

Partial Project Definition  
Database Foundations I

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## **1. Project Description**

For the project proposal, we aim to develop an application that serves as a distributor and hub for purchasing and downloading purely digital apps and products, all within an interface where each user has access to the catalog of applications along with their respective reviews and statistics within the app.

Likewise, every user possesses the capability to publish their own applications and manage their distribution, setting prices and regional visibility according to their needs. In light of this, we propose a business model wherein each user who publishes an app will pay a commission for sales and distribution to the application for every copy sold of the product, or alternatively, a percentage of the total profits generated if the application is free to download. If the user prefers, this percentage will vary based on the net value of the revenue produced by the application in its last year of publication available in the sales and distribution app.

## **2. Project Requirements - User Stories**

1. As a user, I want to search and discover new digital applications and products for download, so that I can explore a wide range of options available.
2. As a user, I want to filter search results by categories, prices, and ratings to easily find what I need, so that I can quickly narrow down my options.
3. As a user, I want the option to view reviews and ratings from others before downloading a digital application or product, so that I can make informed decisions about their quality and suitability.
5. As a user, I want to receive notifications about updates for applications I have downloaded, so that I can stay informed about new features and improvements.
6. As a user, I want to have a section of personalized recommendations based on my interests and browsing behavior, so that I can discover relevant content tailored to my preferences.
7. As a user, I want to manage my library of downloaded digital applications and products, including the ability to delete or categorize them, so that I can organize and declutter my collection as needed.
8. As a user, I want the option to purchase digital applications and products directly from the app, using secure payment methods, so that I can easily acquire desired items without leaving the platform.

9. As a user, I want to access technical support and customer service if I encounter issues with an application or product, so that I can receive assistance and resolve any problems efficiently.

10. As a user, I want the option to leave comments and reviews about the applications and products I have downloaded, to help other users make informed decisions and contribute to the community.

11. As an administrator, I want access to analytics tools to monitor the performance of the application and understand user behavior, so that I can make data-driven decisions to improve the platform.

12. As an administrator, I want the ability to manage the catalog of digital applications and products, including adding, editing, and deleting items, to ensure that the content available remains relevant and up-to-date.

13. As an administrator, I want to establish pricing policies and promotions to incentivize sales and user engagement, in order to drive revenue and encourage user interaction with the platform.

14. As an administrator, I want the ability to manage user accounts, including the ability to suspend or delete accounts as needed, to maintain security and compliance with platform policies.

15. As an administrator, I want to ensure the security and privacy of user data through appropriate protection measures, to safeguard user trust and comply with regulatory requirements.

16. As a User, I want to search for apps by name, so that I can quickly find the app I'm looking for.

17. As a User, I want to view an app's information, such as screenshots, description, and ratings, so that I can decide whether or not I want to download it.

18. As a developer User, I want to be able to update my released apps, so that I can have the latest features and bug fixes.

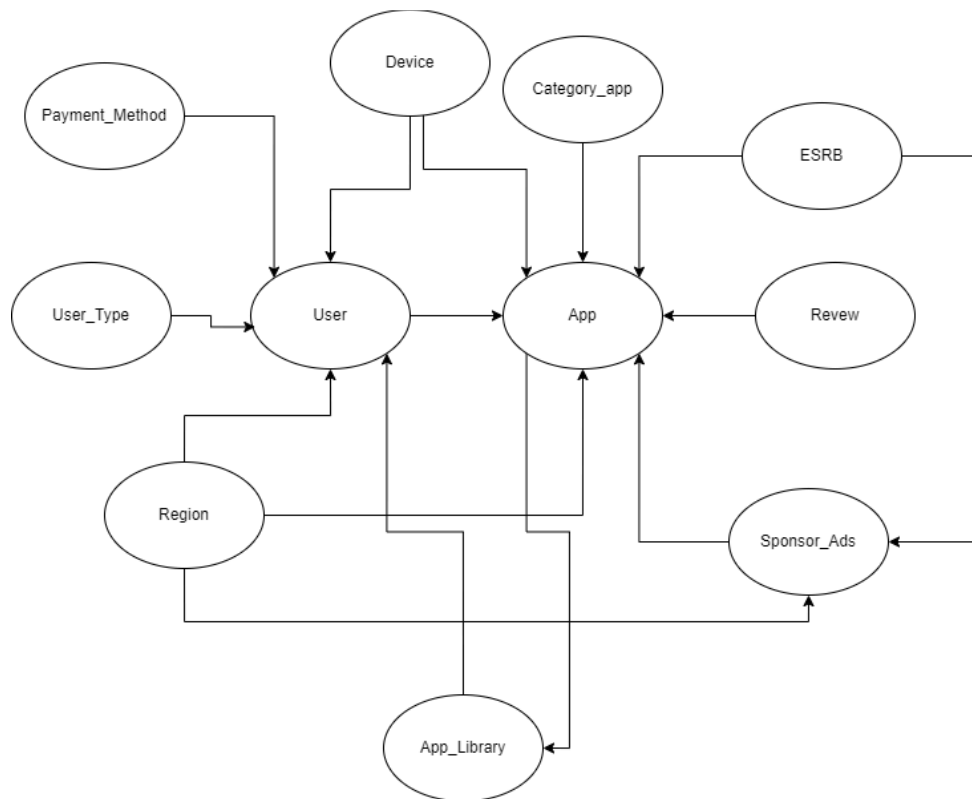
19. As a User, I want to manage my app subscriptions, so that I can control my spending.

20. As a User, I want to report problems with apps, so that developers can fix them.

### 3. Project Structure Construction using Entity-Relationship Model guidelines.

#### a) Entities Setting:

An initial draft of Entities used in the model and its possible relationships established according to the requirements set in the User Stories



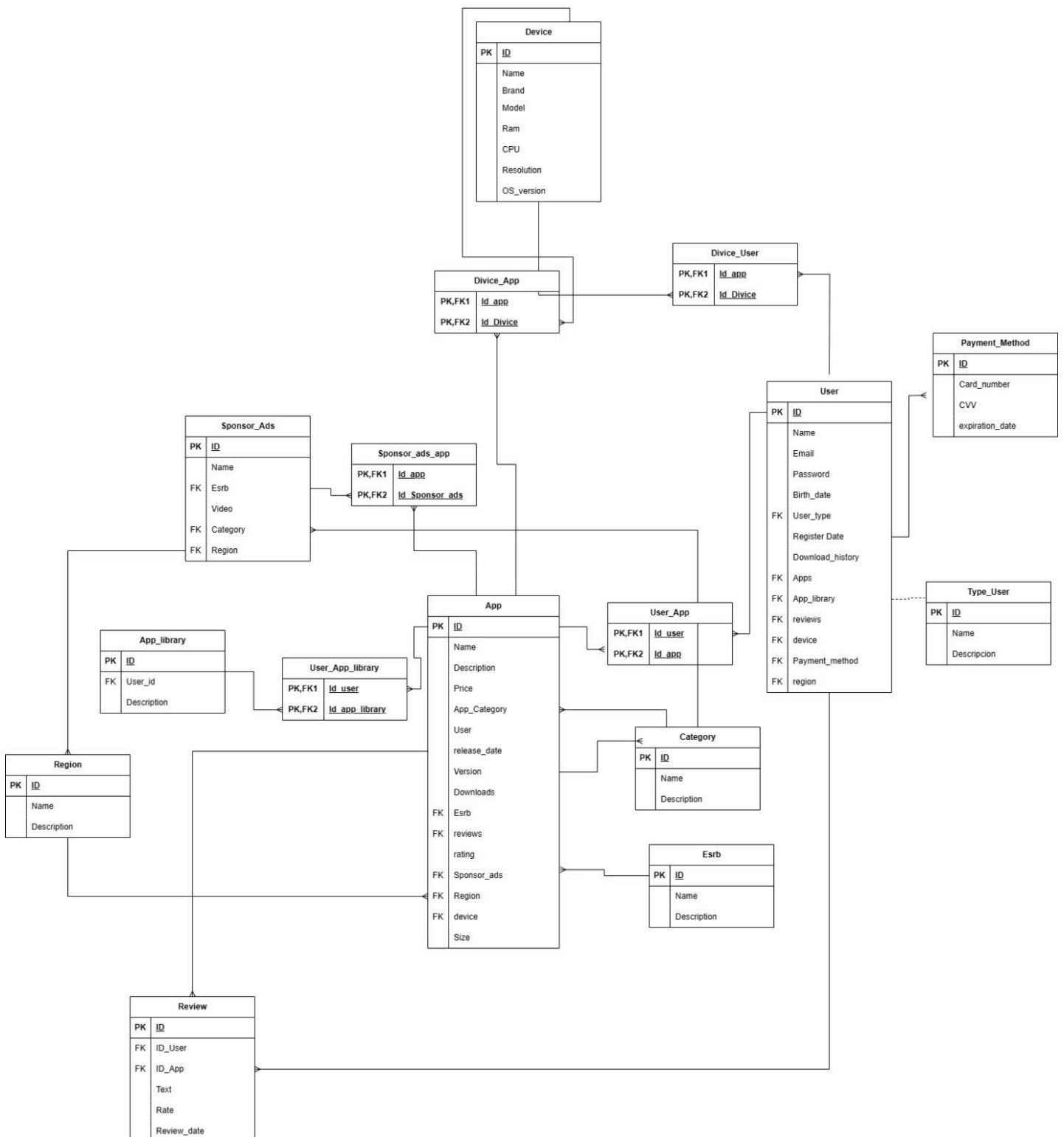
#### b) Entities Definition

Every entity set in the last step is defined along with its attributes according to make a clearer and organized setting for each entity

- E1: User: Name, E-mail, password, register\_date, birthdate, download\_history, reviews, User\_type, Device, Payment\_method, Region, App\_library, ID, apps
- E2 : App: ID, name, Description, App\_Category, Price, User, release\_date, version, downloads, reviews, rating, ERSB, Sponsor\_Ads, Region, Device, size
- E3 App\_Category: ID, name, Apps, Description
- E4 App\_library: ID, User, Apps
- E5 Review: Title, Rating, User, Content, ID
- E6 ERSB: ID, name, description, apps
- E7 Sponsor\_Ads: ID, name, apps, ERSB, Region
- E8 Region: ID, name, Apps, Sponsor:Ads
- E9 User\_Type: ID, name, Users
- E10 Payment\_Method: ID, description, financial\_entity

[illegible]

#### d) Entity.Relationship Model diagram construction:



1. Search applications by category, price and ratings:

$$\pi_{name, Price, rating}(\sigma_{App\_Category.name='category\_name'}(App \bowtie App\_Category))$$

2. Search reviews of an application:

$$\sigma_{App.name='app\_name'}(Review \bowtie App)$$

3. Search for applications of a category in a user's library:

$$\pi_{App.name, App.Description, App.App\_Category, App.Price, App.rating} \\ (\sigma_{App\_Category.name='category\_name'} \\ ((User \bowtie App\_Library) \bowtie App \bowtie App\_Category))$$

4. Search applications by number of downloads in a category:

$$\pi_{App.name, App.downloads}(\sigma_{App\_Category.name='category\_name'}(App \bowtie App\_Category))$$

5. Search users by category:

$$\pi_{User.Name}(User \bowtie App\_Library \bowtie App \bowtie App\_Category)$$

6. Search applications by ESRB:

$$\pi_{App.name}(\sigma_{ESRB.name='ESRB\_name'}(App \bowtie ESRB))$$

7. Search users by payment:

$$\pi_{User.Name}(User \bowtie Payment\_Method)$$

8. Search applications by category, price and ratings:

$$\pi_{name, Price, rating}(\sigma_{App\_Category.name='category\_name'}(App \bowtie App\_Category))$$

9. Search reviews of an application:

$$\sigma_{App.name='app\_name'}(Review \bowtie App)$$

10. Search for applications of a category in a user's library:

$$\pi_{App.name, App.Description, App.App\_Category, App.Price, App.rating} \\ (\sigma_{App\_Category.name='category\_name'} \\ ((User \bowtie App\_Library) \bowtie App \bowtie App\_Category))$$

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$$\pi_{User.Name}(User \bowtie App\_Library \bowtie App \bowtie App\_Category)$$

13. **Search applications by ESRB:**

$$\pi_{App.name}(\sigma_{ESRB.name='ESRB\_name'}(App \bowtie ERSB))$$

14. **Search users by payment:**

$$\pi_{User.Name}(User \bowtie Payment\_Method)$$

15. **Search for applications that have not been reviewed by any user:**

$$\pi_{name}(App - (\pi_{App.name}(Review)))$$

16. **Search for applications that have a rating higher than the average rating of all applications:**

$$\pi_{name,rating}(\sigma_{rating > promedio\_rating}(App))$$

17. **Search for users who have downloaded applications from all available categories:**

$$\pi_{Name}(User - (\pi_{Name}(User \bowtie App\_Library \bowtie App \bowtie App\_Category)))$$