



## **Project Assignment**

### **Milestone 4**

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**Submitted to**

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**Faculty of Information and Communication Technology**

**Mahidol University**

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## **Executive Summary**

The project phase 1, milestone4 of ITCS 413 Database Design , this report presents an analysis of the designing the database system for the business for one of the popular social media platforms, Pinterest. As a visual discovery and planning tool, Pinterest has proven to be a valuable resource for personal and business use. It offers a unique opportunity for businesses to showcase their products, services, and brand identity to a large and engaged audience. Including representing the inspiration of a person's daily life/designing/interesting content.

This report consists of:

- Business Requirements
- ERD/EERD design
- ERD/EERD Transformation
- Normalization

The objectives of this report:

- To study the depth of the business domain in the field of business rules/constraints to enhance and better understanding of database designing.

## **Revised version**



### **Business Domain**

Site / social media platforms that are focused on e-commerce, retail, and visual discovery and planning, where users can search and save ideas/inspiration for various aspects of their lives, including decor, fashion, food, travel, and more. Allow users to create their dashboard or establish via the application called "pins." Various convenience features make it an ideal platform for retail and e-commerce businesses as it provides a way to showcase their products and connect with customers actively searching for ideas and inspiration.

In addition, Pinterest can inspire/improve lifestyles, interiors, and any creative design which bloggers and brands improve to enhance customer relationships and engage many audiences. In order to connect with and engage its user base, drive traffic, and increase conversions, Pinterest offers a variety of advertising opportunities, including promoted pins, promoted boards, and shopping advertisements. Additionally, the platform offers data and insights that businesses can use to evaluate the effectiveness of their campaigns and content.

In general, Pinterest is a business-to-consumer (B2C) platform that gives customers a place to explore and plan for their future projects and interests as well as a way for businesses to connect with and engage with consumers.

In conclusion, Pinterest is a versatile platform that offers businesses a wide range of opportunities to reach their target audience, build brand awareness, and drive conversions. Whether it's through advertising, content creation, or influencer marketing, businesses can leverage the platform to meet their specific goals and connect with consumers in meaningful ways.

### **The overview of the company**

Pinterest is an American image-sharing service platform social media, designed to enable saving, and exploring information generated from 'ideas', on the internet using any visual resource such as images, animated GIFs, and videos. Additionally, Pinterest functions as a search engine for ideas, recommendations, and commerce. Pinterest's users frequently utilize it to observe one another's views. Moreover, brand products can be found via applications, but avoid interfering with Pinterest or marketing efforts because the latter is more likely to inspire people than the former.

For many users, Pinterest offers a variety of information on topics including fashion, travel, food recipes and decorations, exercise, art, business, marketing, etc. Only inspirational images and videos with minimum descriptions are used to present the information.

Users may sign in with Facebook or Google accounts or create a new account to access Pinterest via the website or mobile applications on both iOS and Android.

Whenever users explore Pinterest, the application scrapes users' data and, if the users allow it, Pinterest will collect deep data for analysis. Pinterest may evaluate user activity and compare it to the activities of other users, filter the data, and provide the most accurate information. In short, Pinterest provides information and a ranking based on user engagement and activity.

The distinctive feature of Pinterest is the ability to pin users' content by themselves for grouping and adding to the user's board. Users can use several images to bring ideas or analyze everything they discover. The user who is new to Pinterest will first select their interest content. They can also use a search box to search for other specific content information, which may be different from what they selected the first time. Pinterest also condenses its algorithms to automatically pin-match keywords.

### **Pinterest: Background history**

Pinterest is a social media platform that allows users to discover, share and save visual content such as images and videos. It was founded in 2010 by Ben Silbermann, Paul Sciarra, and Evan Sharp, and officially launched in March 2010. The idea for Pinterest came about when Silbermann, a former Google employee, became interested in collecting and categorizing images online. He wanted to create a platform where people could easily organize and share images with each other. Sciarra, a friend of Silbermann, joined the project soon after, and together they began working on a prototype.

In 2009, Evan Sharp, a former architect, joined the team and helped turn the prototype into a functioning product. The three co-founders officially launched Pinterest in March 2010, and it quickly gained popularity among users who were drawn to its visually appealing format and user-friendly design. Since then, Pinterest has grown to become one of the most popular social media platforms in the world, with over 450 million monthly active users as of 2021. The company is headquartered in San Francisco, California, and has offices in countries such as the United Kingdom, France, and Australia. It has also expanded its offerings to include features such as shopping and advertising, making it a valuable tool for businesses and advertisers looking to reach new audiences.

## **Mission and Vision of Pinterest**

With a slogan that conveys a clear view of Pinterest, “To bring everyone the inspiration to create a life they love.”

Pinterest is the world's idea database. It's the world's largest dataset of ideas, with over 100 billion recipes, home hacks, fashion inspiration, and other daily ideas to explore, each hand-curated by 150 million people and counting. People use Pinterest to identify and do activities that they delight in. Pinterest's users feel more energized and enthusiastic about the future after using the application. Pinterest brings people joy which is the reason, it is one of the world's most recognizable brands. The Pinterest objective is to help people discover their passions, encourage, and inspire them to pursue them in real life.

## **How Pinterest makes money**

The main source of revenue for Pinterest is advertising, more particularly, their advertising platform known as Pinterest Ads.

Advertisers can pay to promote their content, such as promoted pins or promoted boards, to specific user groups or target audiences based on demographics, interests, behaviors, and search keywords. Advertisers can also choose to pay per click (CPC) or per impression (CPM) on their ads.

In addition to advertising, Pinterest has also introduced other revenue-generating features such as the ability for businesses to set up a shop on the platform, which allows them to sell products directly to users. Pinterest also earns revenue through its partnerships with third-party ecommerce platforms like Shopify and WooCommerce.

Additionally, Pinterest makes money by collecting fees for particular services or resources made available to businesses, such as analytics tools to analyze and track their effectiveness on the platform.

## Business Rules

1. Allocate resources effectively to optimize the performance of each income channel.  
Pinterest has various channels to earn income such as business profile, branding income, and retail account who want to promote their product. So, Pinterest can focus on how their revenue is going on and focus on the top three and then focus on the maintenance/performance. This also happens in other social media applications such as Facebook, Instagram, blockit.
2. Continuously gather and analyze data to inform decisions and optimize income channels.

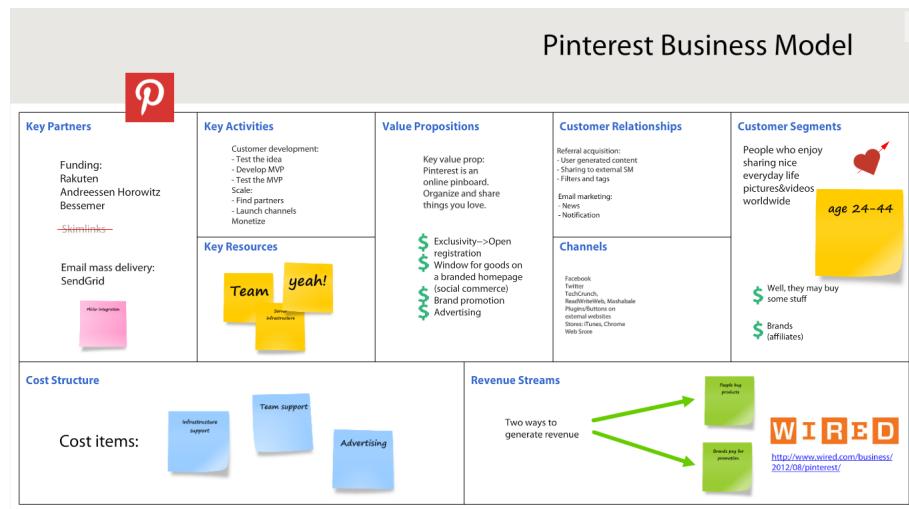


Figure 1 Pinterest Business Model

As the figure above is Pinterest Business Model Canvas and they can maintain what key activity they are involved with.

3. Continuously monitor cash flow and make necessary adjustments to maintain positive cash flow. This is a standard operation of the business which maintains the most income and monitors the near-real time channel.

4. Regularly review and adjust pricing strategies to optimize revenue potential. This is also basically every business that should focus on their strategies to boost their revenue for business by aiming at their opportunity.
5. Offer attractive ad packages to attract and retain advertisers. This does not happen only on the Pinterest platform but also on social media platforms such as facebook that the best revenue is advertising.
6. Continuously gather and analyze the market and industry data to inform advertising decisions. This business rule is quite similar to the previous business rules that the business should aim at what their revenue comes from.
7. Clearly define and communicate the terms and conditions of licensing agreements. The Pinterest platform has various communities depending on what user interest, so the business should provide an employee of each community such as decor, artist, lifestyle, marketing.
8. Regularly review and renegotiate licensing agreements to maximize revenue potential. Pinterest has their own feature for business accounts that is similar to facebook features that support licensing accounts and give a convenience feature for building user's business.
9. Clearly communicate the benefits and features of the business profile subscription. Pinterest supports business profiles in various ways but users need to perform their own like the figure below.

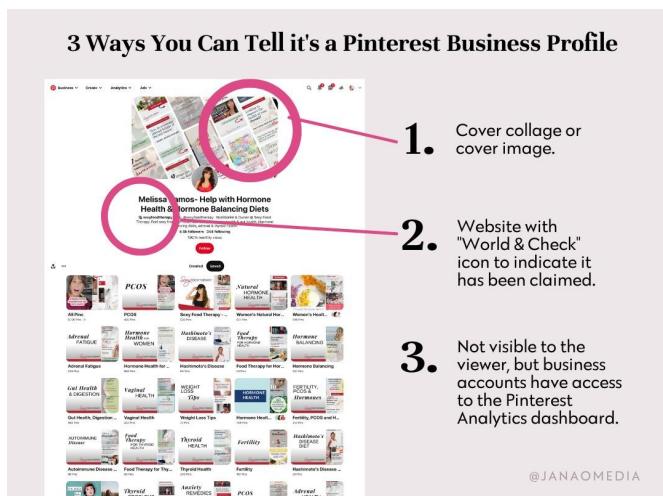


Figure 2 Pinterest Business Profile

10. Continuously gather and analyze data on the usage and effectiveness of business profile subscriptions.
11. Gather users' feedback on a continuous schedule and utilize it to achieve potential developments.

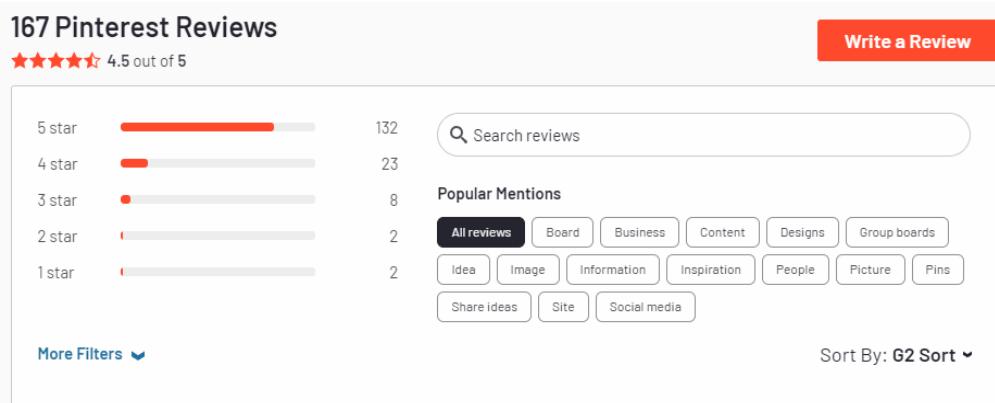


Figure 3 Example of Pinterest Reviews

12. Balance users' needs with technical feasibility and business requirements.
13. Considerations regarding privacy and security, such as data protection rules.

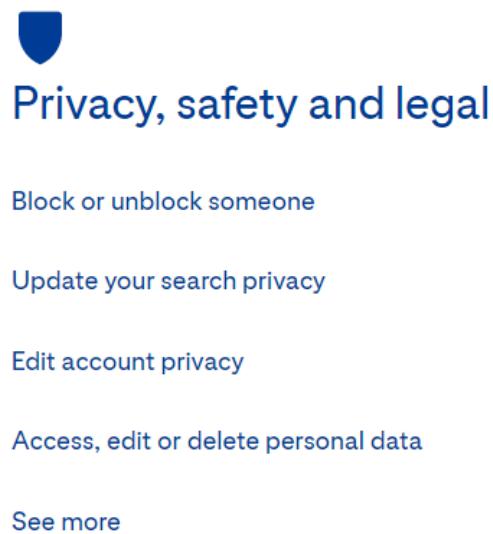


Figure 4 Example of considerations regarding privacy and security

#### 14. Monitor user satisfaction statistics.

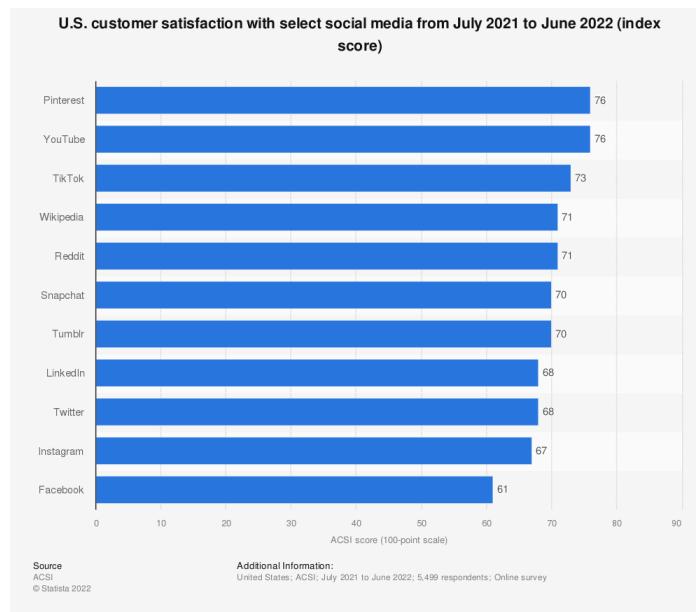


Figure 5 Example of user satisfaction statistics

15. User development procedures should be assessed and evaluated to make opportunities for improvement.

16. Focus on solving customer problems and providing value.

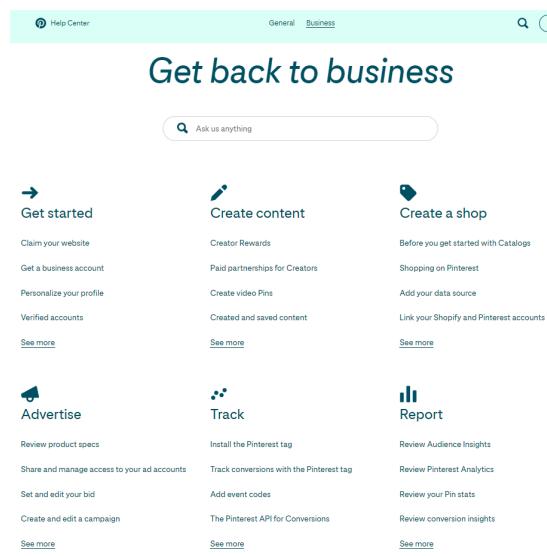


Figure 6 Example of solving customer problems

17. Identify and prioritize the key features and benefits that users value most. Identifying and prioritizing the key features and benefits that users value most involves understanding what your users want and need from your products or services, and using that information to make informed decisions about what features and benefits to focus on.
18. Test new features and functions before launch to application.
19. Maintain frequent communication with users and keep them up to date on feature upgrades and changes.
20. Continuously iterate and improve the user's development process.
21. Maintain a consistent brand image across your pins and boards to build a strong brand identity and increase recognition.
22. Optimize your pins and boards with relevant keywords to make your content more discoverable to users searching for similar topics.

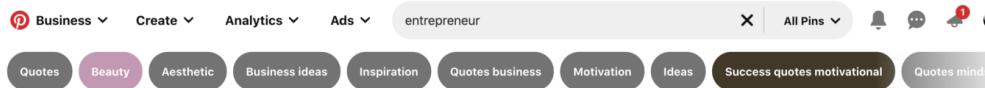


Figure 7 Example of search by relevant keywords

23. Collaborate with other businesses or influencers in your industry to reach a wider audience and drive engagement.
24. Monitor your analytics to track the success of your content and make data-driven decisions about your marketing strategy. Analytics can provide valuable insights into the performance of your content and help you make informed decisions about your marketing strategy.
25. Be transparent about any sponsored content or advertisements to maintain trust with your audience. Sponsored content or advertisements are paid promotions, and disclosing them as such helps to avoid any confusion or misunderstandings with your audience.

26. Pin a variety of content, including product images, tutorials, and behind-the-scenes photos, to keep your content interesting and engaging.

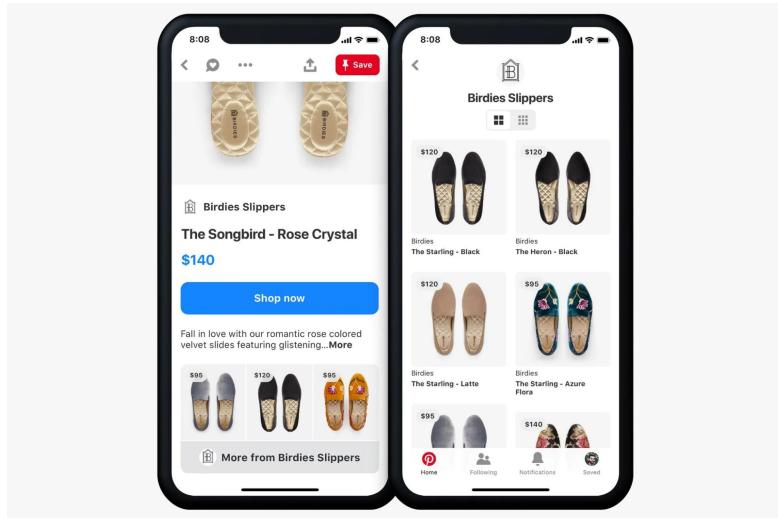


Figure 8 Example of pin a variety of content

27. Continuously testing and optimizing your content and strategy to improve performance and reach your goals is an important aspect of success on the platform. It allows you to make data-driven decisions and improve your performance over time.
28. Pinterest prioritizes high-quality, visually appealing content in the feed, so make sure your pins are well-designed and engaging.

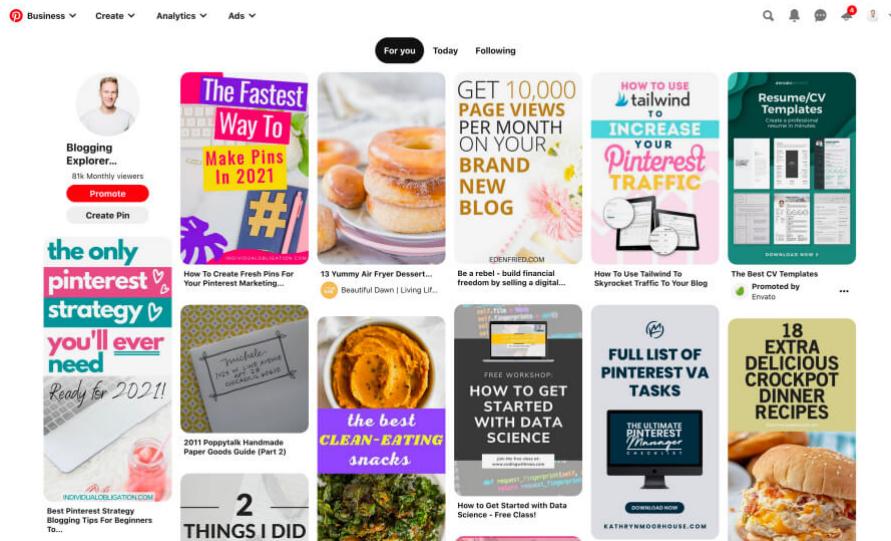


Figure 9 Example of pinterest prioritizes high-quality

29. Include URL links in your pins that lead back to your website or a specific landing page.

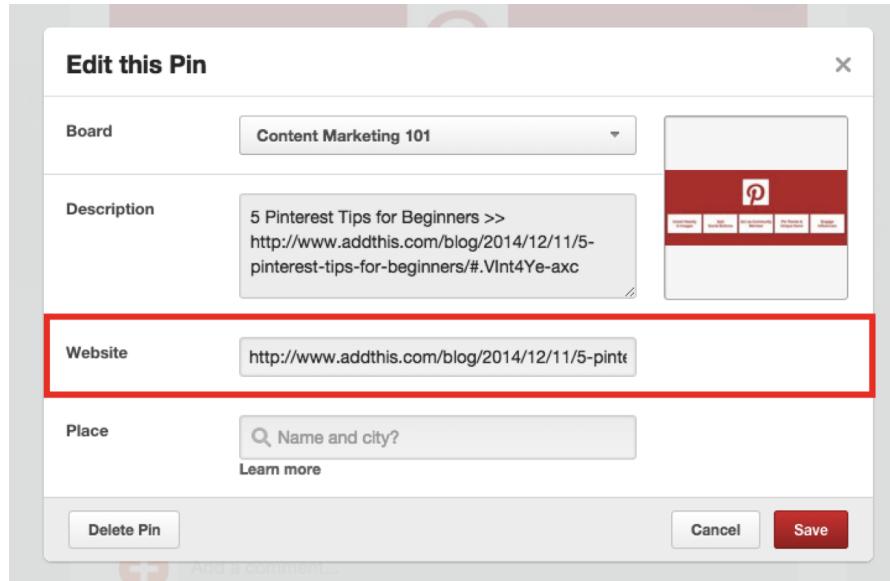


Figure 10 Example of include URL links in pins

30. Consider using rich pins, which provide more information about your products or services, to make your content more engaging and informative.

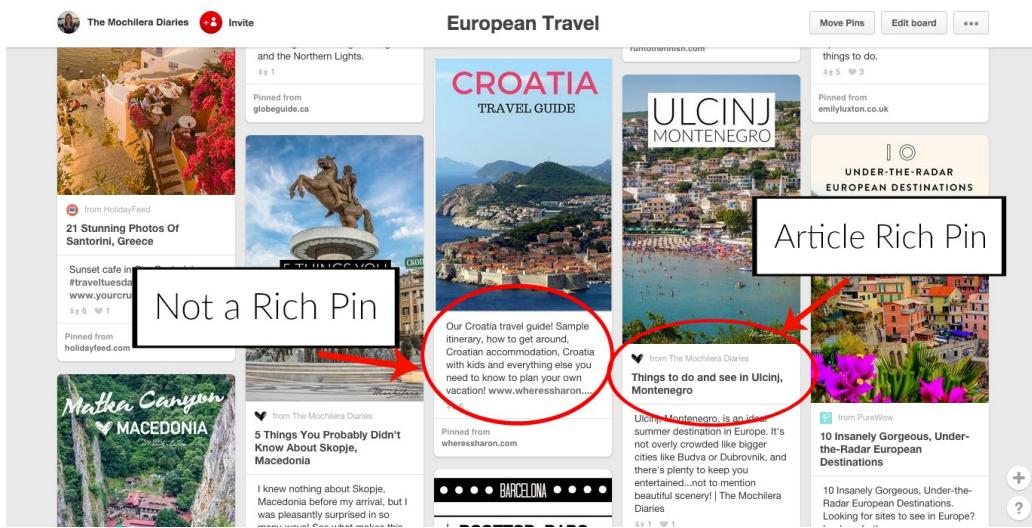


Figure 11 Example of using rich pins

## **Business Constraints**

### 1. Target audience:

The first business constraint of Pinterest is the target audience. This constraint refers to the fact that businesses must clearly understand the demographics, interests, and behavior of the people they are trying to reach on the platform. Understanding the target audience is crucial to creating effective marketing strategies on Pinterest.

Knowing the target audience enables businesses to create content and campaigns that are relevant and appealing to their target customers. For example, a fashion brand targeting young women may create Pinterest boards featuring the latest fashion trends and outfits. In contrast, a home improvement brand may create boards showcasing home renovation ideas and DIY projects.

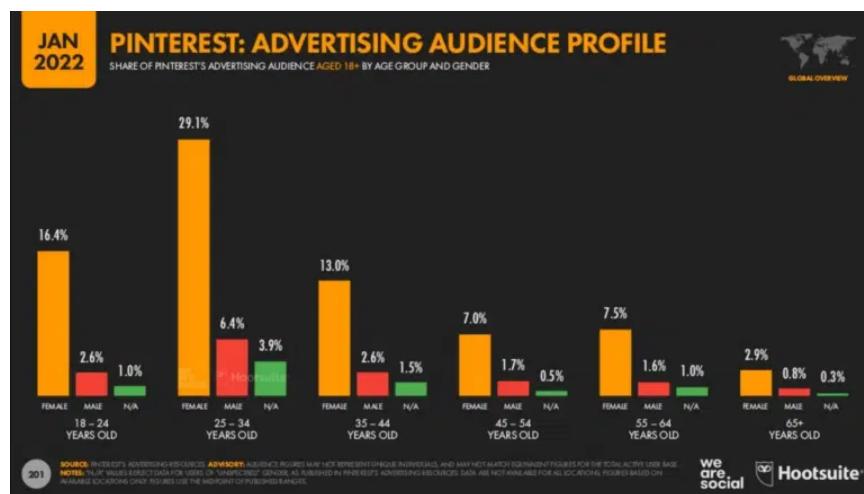


Figure 12 Example of demographic of an audience profile

## 2. User engagement:

User engagement, which is the constraint in the quality and relevance of the content that businesses create, is a critical component of success on Pinterest, as it drives growth, engagement, and business results. This constraint is to drive engagement in which a business must create high-quality and visually appealing content that resonates with its target audience. This requires significant resources, including time, money, and expertise, also to create and distribute delight to users. On Pinterest, user engagement refers to the interactions and activities that users engage in on the platform, such as saving pins, commenting, and sharing. Businesses can increase user engagement by creating high-quality and relevant content that resonates with their target audience. Consequently, able to include visually appealing and inspiring images as well as descriptive and informative text that provides context and value to user.

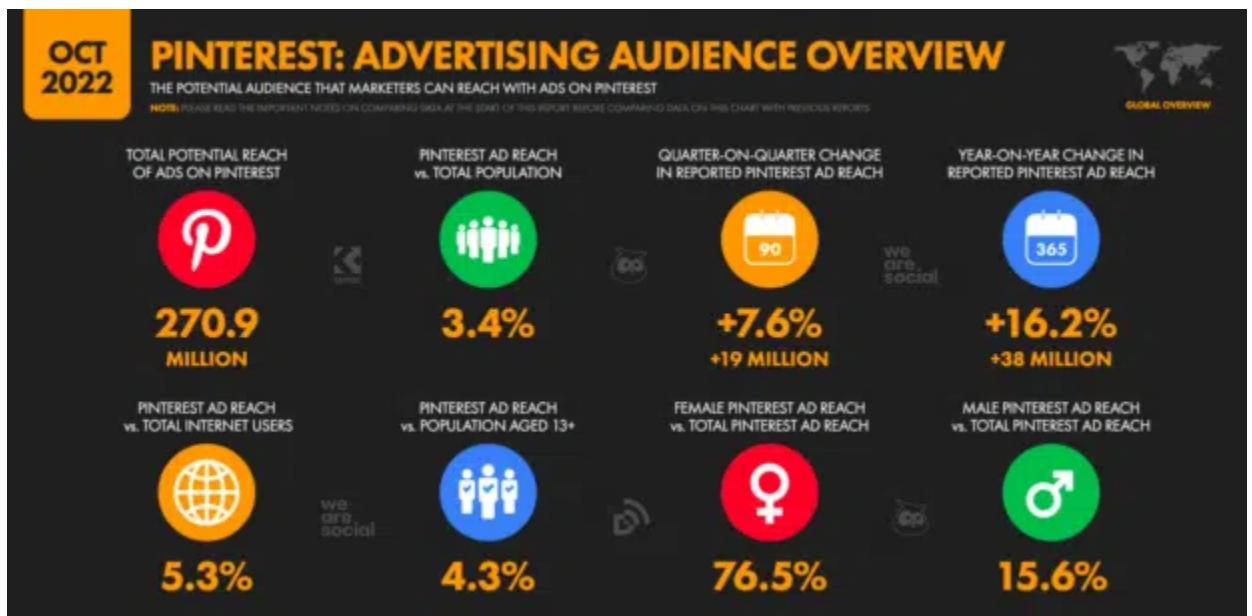


Figure 13 Example of advertising audience overview

### 3. Competition:

With millions of companies and users seeking visibility and engagement, Pinterest is a competitive platform. On Pinterest, the level of competition varies depending on the industry or niche, with some areas being more competitive than others. Pinterest must focus on developing high-quality, unique content that engages with its target audience to succeed in a competitive environment. They must also comprehend the platform's algorithm and features to reach a wider audience and promote interaction. Understanding the opponent and their strategies is another critical factor for success in a competitive environment. The constraints include analyzing what other companies in the same business domain are doing, evaluating their content and engagement, and looking for strategies to differentiate themselves and distinguish themselves from the competition.

### 4. Marketing budget:

Marketing on Pinterest is a cost-effective way for businesses to reach and engage with their target audience, and drive traffic and conversions. However, there are certain constraints that businesses should be aware of when it comes to marketing on the platform. Budget constraints like any other advertising platform, Pinterest requires a budget to be effective. The exact budget required will depend on the specific advertising goals and target audience of the business, but businesses should be prepared to invest a significant amount of resources into their marketing efforts.

Also, businesses may also face competition from other businesses in their industry, as well as from influencers, who may also be promoting similar products and services on the platform.

## 5. Technological limitations:

The fifth business constraint of Pinterest is technological limitations. This constraint refers to the complexity of the platform and the requirement for a certain level of technical skill to use it effectively.

Pinterest is a highly visual platform, and businesses need to be able to create and share high-quality images and videos to engage with their target audience. This can require a certain level of technical skill and understanding of the platform's features and functionality. For example, businesses need to optimize their content for search, create eye-catching visuals, and use hashtags and keywords effectively.

Additionally, Pinterest is constantly updating its algorithm and adding new features. Businesses need to stay informed of these changes and adapt their strategies accordingly. This can be challenging for businesses without the necessary technical knowledge and resources.

Therefore, technological limitations are a critical business constraint on Pinterest. Businesses need to invest in the necessary technology and resources, as well as the training and development of their teams, to use the platform effectively and achieve their marketing goals.

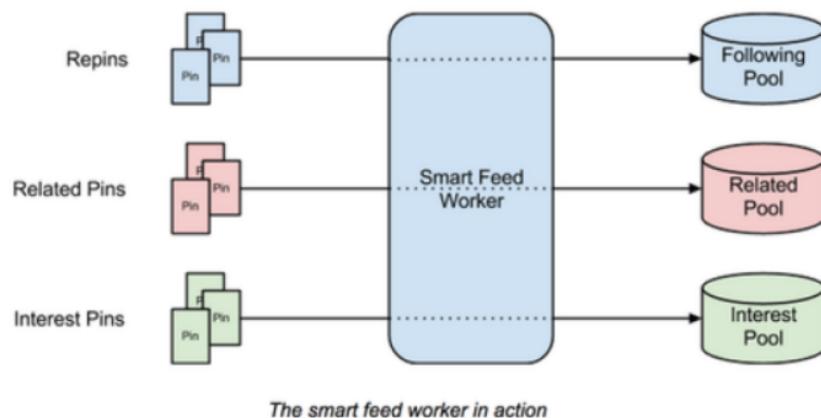


Figure 14 Example of pins features that need complex skill to understand in dept of the feed pool

## 6. Time constraints:

Time constraints play a significant role in many aspects of the success of a business on Pinterest. In Platform changes, Pinterest keeping up with changes to the platform's features and tools can also be time-consuming, and companies must allocate enough time to understand and implement these changes to maximize their impact. In addition to Platform changes, Algorithm optimization is one crucial of time constraints of Pinterest. Pinterest understands the platform's algorithm and adapting its strategies accordingly can also be time-consuming, and companies must allocate enough time to monitor and optimize their content and approach.



Figure 15 Example of Time constraints

## 7. Data privacy:

Businesses must be mindful of data privacy regulations and use customer data in compliance with these laws. However, as a social media platform, it must collect data from users, but laws currently focus on customer privacy. So, the application must ask the user for permission to collect data. In addition, if users connect their Pinterest account to a third party such as Facebook, Instagram, etc. The application must follow the third-party policy as well. Lastly, ensure that when Pinterest shares information with other companies/partners can maintain and protect user data.



# Privacy policy

Figure 16 Data privacy

## 8. Brand representation:

Brand representation on Pinterest is an important aspect of the platform for businesses, but there are certain constraints that businesses should be aware of when it comes to establishing their visual identity. One constraint for businesses on Pinterest is that the platform may not be ideal for all types of businesses. On Pinterest, businesses can create boards and pins that showcase their products, services, and expertise, and align with their target audience's interests and values. By using high-quality visuals and compelling copy, businesses can create a strong and consistent brand representation that sets them apart from the competition. For example, businesses in industries that rely heavily on visuals, such as fashion and home décor, are more likely to see success on Pinterest than businesses in industries that are not as visually driven.



Figure 17 Brand representation

## 9. Detect Spam:

Detecting spam constraint is the technical complexity of detecting spam on the platform. With millions of users and billions of pins, detecting and removing spam is a challenging task that requires sophisticated algorithms and machine learning systems. Another constraint is the risk of false positives, where content is mistakenly identified as spam and removed. This can result in the removal of legitimate content and can damage the user experience, as well as the reputation of the business. Detecting and removing spam on Pinterest is a complex and challenging task that requires significant resources and expertise. Businesses should be aware of these constraints and plan accordingly to ensure that their efforts to detect and remove spam are effective and efficient.

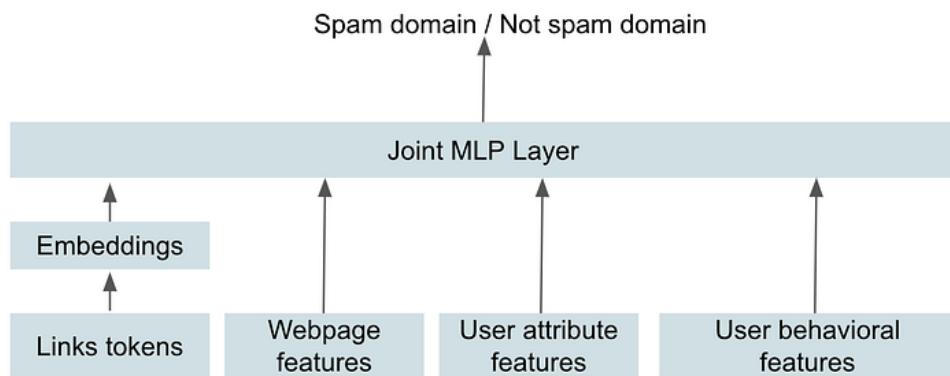


Figure 18 Deep Neural Network for domain classification

## Entity

### 1. Tag

- Tag\_ID (PK)
- Tag\_type
- Tag\_desc

### 2. Category

- C\_ID (PK)
- C\_type
- C\_name
- C\_desc
- Creation\_date
- Last\_updated
- Pin\_amount
- Interested\_amount
- Visited
- Tag\_ID (FK)

### 3. User

- User\_ID (PK)
- Username
- Password
- Profile\_name
- User\_link
- User\_email
- Gender
- User\_country
- Bio
- Followers\_count
- Following\_count

#### **4. Photo**

- Photo\_ID (PK)
- Photo\_size
- Pho\_name
- Pho\_desc
- Pho\_type

#### **5. Comment**

- Comment\_ID (PK)
- Com\_date
- Com\_time
- Com\_text
- User\_ID (FK)

#### **6. Pin**

- Pin\_ID (PK)
- P\_desc
- P\_url
- P\_Reach
- P\_Repin
- P\_title
- Comment\_ID (FK)
- Photo\_ID (FK)
- User\_ID (FK)
- C\_ID (FK)

#### **7. Sticker**

- Sticker\_ID (PK)
- St\_size
- St\_name
- St\_desc
- St\_type

## **8. Idea\_Pin**

- Idea\_ID (PK)
- Photo\_amount
- I\_desc
- I\_url
- I\_title
- I\_Repin
- I\_Reach
- Sticker\_ID (FK)
- Comment\_ID (FK)
- Photo\_ID (FK)
- User\_ID (FK)
- C\_ID (FK)

## **9. User\_Pool**

- Pool\_ID (PK)
- Pool\_desc
- Pool\_last\_updated
- Pool\_type
- Idea\_ID (FK)
- Pin\_ID (FK)
- User\_ID (FK)

## **10. Board**

- Board\_ID (PK)
- Board\_name
- Board\_desc
- User\_ID (FK)
- Pin\_ID (FK)
- Idea\_ID (FK)

## **11. Busines\_acc**

- BAcc\_ID (PK)
- B\_name
- B\_desc
- B\_email
- B\_phone
- B\_Bio
- Address
- Industry
- User\_reached
- User\_ID (FK)

## **12. Advertise**

- Ad\_ID (PK)
- Ad\_name
- Ad\_desc
- Ad\_registered
- Ad\_end
- Ad\_price
- Ad\_reached
- BAcc\_ID (FK)
- Pin\_ID (FK)
- Idea\_ID (FK)

## **13. Art\_pool**

- AP\_ID (PK)
- AP\_desc
- AP\_last\_updated
- Pool\_ID (FK)

#### **14. Popular\_Pool**

- PP\_ID (PK)
- PP\_last\_modified
- PP\_amount
- Pool\_ID (FK)

#### **15. Relevant\_Pool**

- RP\_ID (PK)
- Relevant
- Pool\_ID (FK)

#### **16. USaved**

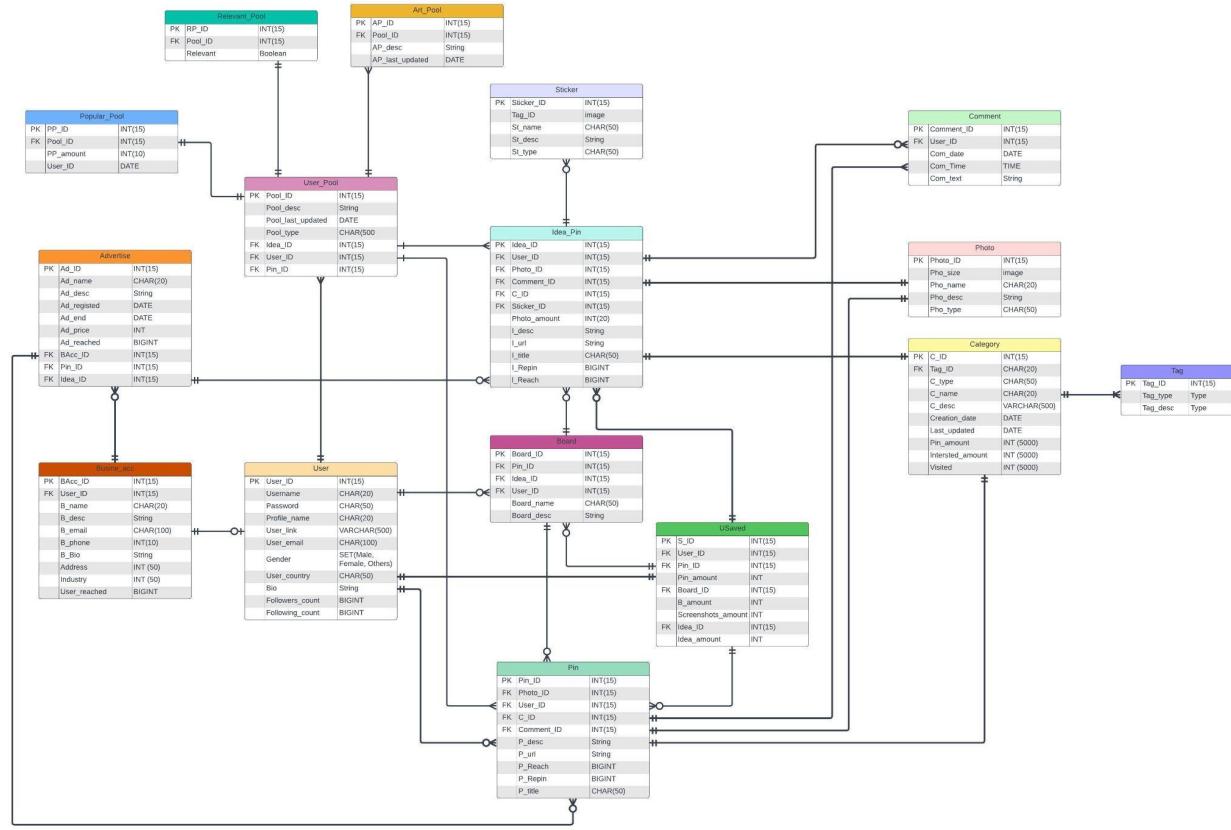
- S\_ID (PK)
- Pin\_amout
- AF\_amount
- B\_amount
- Screenshots\_amount
- Board\_ID (FK)
- User\_ID (FK)
- Pin\_ID (FK)
- Idea\_ID (FK)

## **Pinterest entities cardinality**

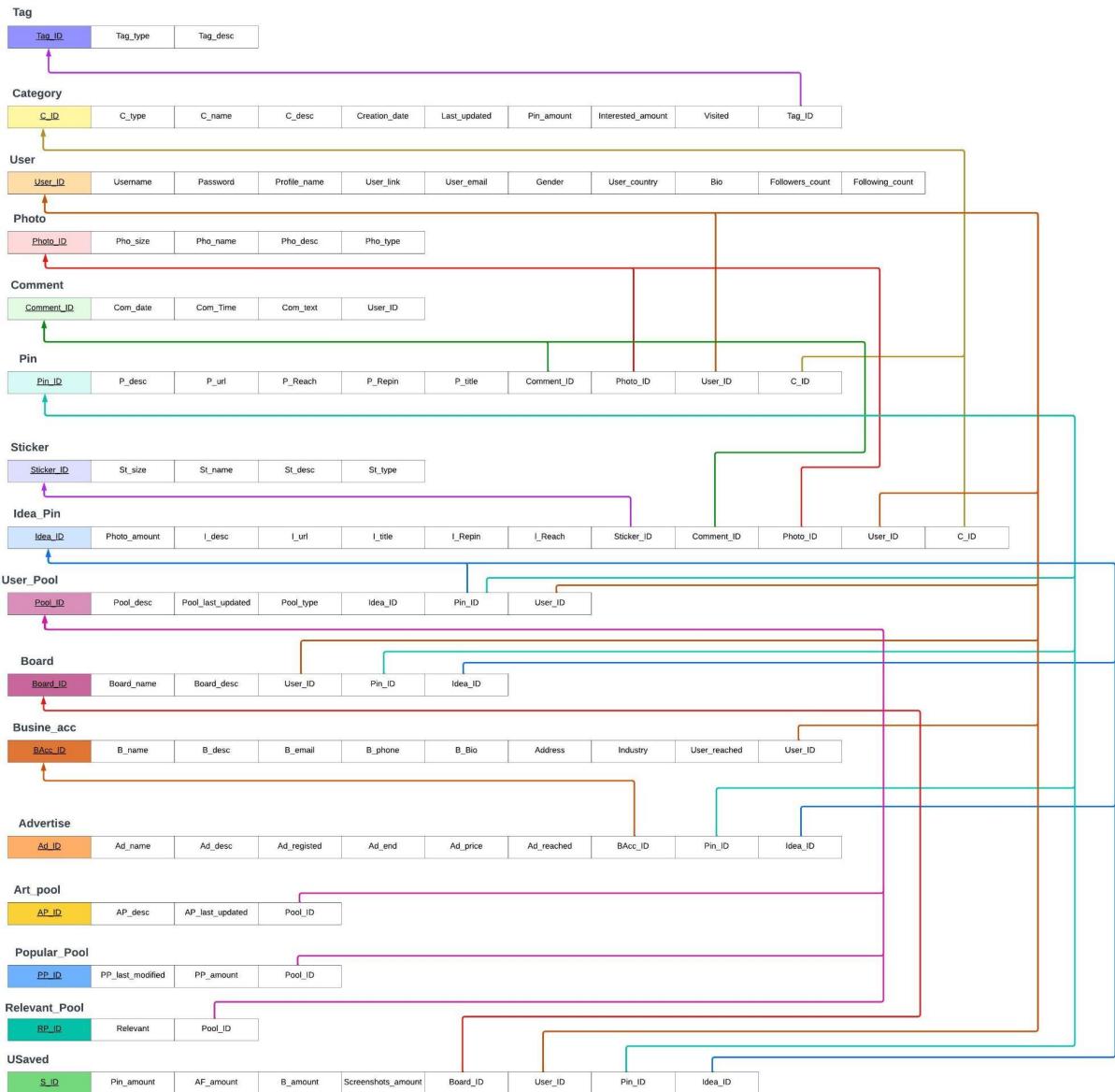
### **Relationship**

- Category (1..1) - Tag (1..\*)
- Category (1..1) - Idea\_Pin (1..1)
- Category (1..1) - Pin (1..1)
- User (0..1) - Busin\_acc (1..1)
- User (1..1) - User\_Pool (\*..\*)
- User (1..1) - Board (0..\*)
- User (1..1) - USaved (1..1)
- User (1..1) - Pin (0..\*)
- Photo (1..1) - Idea\_Pin (1..1)
- Photo (1..1) - Pin (1..1)
- Comment (0..\*) - Idea\_Pin (1..1)
- Comment (\*..\*) - Pin (1..1)
- Pin (\*..\*) - User\_Pool (1..1)
- Pin (0..\*) - Board (1..1)
- Pin (0..\*) - USaved (1..1)
- Pin (0..\*) - Advertise (1..1)
- Idea\_Pin (1..1) - Sticker (0..\*)
- Idea\_Pin (0..\*) - Advertise (1..1)
- Idea\_Pin (\*..\*) - User\_Pool (1..1)
- Idea\_Pin (0..\*) - USaved (1..1)
- Idea\_Pin (0..\*) - Board (1..1)
- User\_Pool (1..1) - Popular\_Pool (1..1)
- User\_Pool (1..1) - Relevant\_Pool (1..1)
- User\_Pool (1..1) - Art\_Pool (\*..\*)
- Board (0..\*) - USaved (1..1)
- Busine\_acc (1..1) - Advertise (0..1)

## ER Diagram (Revise Version)



## Relational database schema (Revise Version)



## **Database Normalization**

Database normalization is the process of organizing data in a database in such a way that it reduces redundancy and dependency. It is a technique used to design relational databases to achieve optimal performance, accuracy, and consistency of the data.

Normalization involves breaking down a database table into multiple smaller tables to reduce data redundancy and avoid data inconsistencies. This is achieved by dividing large tables into smaller ones and establishing relationships between them. The process of normalization follows a set of rules called normal forms. There are several normal forms, each with its own set of rules, but the most commonly used are the first, second, and third normal forms (1NF, 2NF, and 3NF). The first normal form (1NF) requires that each table have a primary key and that each column in the database contains atomic values. The second normal form (2NF) requires that every non-key column in a table must functionally dependant on the primary key. The third normal form (3NF) specifies that no non-key column be transitively dependent on the primary key.

By using normalization, we can ensure that data is stored efficiently, that it is simple to maintain and update, and that data integrity is maintained.

## **Database Normal Forms**

List of Normal form consists of:

1. 1NF (First Normal Form)
2. 2NF (Second Normal Form)
3. 3NF (Third Normal Form)
4. BCNF (Boyce-Codd Normal Form)
5. 4NF (Fourth Normal Form)
6. 5NF (Fifth Normal Form)
7. 6NF (Sixth Normal Form)

In most practical applications, however, normalizing works best in the third Normal Form.

## **Dependency Diagram**

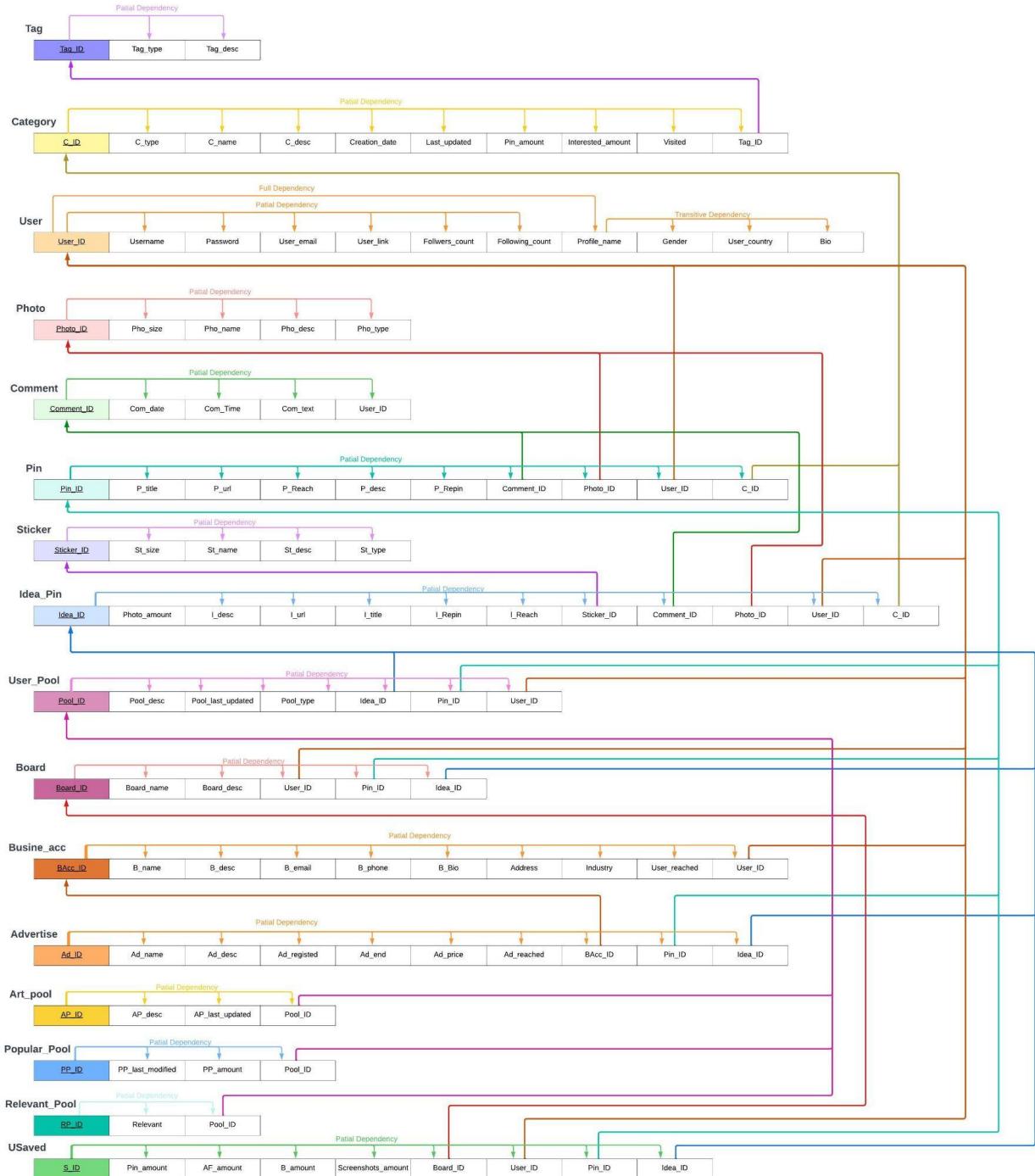
A dependency diagram is a graphical representation that illustrates the relationships and dependencies between different components of a system. It is frequently used in project management, software development, and other complicated systems where different tasks or components are interdependent. The components or tasks in a dependency diagram are shown as nodes or boxes, and the dependencies between them are depicted as arrows or lines. The arrows represent the dependencies' direction and the sequence in which tasks must be done. If Task A is dependent on Task B, for example, an arrow pointing from Task B to Task A will indicate that Task B must be completed before Task A can begin.

Dependency diagrams can be used by managers and team members, used in helping projects to identify critical paths, bottlenecks, and potential risks in a project or system. Dependency diagrams are also important for task planning and scheduling, allocating resources, and tracking progress.

## **Partial Dependency**

Partial dependency is a statistical concept used to study the relationship between two variables in a statistical model by holding one variable constant and examining the other variable's effect on the dependent variable. This method isolates the influence of one variable on the dependent variable while controlling for other variables. Partial dependency is commonly used in regression analysis to identify unique contributions of independent variables to the model and to detect variables that could influence the analysis. The relationship can be graphically represented using partial dependence plots that illustrate the predicted values of the dependent variable for different levels of the independent variable, while keeping other independent variables constant.

## Dependency Diagram



## Dependency Lists

### Partial Dependency

- Tag → Tag\_ID, Tag\_type, Tag\_desc
- Category → C\_ID, C\_type, C\_name, C\_desc, Creation\_date, Last\_updated, Pin\_amount, Interested\_amount, Visited, Tag\_ID
- User → User\_ID, Username, Password, User\_email, User\_link, Followers\_count
- Photo → Photo\_ID, Photo\_size, Pho\_name, Pho\_desc, Pho\_type
- Comment → Comment\_ID, Com\_date, Com\_time, Com\_text, User\_ID
- Pin → Pin\_ID, P\_desc, P\_url, P\_Reach, P\_Repin, P\_title, Comment\_ID, Photo\_ID, User\_ID, C\_ID
- Sticker → Sticker\_ID, St\_size, St\_name, St\_desc, St\_type
- Idea\_Pin → Idea\_ID, Photo\_amount, I\_desc, I\_url, I\_title, I\_Repin, I\_Reach, Sticker\_ID, Comment\_ID, Photo\_ID, User\_ID, C\_ID
- User\_Pool → Pool\_ID, Pool\_desc, Pool\_last\_updated, Pool\_type, Idea\_ID, Pin\_ID, User\_ID
- Board → Board\_ID, Board\_name, Board\_desc, User\_ID, Pin\_ID, Idea\_ID
- Busine\_acc → BAcc\_ID, B\_name, B\_desc, B\_email, B\_phone, B\_Bio, Address, Industry, User\_reached, User\_ID
- Advertise → Ad\_ID, Ad\_name, Ad\_desc, Ad\_registered, Ad\_end, Ad\_price, Ad\_reached, BAcc\_ID, Pin\_ID, Idea\_ID
- Art\_Pool → AP\_ID, AP\_desc, AP\_last\_updated, Pool\_ID
- Popular\_Pool → PP\_ID, PP\_last\_modified, PP\_amount, Pool\_ID
- Relevant\_Pool → RP\_ID, Relevant, Pool\_ID
- USaved → S\_ID, Pin\_amout, AF\_amount, B\_amount, Screenshots\_amount, Board\_ID, User\_ID, Pin\_ID, Idea\_ID

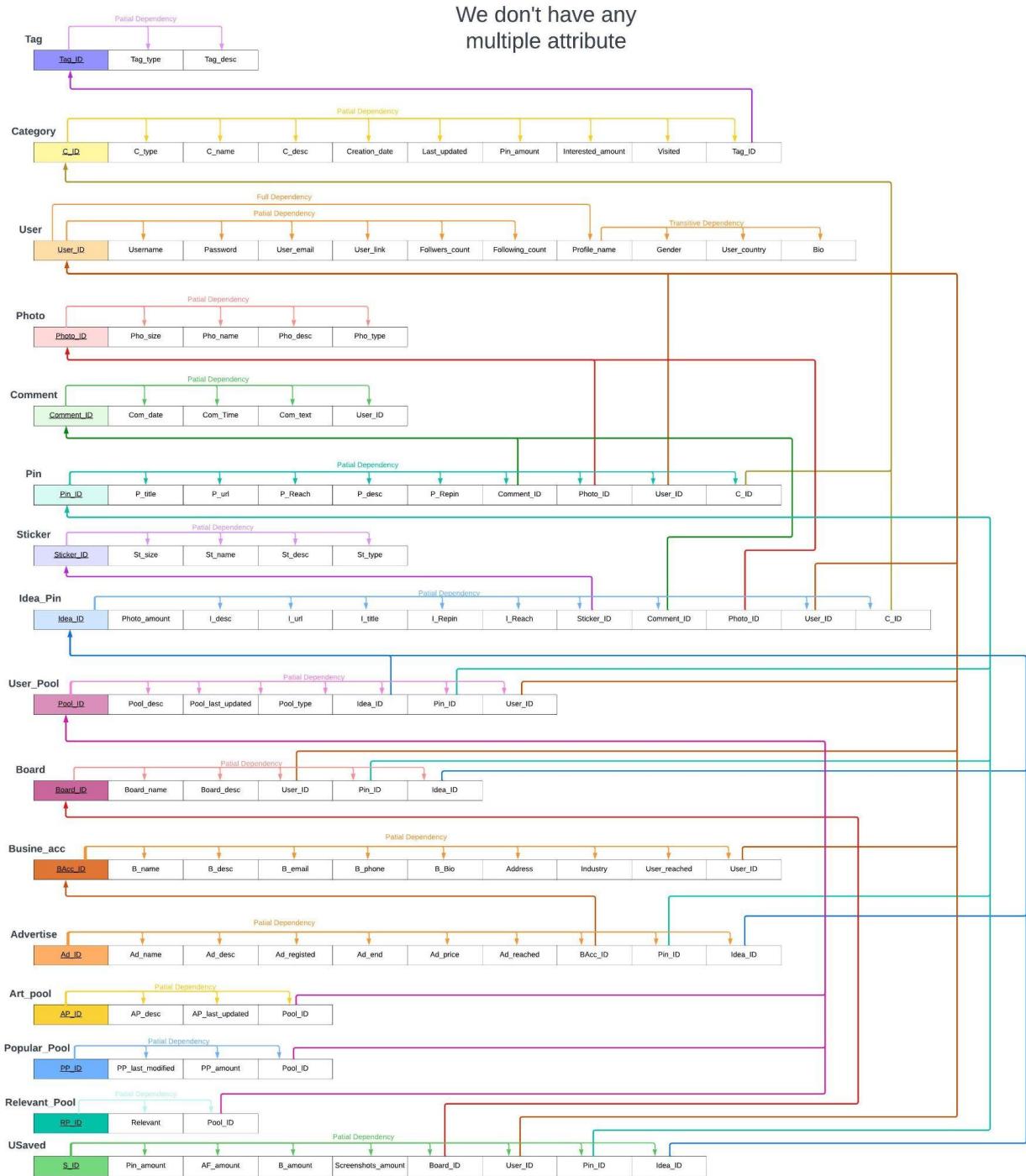
### Full Dependency

- $User\_ID \rightarrow Profile\_name$

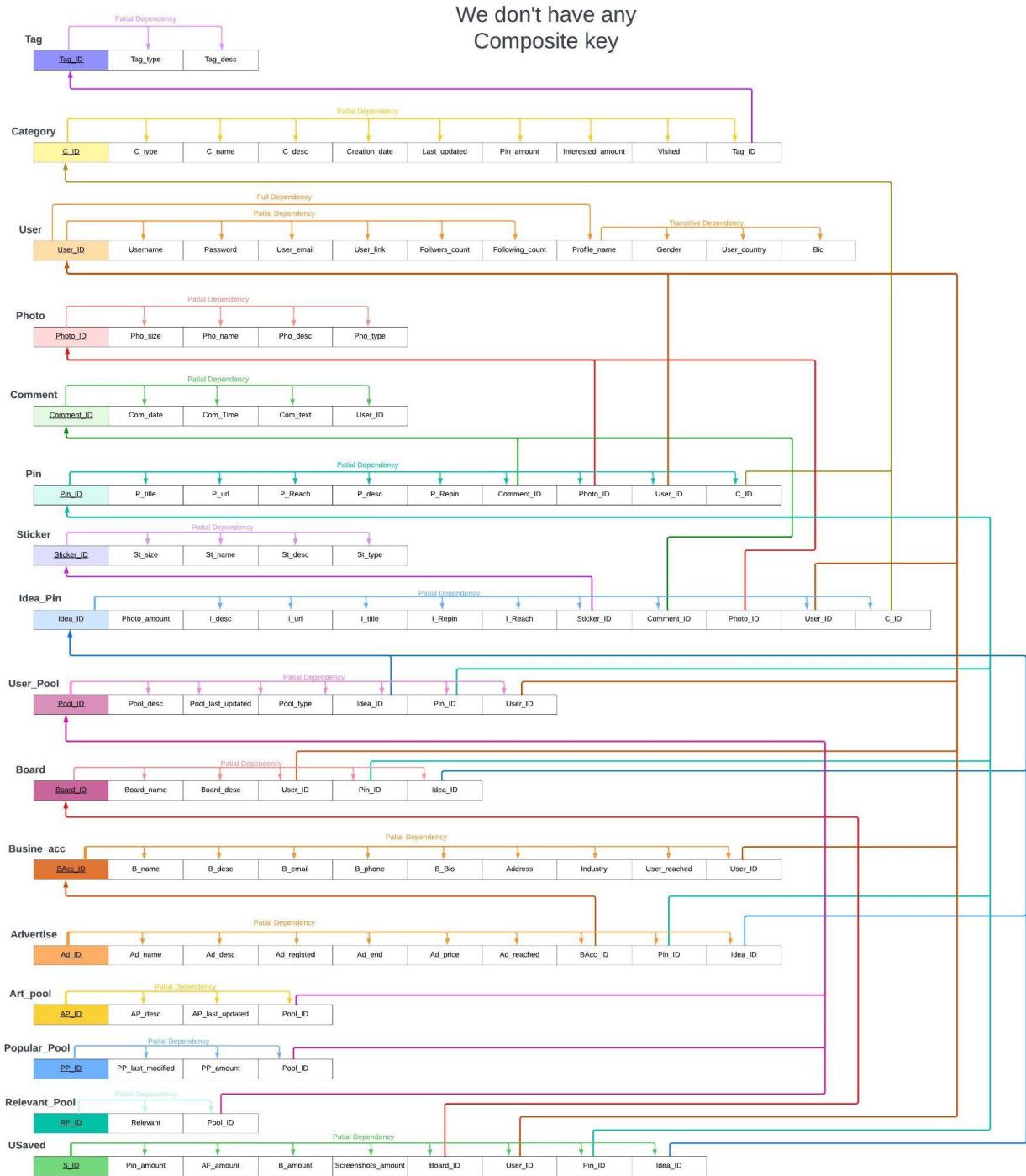
### Transitive Dependency

- $Profile\_name \rightarrow Gender, User\_country, Bio$

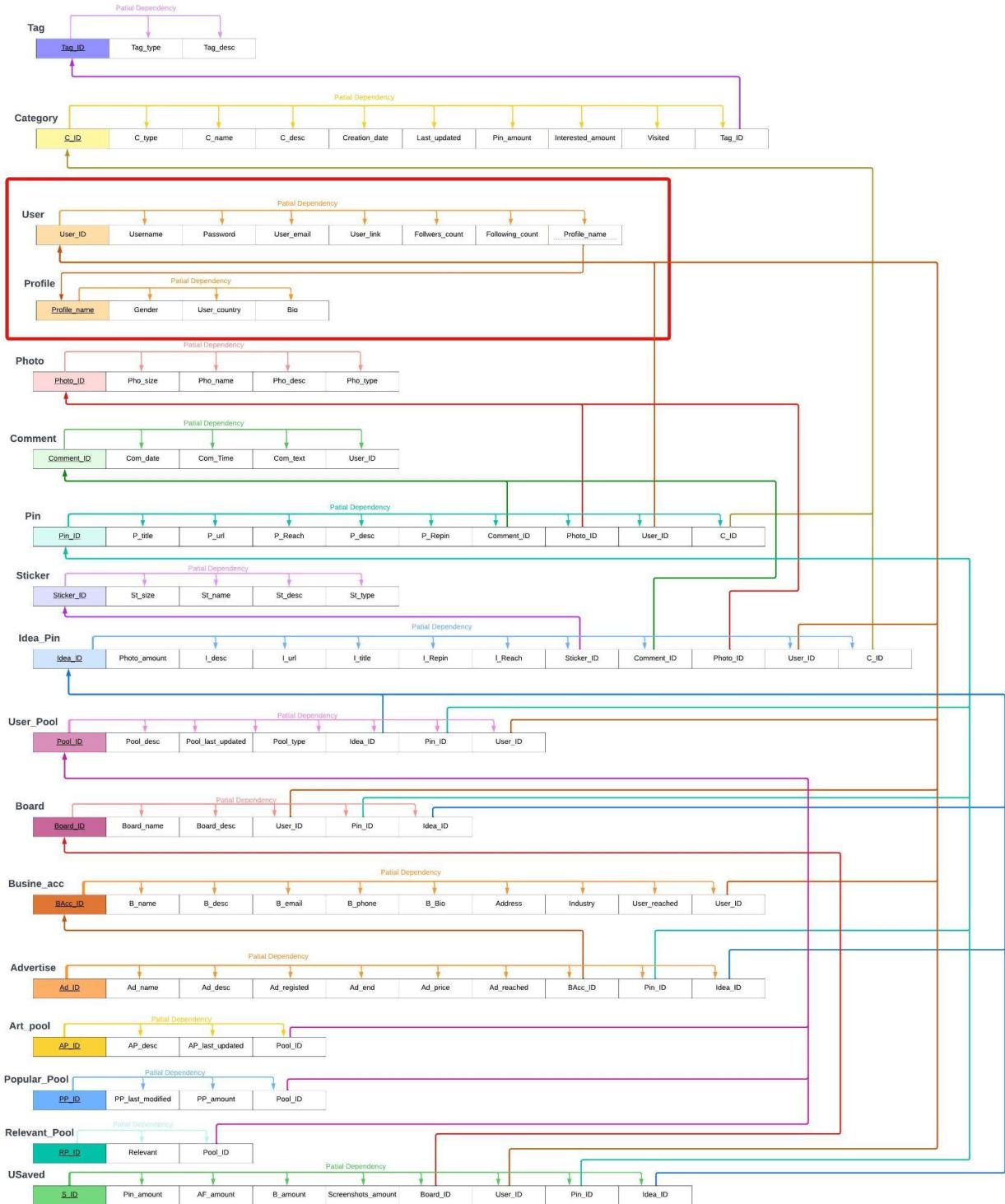
## Normalization 1NF



## Normalization 2NF



## Normalization 3NF



## **Relational database schema and ER Diagram (Revise Version), and Normalization Link**

Link for Relational database schema, ER Diagram, and Normalization (1NF, 2NF, and 3NF)

- [https://lucid.app/lucidchart/240f80de-cf30-4f04-adcc-2ca3e62269af/edit?viewport\\_loc=-1248%2C-1450%2C6285%2C3598%2CR\\_FyGtPU~Kx&invitationId=inv\\_19796351-e801-4f98-9598-e699b267de53](https://lucid.app/lucidchart/240f80de-cf30-4f04-adcc-2ca3e62269af/edit?viewport_loc=-1248%2C-1450%2C6285%2C3598%2CR_FyGtPU~Kx&invitationId=inv_19796351-e801-4f98-9598-e699b267de53)

## **References**

1. 'What is Pinterest', [Online]. Available from:  
<https://www.infront.com/blog/what-is-pinterest-and-how-does-it-work/>. [Accessed: Feb 10, 2023]
2. Pinterest. All about Pinterest, [Online] 2023. Available from:  
<https://help.pinterest.com/en/guide/all-about-pinterest>. [Accessed: Feb 9, 2023]
3. Holly Stanley. 29 Pinterest Demographics for Social Media Marketers, [Online] May 31, 2022. Available from <https://blog.hootsuite.com/pinterest-demographics-for-business/>. [Accessed: Feb 10, 2023]
4. Pinterest. Policy, [Online] 2023. Available from:  
<https://policy.pinterest.com/en/privacy-policy>. [Accessed: Feb 10, 2023]
5. Pinterest Help, [Online] 2023 Available from: <https://help.pinterest.com/en>. [Accessed: Feb 10, 2023]
6. Pinterest Reviews: 170+ User Reviews and Ratings in 2023 | G2 [Online], 2023.  
Available from: <https://www.g2.com/products/pinterest/reviews>. [Accessed: Feb 10, 2023]
7. J. Bostwick, "How Pinterest Makes Money," Investopedia, [Online], 2015. Available:  
<https://www.investopedia.com/articles/personal-finance/022415/how-pinterest-makes-money.asp>. [Accessed: Mar 17, 2023].
8. "Database Normalization - Explained with Examples," Guru99 [Online], 2021. Available:  
<https://www.guru99.com/database-normalization.html>. [Accessed: Mar 16, 2023].
9. "Dependency Graph - Glossary," DeepSource, [Online]. Available:  
<https://deepsouce.io/glossary/dependency-graph/>. [Accessed: Mar. 17, 2023].