DBMS PROJECT [IT-214]

Project Title: PlayStoreDB: Play Store Database & Insights
(Academic Year: 2025)

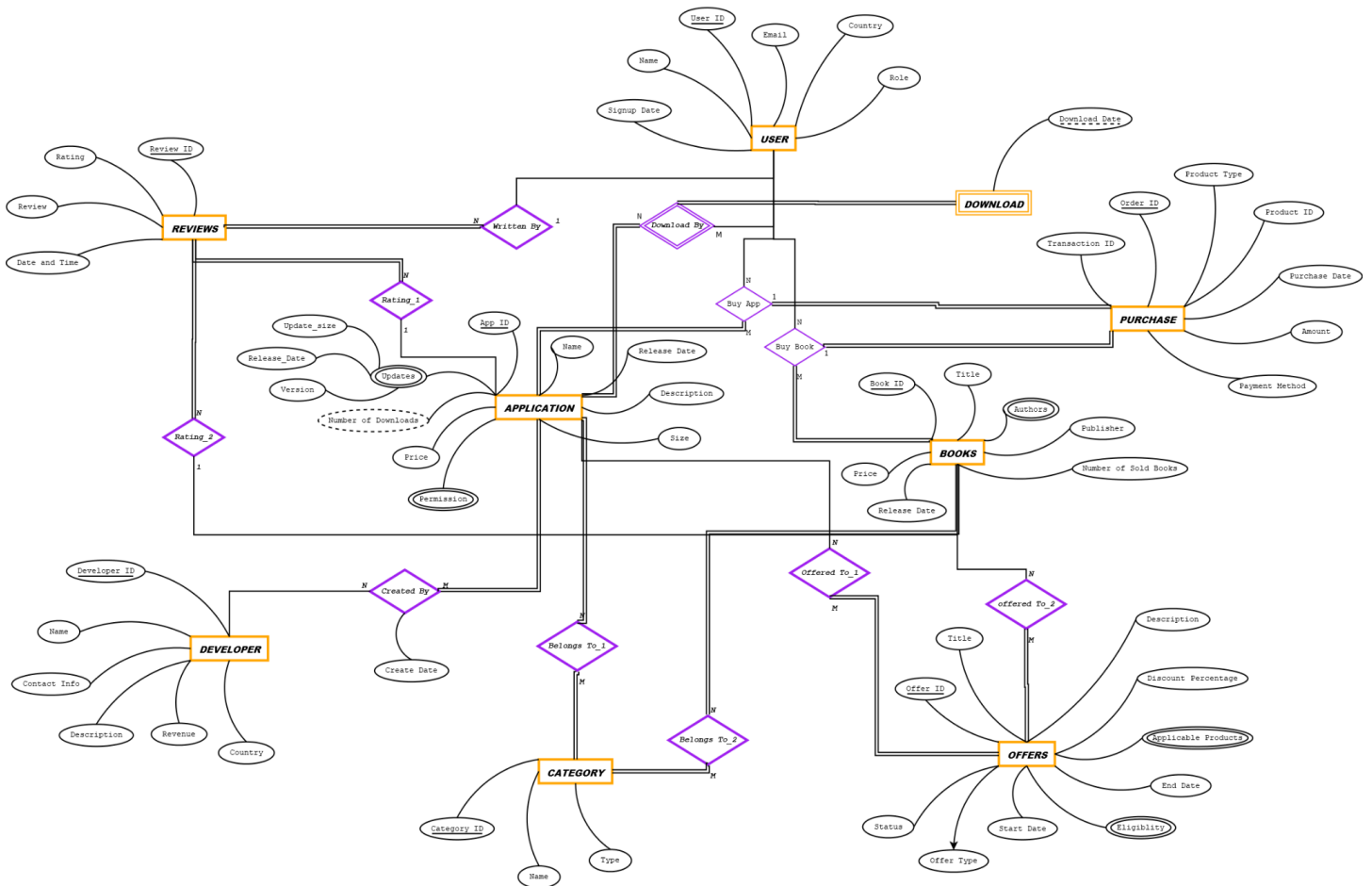| Team Details :	
Student ID	**Name**
202301016	Tirth Niravkumar Gandhi
202301037	Bhavya Boda
202301062	Maulik Khoyani

Group Representative :

- **Student ID:** 202301016
- **Name:** Tirth Niravkumar Gandhi
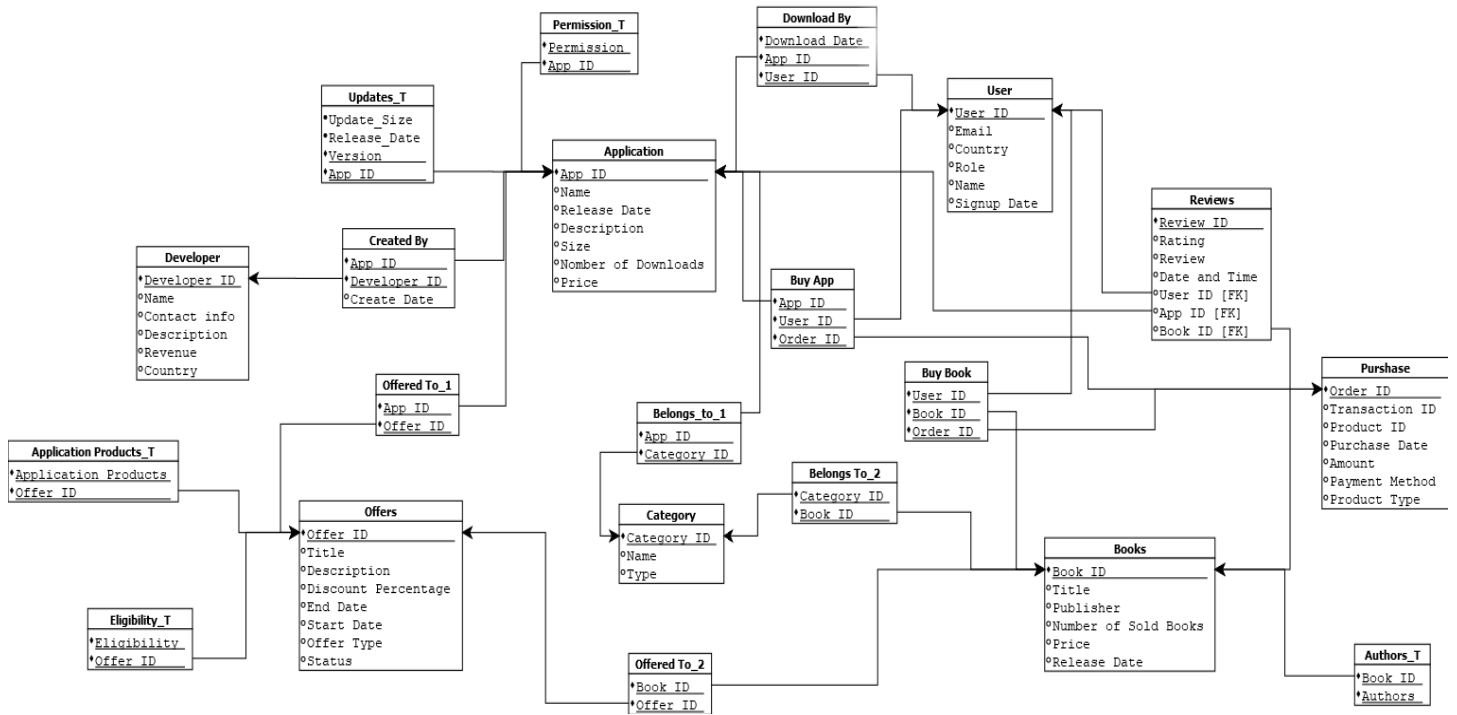- **Contact Number:** 7048521918

Project Title :

- **PlayStoreDB**: Play Store Database & Insights

★ ER DIAGRAM :

Play Store ER Diagram

★ : Relational Schema (Dia Diagram) :

Permission_T
- ‣ Permission
- ‣ App ID

Download By
- ‣ Download Date
- ‣ App ID
- ‣ User ID

Updates_T
- ‣ Update_Size
- ‣ Release_Date
- ‣ Version
- ‣ App ID

Application
- ‣ App ID
- ° Name
- ° Release Date
- ° Description
- ° Size
- ° Nomber of Downloads
- ° Price

User
- ‣ User ID
- ° Email
- ° Country
- ° Role
- ° Name
- ° Signup Date

Reviews
- ‣ Review ID
- ° Rating
- ° Review
- ° Date and Time
- ° User ID [FK]
- ° App ID [FK]
- ° Book ID [FK]

Developer
- ‣ Developer ID
- ° Name
- ° Contact info
- ° Description
- ° Revenue
- ° Country

Created By
- ‣ App ID
- ‣ Developer ID
- ° Create Date

Buy App
- ‣ App ID
- ‣ User ID
- ‣ Order ID

Buy Book
- ‣ User ID
- ‣ Book ID
- ‣ Order ID

Purshase
- ‣ Order ID
- ° Transaction ID
- ° Product ID
- ° Purchase Date
- ° Amount
- ° Payment Method
- ° Product Type

Offered To_1
- ‣ App ID
- ‣ Offer ID

Belongs_to_1
- ‣ App ID
- ‣ Category ID

Application Products_T
- ‣ Application Products
- ‣ Offer ID

Belongs To_2
- ‣ Category ID
- ‣ Book ID

Offers
- ‣ Offer ID
- ° Title
- ° Description
- ° Discount Percentage
- ° End Date
- ° Start Date
- ° Offer Type
- ° Status

Category
- ‣ Category ID
- ° Name
- ° Type

Books
- ‣ Book ID
- ° Title
- ° Publisher
- ° Number of Sold Books
- ° Price
- ° Release Date

Eligibility_T
- ‣ Eligibility
- ‣ Offer ID

Offered To_2
- ‣ Book ID
- ‣ Offer ID

Authors_T
- ‣ Book ID
- ‣ Authors

★ *RELATIONAL SCHEMA :*

APPLICATION (App ID, Name, Release Date, Description, Size, Price, Number of Downloads)

        // Primary Key: App ID
        // Foreign Key: NA

Updates (App ID, Update_size, Release_Date, Version)

        // Primary Key: {App ID, Version}
        // Foreign Key: App ID

PERMISSION (App ID, Permission)

        // Primary Key: {App ID, Permission}
        // Foreign Key: App ID

DOWNLOAD BY (App ID, User ID, Download Date)

        // Primary Key: {App ID, User ID, Download Date}
        // Foreign Key: App ID
        // Foreign Key: User ID

USER (User ID, Name, Email, Signup Date, Role, Country)

        // Primary Key: User ID
        // Foreign Key: NA

Created By (App ID, Developer ID, Create Date)

        // Primary Key: {App ID, Developer ID}
        // Foreign Key: App ID
        // Foreign Key: Developer ID

DEVELOPER (Developer ID, Name, Contact Info, Description, Revenue, Country)

        // Primary Key: Developer ID
        // Foreign Key: NA

Belongs To_1 (App ID, Category ID)

        // Primary Key: {App ID, Category ID}
        // Foreign Key: App ID
        // Foreign Key: Category ID

Belongs To_2 (Book ID, Category ID)

        // Primary Key: {Book ID, Category ID}
        // Foreign Key: Book ID
        // Foreign Key: Category ID

CATEGORY (Category ID, Name, Type)

        // Primary Key: Category ID
        // Foreign Key: NA

Buy App (User ID, App ID, Order ID)

        // Primary Key: {User ID, App ID, Order ID}
        // Foreign Key: UserID
        // Foreign Key: App ID
        // Foreign Key: Order ID

Buy Book (User ID, Book ID, Order ID)

        // Primary Key: {User ID, Book ID, Order ID}
        // Foreign Key: User ID
        // Foreign Key: Book ID
        // Foreign Key: Order ID

PURCHASE (Order ID, Transaction ID, Product Type, Product ID, Purchase ID, Purchase Date, Amount, Payment Method)

        // Primary Key: Order ID
        // Foreign Key: NA

BOOKS (Book ID, Title, Price, Release Date, Publisher, Number of Sold Books)

        // Primary Key: Book ID
        // Foreign Key: NA

AUTHOR (Book ID, Authors)

        // Primary Key: {Book ID, Authors}
        // Foreign Key: Book ID

Offered To_1 (App ID, Offer ID)

        // Primary Key: {App ID, Offer ID}
        // Foreign Key: App ID
        // Foreign Key: Offer ID

Offered To_2 (Book ID, Offer ID)

        // Primary Key: {Book ID, Offer ID}
        // Foreign Key: Book ID
        // Foreign Key: Offer ID

OFFERS (Offer ID, Title, Description, Discount Percentage, End Date, Start Date,Offer Type, Status)

        // Primary Key: Offer ID
        // Foreign Key: NA

Applicable Products (Offer ID, Applicable Products)

        // Primary Key: {Offer ID, Applicable Products}
        // Foreign Key: Offer ID

Eligibility (Offer ID, Eligibility)

        // Primary Key: {Offer ID, Eligibility}
        // Foreign Key: Offer ID

REVIEWS (Review ID, Rating, Review, Date and Time, User ID, App ID, Book ID)

        // Primary Key: Review ID
        // Foreign Key: User ID
        // Foreign Key: App ID
        // Foreign Key: Book ID

★ *Minimal FD Set & BCNF Proof :*

1. APPLICATION

->*App_ID → Name, Release_Date, Description, Size, Price, Number_of_Downloads*

->*App_ID* being the key determines every attribute in the relation, it is on the left side of all FDs in the Minimal FD set.

Thus, it is in the **BCNF** Form.

2. UPDATES

->*App_ID, Version → Update_size, Release_Date*

->*App_ID, Version* being the key that determines every attribute in the relation, it is on the left side of all FDs in the Minimal FD set.

Thus, it is in the **BCNF** Form.

3. PERMISSION

->*App_ID, Permission → (No non-key attribute, hence no non-trivial FD)*

->App_ID, Permission being the key *& no non-key attributes. Hence, there are no non-trivial functional dependencies other than those implied by the key.*

Thus, it is in the **BCNF** Form.

4. DOWNLOAD_BY

->*App_ID, User_ID → Download_Date*

->App_ID, User_ID being the key that determines every attribute in the relation, it is on the left side of all FDs in the Minimal FD set.

Thus, it is in the **BCNF** Form.

5. USER

->*User_ID → Name, Email, Signup_Date, Role, Country*

->User_ID being the key determines every attribute in the relation, it is on the left side of all FDs in the Minimal FD set.

Thus, it is in the **BCNF** Form.

6. CREATED_BY

->*App_ID, Developer_ID → Create_Date*

->App_ID, Developer_ID being the key that determines every attribute in the relation, it is on the left side of all FDs in the Minimal FD set.

Thus, it is in the **BCNF** Form.

7. DEVELOPER

->*Developer_ID → Name, Contact_Info, Description, Revenue, Country*

->Developer_ID being the key determines every attribute in the relation, it is on the left side of all FDs in the Minimal FD set.

Thus, it is in the **BCNF** Form.

8. BELONGS_TO_1

->*App_ID, Category_ID → (No non-key attribute)*

->App_ID, Category_ID being the key *& no non-key attributes. Hence, there are no non-trivial functional dependencies other than those implied by the key.*

Thus, it is in the **BCNF** Form.

9. BELONGS_TO_2

->*Book_ID, Category_ID → (No non-key attribute)*

->Book_ID, Category_ID being the key *& no non-key attributes. Hence, there are no non-trivial functional dependencies other than those implied by the key.*

Thus, it is in the **BCNF** Form.

10. CATEGORY

->*Category_ID → Name, Type*

->Category_ID being the key determines every attribute in the relation, it is on the left side of all FDs in the Minimal FD set.

Thus, it is in the **BCNF** Form.

11. BUY_APP

->*User_ID, App_ID, Order_ID → (No non-key attribute)*

->User_ID, App_ID, Order_ID being the key *& no non-key attributes. Hence, there are no non-trivial functional dependencies other than those implied by the key.*

Thus, it is in the **BCNF** Form.

12. BUY_BOOK

->*User_ID, Book_ID, Order_ID → (No non-key attribute)*

->User_ID, Book_ID, Order_ID being the key *& no non-key attributes. Hence, there are no non-trivial functional dependencies other than those implied by the key.*

Thus, it is in the **BCNF** Form.

13. PURCHASE

->*Order_ID → Transaction_ID, Product_Type, Product_ID, Purchase_ID, Purchase_Date, Amount, Payment_Method*

->Order_ID being the key determines every attribute in the relation, it is on the left side of all FDs in the Minimal FD set.

Thus, it is in the **BCNF** Form.

14. BOOKS

->*Book_ID → Title, Price, Release_Date, Publisher, Number_of_Sold_Books*

->Book_ID being the key determines every attribute in the relation, it is on the left side of all FDs in the Minimal FD set.

Thus, it is in the **BCNF** Form.

15. AUTHOR

->*Book_ID, Authors → (No non-key attribute)*

->Book_ID, Authors being the key *& no non-key attributes. Hence, there are no non-trivial functional dependencies other than those implied by the key.*

Thus, it is in the **BCNF** Form.

16. OFFERED_TO_1

->*App_ID, Offer_ID → (No non-key attribute)*

->App_ID, Offer_ID being the key *& no non-key attributes. Hence, there are no non-trivial functional dependencies other than those implied by the key.*

Thus, it is in the **BCNF** Form.

17. OFFERED_TO_2

->Book_ID, Offer_ID → (No non-key attribute)

->Book_ID, Offer_ID being the key *& no non-key attributes. Hence, there are no non-trivial functional dependencies other than those implied by the key.*

Thus, it is in the **BCNF** Form.

18. OFFERS

->Offer_ID → Title, Description, Discount_Percentage, End_Date, Start_Date, Offer_Type, Status

->Offer_ID being the key that determines every attribute in the relation, it is on the left side of all FDs in the Minimal FD set.

Thus, it is in the **BCNF** Form.

19. APPLICABLE_PRODUCTS

->Offer_ID, Applicable_Products → (No non-key attribute)

->Offer_ID, Applicable_Products being the key *& no non-key attributes. Hence, there are no non-trivial functional dependencies other than those implied by the key.*

Thus, it is in the **BCNF** Form.

20.   ELIGIBILITY

->Offer_ID, Eligibility → (No non-key attribute)

->Offer_ID,Eligibility being the key *& no non-key attributes. Hence, there are no non-trivial functional dependencies other than those implied by the key.*

Thus, it is in the **BCNF** Form.

21. REVIEWS

->Review_ID → Rating, Review, Date_and_Time, User_ID, App_ID, Book_ID

->Review_ID being the key that determines every attribute in the relation, it is on the left side of all FDs in the Minimal FD set.

Thus, it is in the **BCNF** Form.

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