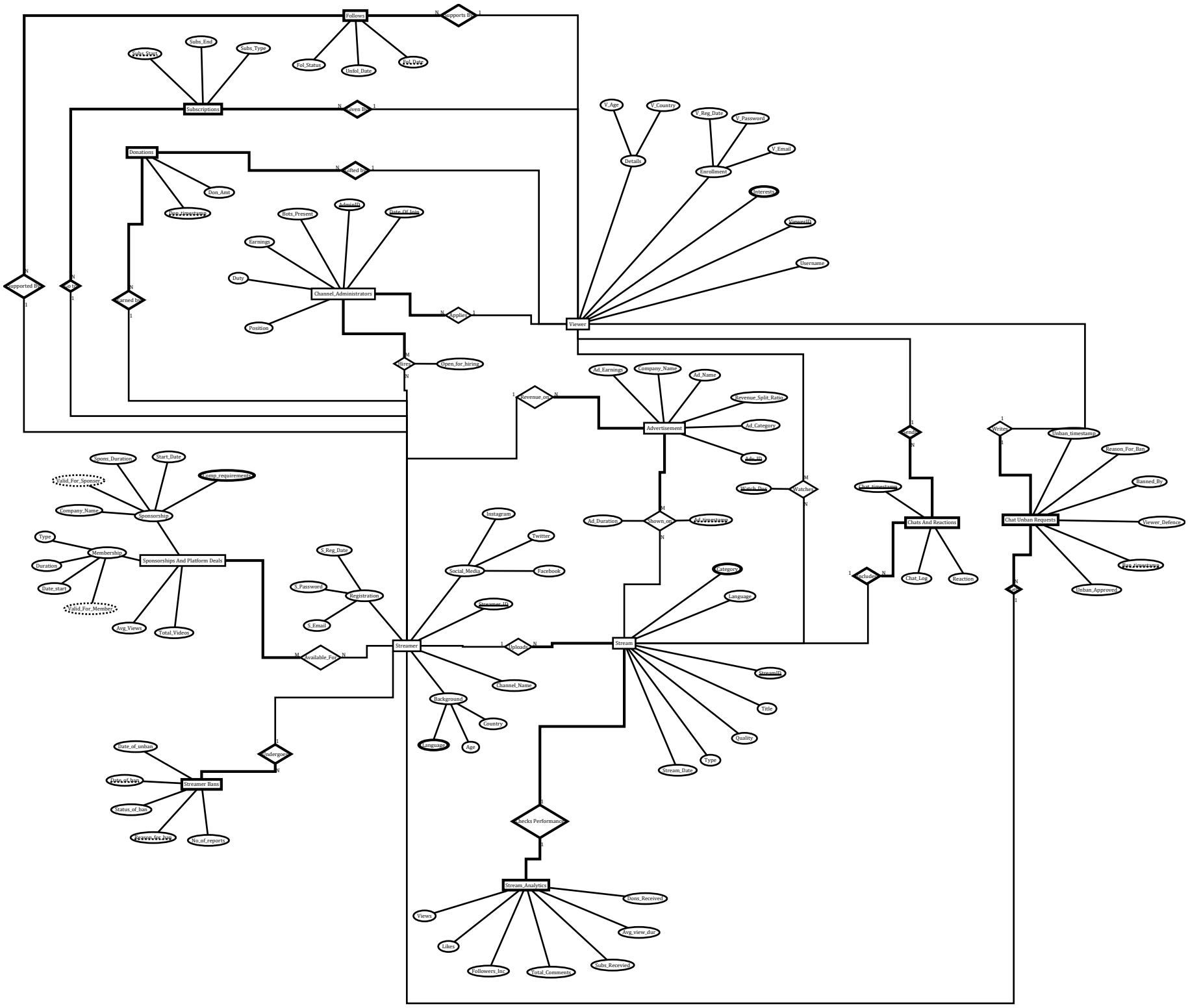
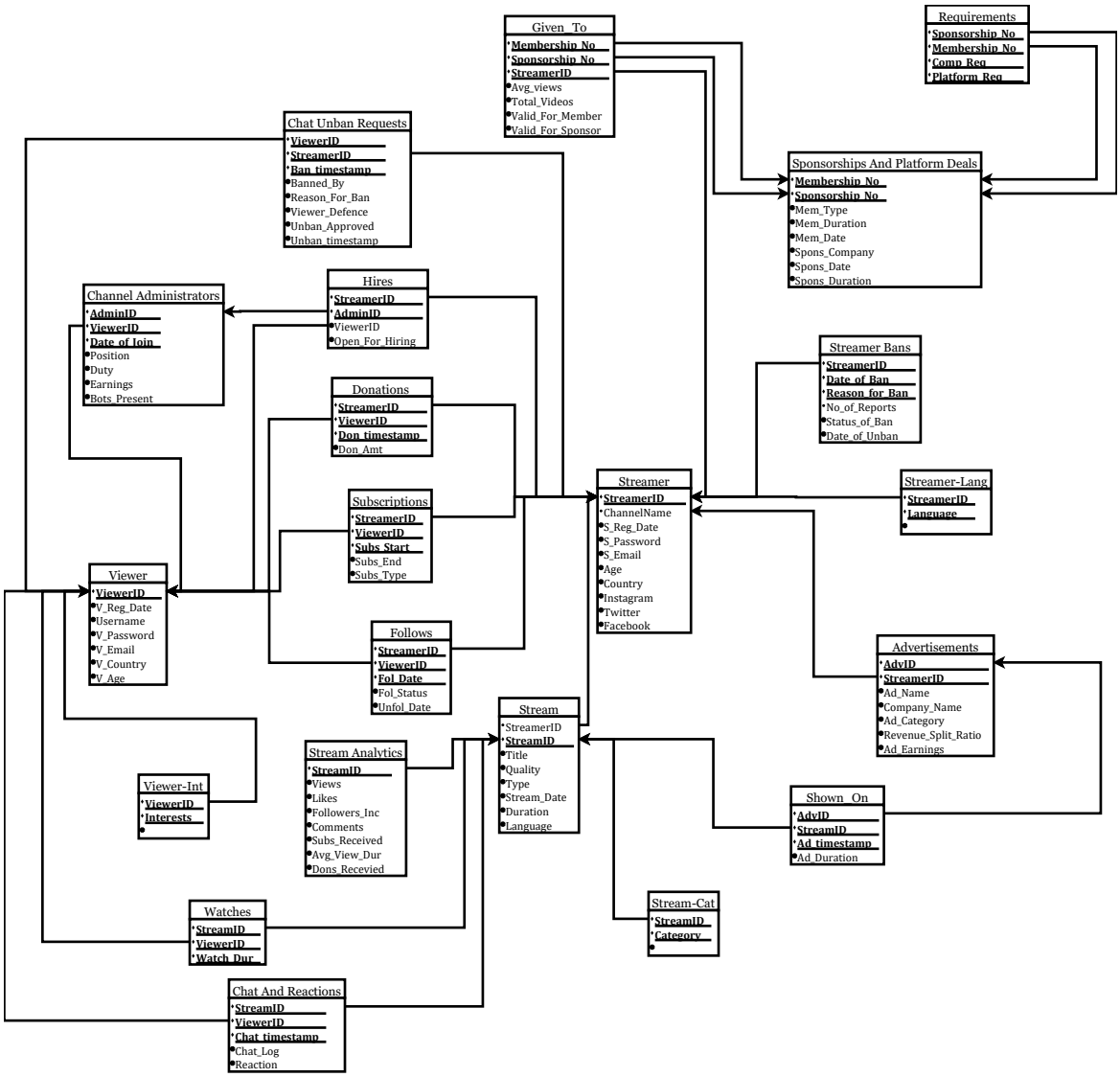

Follows
Supports By
Subs_Start
Subs_End
Subs_Type
Fol_Status
Unfol_Date
Fol_Date
Subscriptions
Given By
Donations
Gifted By
Don_Amt
Don_Timestamp
Supported By
Got By
Earned By
Bots_Present
AdminID
Date_Of_Join
Earnings
Duty
Position
Channel_Administrators
Applies
Viewer
V_Age
V_Country
Details
V_Reg_Date
V_Password
V_Email
Enrollment
Interests
ViewerID
Username
Hires
Open_for_hiring
Revenue_on
Ad_Earnings
Company_Name
Ad_Name
Revenue_Split_Ratio
Ad_Category
Ads_ID
Advertisement
Watches
Watch_Dur
Shown_on
Ad_Duration
Ad_Timestamp
Sends
Chat_timestamp
Chats And Reactions
Includes
Chat_Log
Reaction
Writes
Unban_timestamp
Reason_For_Ban
Banned_By
Chat Unban Requests
Viewer_Defence
Unban_Approved
Spons_Duration
Start_Date
Valid_For_Sponsor
Comp_requirements
Company_Name
Sponsorship
Type
Membership
Duration
Date_start
Valid_For_Member
Sponsorships And Platform Deals
Avg_Views
Total_Videos
S_Reg_Date
S_Password
Registration
S_Email
Instagram
Twitter
Social_Media
Facebook
Streamer_ID
Streamer
Available_For
Uploads
Stream
Category
Language
StreamID
Title
Quality
Type
Stream_Date
Channel_Name
Background
Country
Language
Age
Undergoes
Date_of_unban
Date_of_ban
Status_of_ban
Reason_for_ban
No_of_reports
Streamer Bans
Checks Performance
Stream_Analytics
Views
Likes
Followers_Inc
Total_Comments
Subs_Received
Avg_view_dur
Dons_Received


Given_To
Membership_No
Sponsorship_No
StreamerID
Avg_views
Total_Videos
Valid_For_Member
Valid_For_Sponsor
Requirements
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Membership_No
Comp_Reg
Platform_Reg
Chat Unban Requests
ViewerID
StreamerID
Ban_timestamp
Banned_By
Reason_For_Ban
Viewer_Defence
Unban_Approved
Unban_timestamp
Sponsorships And Platform Deals
Membership_No
Sponsorship_No
Mem_Type
Mem_Duration
Mem_Date
Spons_Company
Spons_Date
Spons_Duration
Channel Administrators
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Position
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Earnings
Bots_Present
Hires
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AdminID
ViewerID
Open_For_Hiring
Streamer Bans
StreamerID
Date_of_Ban
Reason_for_Ban
No_of_Reports
Status_of_Ban
Date_of_Unban
Donations
StreamerID
ViewerID
Don_timestamp
Don_Amt
Streamer
StreamerID
ChannelName
S_Reg_Date
S_Password
S_Email
Age
Country
Instagram
Twitter
Facebook
Streamer-Lang
StreamerID
Language
Subscriptions
StreamerID
ViewerID
Subs_Start
Subs_End
Subs_Type
Viewer
ViewerID
V_Reg_Date
Username
V_Password
V_Email
V_Country
V_Age
Follows
StreamerID
ViewerID
Fol_Date
Fol_Status
Unfol_Date
Advertisements
AdvID
StreamerID
Ad_Name
Company_Name
Ad_Category
Revenue_Split_Ratio
Ad_Earnings
Stream
StreamerID
StreamID
Title
Quality
Type
Stream_Date
Duration
Language
Stream Analytics
StreamID
Views
Likes
Followers_Inc
Comments
Subs_Received
Avg_View_Dur
Dons_Recevied
Viewer-Int
ViewerID
Interests
Shown_On
AdvID
StreamID
Ad_timestamp
Ad_Duration
Watches
StreamID
ViewerID
Watch_Dur
Stream-Cat
StreamID
Category
Chat And Reactions
StreamID
ViewerID
Chat_timestamp
Chat_Log
Reaction

Minimal Functional Dependency Sets and Normal Forms in StreamWave's Database:-

Streamer Relation:

- StreamerID -> ChannelName
- StreamerID -> S_Reg_Date
- StreamerID -> S_Password
- StreamerID -> S_Email
- StreamerID -> Age
- StreamerID -> Country
- StreamerID -> Instagram
- StreamerID -> Twitter
- StreamerID -> Facebook
- $(StreamerID)^+$ = (StreamID, ChannelName, S_Reg_Date, S_Email, Age, Country, Instagram, Twitter, Facebook)
- Primary Key: StreamerID as its closure includes all attributes of Streamer Relation.
- For every Functional Dependency A → B that holds on the relation Streamer, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Streamer-Lang Relation:

- {StreamerID,Language} -> Language
- {StreamerID,Language} -> StreamerID
- $(StreamerID,Language)^+$ = (StreamerID,Language)
- Composite Key: (StreamID,Language) as its closure includes all attributes of Streamer-Lang Relation.
- For every Functional Dependency A → B that holds on the relation Streamer-Lang, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form). Also, as all the attributes of the relation form the composite key, the relation will be in BCNF.

Viewer Relation:

- ViewerID -> V_Reg_Date
- ViewerID -> V_Password
- ViewerID -> V_Country
- ViewerID -> V_Age
- ViewerID -> Username

- $(ViewerID)^+$ = (ViewerID, V_Reg_Date, V_Password, V_Country, V_Age, Username)
- Primary Key: ViewerID as its closure includes all attributes of Viewer Relation.
- For every Functional Dependency A → B that holds on the relation Viewer, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Viewer-Int Relation:

- {ViewerID,Interests} -> Interests
- {ViewerID,Interests} -> ViewerID
- $(ViewerID,Interests)^+$ = (ViewerID, Interests)
- Composite Key: (ViewerID,Interests) as its closure includes all attributes of Viewer-Int Relation.
- For every Functional Dependency A → B that holds on the relation Viewer-Int, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form). Also, as all the attributes of the relation form the composite key, the relation will be in BCNF.

Stream Relation:

- StreamID -> Title
- StreamID -> Quality
- StreamID -> Type
- StreamID -> Stream_Date
- StreamID -> Duration
- StreamID -> Language
- StreamID -> StreamerID
- $(StreamID)^+$ = (StreamID, Title, Quality, Type, Stream_Date, Duration, Language, StreamerID)
- Primary Key: StreamID as its closure includes all attributes of Stream Relation.
- For every Functional Dependency A → B that holds on the relation Stream, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Stream-Cat Relation:

- {StreamID,Category} -> Category
- {StreamID,Category} -> Stream
- $(StreamID,Category)^+$ = (StreamID, Category)
- Composite Key: (StreamID,Category) as its closure includes all attributes of Stream-Cat Relation.

- For every Functional Dependency A → B that holds on the relation Stream-Cat, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form). Also, as all the attributes of the relation form the composite key, the relation will be in BCNF.

Stream Analytics Relation:

- StreamID -> Views
- StreamID -> Likes
- StreamID -> Comments
- StreamID -> Followers_Inc
- StreamID -> Subs_Received
- StreamID -> Dons_Received
- StreamID -> Avg_View_Dur
- $(StreamID)^+$ = (StreamID, Views, Likes, Comments, Followers_Inc, Subs_Received, Dons_Received, Avg_View_Dur)
- Primary Key: StreamID as its closure includes all attributes of Stream Analytics Relation.
- For every Functional Dependency A → B that holds on the relation Stream Analytics, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Streamer Bans Relation:

- {StreamerID,Date_of_Ban, Reason_for_Ban } -> No_of_Reports
- {StreamerID,Date_of_Ban, Reason_for_Ban } -> Status_of_Ban
- {StreamerID,Date_of_Ban, Reason_for_Ban } -> Date_of_Unban
- $(StreamerID,Date\_of\_Ban,Reason\_for\_Ban)^+$ = (StreamerID, Date_of_Ban, Reason_for_Ban, No_of_Reports, Status_of_Ban, Date_of_Unban)
- Composite Key: (StreamerID,Date_of_Ban,Reason_for_Ban) as its closure includes all attributes of Streamer Bans Relation.
- For every Functional Dependency A → B that holds on the relation Streamer Bans, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Chat And Reactions:

- {StreamerID,ViewerID,Chat_timestamp} -> Chat_Log
- {StreamerID,ViewerID,Chat_timestamp} -> Reaction
- $(StreamerID,ViewerID,Chat\_timestamp)^+$ = (StreamerID, ViewerID, Chat_timestamp Chat_Log, Reaction)

- Composite Key: (StreamerID,ViewerID,Chat_timestamp) as its closure includes all attributes of Chat And Reactions Relation.
- For every Functional Dependency A → B that holds on the relation Chat and Reactions, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Chat Unban Requests:

- {StreamerID,ViewerID,Ban_timestamp} -> Banned_by
- {StreamerID,ViewerID,Ban_timestamp} -> Reason_For_Ban
- {StreamerID,ViewerID,Ban_timestamp} -> Viewer_Defence
- {StreamerID,ViewerID,Ban_timestamp} -> Unban_Approved
- {StreamerID,ViewerID,Ban_timestamp} -> Unban_timestamp
- $(\text{StreamerID,ViewerID,Ban\_timestamp})^{+}$ = (StreamerID, ViewerID, Ban_timestamp Banned_by, Reason_For_Ban, Viewer_Defence, Unban_Approved, Unban_timestamp)
- Composite Key: (StreamerID,ViewerID,Ban_timestamp) as its closure includes all attributes of Chat Unban Requests Relation.
- For every Functional Dependency A → B that holds on the relation Chat Unban Requests, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Channel Administrators:

- {AdminID,ViewerID,Date_of_Join} -> Position
- {AdminID,ViewerID,Date_of_Join} -> Duty
- {AdminID,ViewerID,Date_of_Join} -> Earnings
- {AdminID,ViewerID,Date_of_Join} -> Bots_Present
- $(\text{AdminID,ViewerID,Date\_of\_Join})^{+}$ = (AdminID, ViewerID, Date_of_Join, Position, Duty, Earnings, Bots_Present)
- Composite Key: (AdminID,ViewerID,Date_of_Join) as its closure includes all attributes of Channel Administrators Relation.
- For every Functional Dependency A → B that holds on the relation Channel Administrators, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Hires:

- {StreamerID,AdminID} -> Open_For_Hiring

- (StreamerID,AdminID)$^+$ = (StreamerID, AdminID, Open_For_Hiring)
- Composite Key: (StreamerID,AdminID) as its closure includes all attributes of Hires Relation.
- For every Functional Dependency A → B that holds on the relation Hires, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Advertisements:

- {AdvID,StreamerID} -> Ad_Name
- {AdvID,StreamerID} -> Company_Name
- {AdvID,StreamerID} -> Ad_Category
- {AdvID,StreamerID} -> Revenue_Split
- {AdvID,StreamerID} -> Ad_Earnings
- (AdvID,StreamerID)+ = (AdvID, StreamerID, Ad_Name, Company_Name, Ad_Category, Revenue_Split, Ad_Earnings)
- Composite Key: (AdvID,StreamerID) as its closure includes all attributes of Advertisements Relation.
- For every Functional Dependency A → B that holds on the relation Advertisements, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Shown_On:

- {AdvID,StreamID,Ad_Timestamp} -> Ad_Duration
- (AdvID,StreamID,Ad_Timestamp)$^+$ = (AdvID, StreamID, Ad_Timestamp, Ad_Duration)
- Composite Key: (AdvID,StreamID,Ad_Timestamp) as its closure includes all attributes of Shown_On Relation.
- For every Functional Dependency A → B that holds on the relation Shown_On, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Sponsorships And Platform Deals:

- {Membership_No,Sponsorship_No} -> Mem_Type
- {Membership_No,Sponsorship_No} -> Mem_Duration
- {Membership_No,Sponsorship_No} -> Mem_Date
- {Membership_No,Sponsorship_No} -> Spons_Company
- {Membership_No,Sponsorship_No} -> Spons_Date
- {Membership_No,Sponsorship_No} -> Spons_Duration

- (MembershipNo,Sponsorship_No)$^+$ = (MembershipNo, Sponsorship_No, Mem_Type, Mem_Duration, Mem_Date, Spons_Company, Spons_Date, Spons_Duration)
- Composite Key: (Membership_No,Sponsorship_No) as its closure includes all attributes of Sponsorships and Platform Deals Relation.
- For every Functional Dependency A → B that holds on the relation Sponsorship and Platform Deals, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Given_To:

- {Membership_No,Sponsorship_No,StreamerID} -> Avg_views
- {Membership_No,Sponsorship_No,StreamerID} -> Total_Videos
- {Membership_No,Sponsorship_No,StreamerID} -> Valid_For_Member
- {Membership_No,Sponsorship_No,StreamerID} -> Valid_For_Sponsor
- (Membership_No,Sponsorship_No,StreamerID)$^+$ = (Membership_No, Sponsorship_No, StreamerID, Avg_Views, Total_Videos, Valid_For_Member, Valid_For_Sponsor)
- Composite Key: (Membership_No,Sponsorship_No,StreamerID) as its closure includes all attributes of Given_To Relation.
- For every Functional Dependency A → B that holds on the relation Given_To, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Requirements:

- {Sponsorship_No,Membership_No,Comp_Req,Platform_Req} -> Sponsorship_No
- {Sponsorship_No,Membership_No,Comp_Req,Platform_Req} -> Membership_No
- {Sponsorship_No,Membership_No,Comp_Req,Platform_Req} -> Comp_Req
- {Sponsorship_No,Membership_No,Comp_Req,Platform_Req} -> Platfrom_Req
- (Sponsorship_No,Membership_No,Comp_Req,Platform_Req)$^+$ = (Sponsorship_No, Membership_No, Comp_Req, Platform_Req)
- Composite Key: (Sponsorship_No,Membership_No,Comp_Req,Platform_Req) as its closure includes all attributes of Requirements Relation.
- For every Functional Dependency A → B that holds on the relation Requirements, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form). Also, as all the attributes of the relation form the composite key, the relation will be in BCNF.

Donations:

- {StreamerID,ViewerID,Don_timestamp} -> Don_Amt
- $(StreamerID,ViewerID,Don\_timestamp)^+$ = (StreamerID, ViewerID, Don_timestamp, Don_Amt)
- Composite Key: (StreamerID,ViewerID,Don_timestamp) as its closure includes all attributes of Donations Relation.
- For every Functional Dependency A → B that holds on the relation Donations, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Subscriptions:

- {StreamerID,ViewerID,Subs_Start} -> Subs_End
- {StreamerID,ViewerID,Subs_Start} -> Subs_Type
- $(StreamerID,ViewerID,Subs\_Start)^+$ = (StreamerID, ViewerID, Subs_Start, Subs_End, Subs_Type)
- Composite Key: (StreamerID,ViewerID,Subs_Start) as its closure includes all attributes of Subscriptions Relation.
- For every Functional Dependency A → B that holds on the relation Subscriptions, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Follows:

- {StreamerID,ViewerID,Fol_Date} -> Fol_Status
- {StreamerID,ViewerID,Fol_Date} -> Unfol_Date
- (StreamerID,ViewerID,Fol_Date)+ = (StreamerID, ViewerID, Fol_Date, Fol_Status, Unfol_Date)
- Composite Key: (StreamerID,ViewerID,Fol_Date) as its closure includes all attributes of Follows Relation.
- For every Functional Dependency A → B that holds on the relation Follows, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form).

Watches:

- {StreamID,ViewerID,Watch_Dur } -> StreamID
- {StreamID,ViewerID,Watch_Dur} -> ViewerID
- {StreamID,ViewerID,Watch_Dur} -> Watch_Dur
- $(StreamID,ViewerID,Watch\_Dur)^+$ = (StreamID, ViewerID, Watch_Dur)

- Composite Key: (StreamID,ViewerID,Watch_Dur) as its closure includes all attributes of Watches Relation.
- For every Functional Dependency A → B that holds on the relation Watches, A is its super key, hence the relation is in BCNF (Boyce-Codd Normal Form). Also, as all the attributes of the relation form the composite key, the relation will be in BCNF.