Normalization

After inspecting the activity diagram of the website, we figured that following data must be stored into the database.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| User\_Id | F\_Name | L\_Name | DOB | Phone | Email | Country |
| City | State | Po\_Code | Addr1 | Addr2 | Card\_Type | Card\_Num |
| Card\_Exp | Card\_Sec | Balance | Password | Pro\_Id | Title | Icon |
| Price | Description | Snap\_Id | Snapshot | Fea\_Id | Feature | Platform |
| Category | Tag\_Id | Tag | F\_Size | F\_Link | Date\_Add | Rating |
| Ch\_Log | Tool\_Id | Tool | Com\_Id | Title | Text | Com\_Date |
| Rating | Up\_Vote | Dw\_Vote | Bank\_Id | B\_Name | B\_Country | Swift |
| Acc\_No | Rec\_Name | Rec\_Typ | R\_Country | R\_City | R\_Addr | Trnf\_Id |
| Process | Amount | Date\_Tim | Details | Trnsc\_Id | Sel\_Id | Buy\_Id |
| Date\_Tim |  |  |  |  |  |  |

As we can see here, the attributes relating to screenshots, tags, tools, features are making the data more redundant as they offer multiple values. So first, let’s make them separate and provide those primary keys which will be added as foreign keys in the main table:

# 1st Normal Form

**Main Table:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| User\_Id  **(pk)** | F\_Name | L\_Name | DOB | Phone | Email | Country |
| City | State | Po\_Code | Addr1 | Addr2 | Card\_Type | Card\_Num |
| Card\_Exp | Card\_Sec | Balance | Password | Pro\_Id  **(pk)** | Title | Icon |
| Price | Description | Platform | Category | F\_Size | F\_Link | Date\_Add |
| Rating | Ch\_Log | Com\_Id  **(pk)** | Title | Text | Com\_Date | Rating |
| Up\_Vote | Dw\_Vote | Bank\_Id  **(pk)** | B\_Name | B\_Country | Swift | Acc\_No |
| Rec\_Name | Rec\_Typ | R\_Country | R\_City | R\_Addr | Trnf\_Id  **(pk)** | Process |
| Amount | Date\_Tim | Details | Trnsc\_Id **(pk)** | Sel\_Id | Buy\_Id | Date\_Tim |

|  |  |
| --- | --- |
| Snap\_Id**(pk)** | Snapshot |

**Snapshot Table:**

**Tag Table:**

|  |  |
| --- | --- |
| Tag\_Id**(pk)** | Tag |

**Tool Table:**

|  |  |
| --- | --- |
| Tool\_Id**(pk)** | Tool |

**Feature Table:**

|  |  |
| --- | --- |
| Fea\_Id**(pk)** | Feature |

Now in the main table we see, product attributes doesn’t depend on other primary keys except Pid. Same goes for Bank, Comment, User, Transfer and Transaction attributes. So to be in 2NF, let’s separate them. If there’s one to many relation between two tables, then putting pk of one as fk in manys’ table:

# 2nd Normal Form

**User Table:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| User\_Id**(pk)** | F\_Name | L\_Name | DOB | Phone | Email | Country |
| City | State | Po\_Code | Addr1 | Addr2 | Card\_Type | Card\_Num |
| Card\_Exp | Card\_Sec | Balance | Password |  |  |  |

**Project Table:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Pro\_Id**(pk)** | Title | Icon | Price | Description | Platform |
| Category | F\_Size | Link | Date\_Add | Rating | Ch\_Log |
| Com\_Id **(fk)** | Snap\_Id(**fk)** | Tag\_Id **(fk)** | Tool\_Id **(fk)** | Fea\_Id **(fk)** | User\_Id **(fk)** |

**Comment Table:**

|  |  |  |  |
| --- | --- | --- | --- |
| Com\_Id**(pk)** | Title | Text | Com\_Date |
| Rating | User\_Id (fk) | Up\_Vote | Dw\_Vote |

**Bank Table:**

|  |  |  |  |
| --- | --- | --- | --- |
| Bank\_Id**(pk)** | B\_Country | B\_Name | Swift |
| Acc\_No | R\_Name | R\_Type | R\_Country |
| R\_City | R\_Addr | User\_Id **(fk)** |  |

**Transaction Table:**

|  |  |  |  |
| --- | --- | --- | --- |
| Trnsc\_Id **(pk)** | Sel\_Id **(fk)** | Buy\_Id **(fk)** | Date\_Time |
| Pro\_Id **(fk)** | User\_Id **(fk)** |  |  |

**Tranfer Table:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Trnf\_Id **(pk)** | User\_Id **(fk)** | Process | Amount | Date\_Time | Details |

|  |  |
| --- | --- |
| Snap\_Id**(pk)** | Snapshot |

**Snapshot Table:**

**Tag Table:**

|  |  |
| --- | --- |
| Tag\_Id**(pk)** | Tag |

**Tool Table:**

|  |  |
| --- | --- |
| Tool\_Id**(pk)** | Tool |

**Feature Table:**

|  |  |
| --- | --- |
| Fea\_Id**(pk)** | Feature |

# 3rd Normal Form

**User Table:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| User\_Id**(pk)** | F\_Name | L\_Name | DOB | Phone | Email | Country |
| City | State | Po\_Code | Addr1 | Addr2 | Balance | Password |

|  |  |  |
| --- | --- | --- |
| User\_Name**(pk)** | Password | Details |

**Admin Table:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Mess\_Id**(pk)** | Admin **(fk)** | User\_Id**(fk)** | Text | File | Date\_Time | Mess\_Type |

**Message Table:**

**Card Table:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Card\_Type | Card\_Num **(pk)** | Card\_Exp | Card\_Sec | User\_Id **(fk)** |

**Bank Table:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Bank\_Id**(pk)** | B\_Country | B\_Name | User\_Id **(fk)** | Swift |
| Acc\_No | R\_Name | R\_Type | R\_Country | R\_City | R\_Addr |

**Project Table:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Pro\_Id**(pk)** | Title | Icon | Price | Description | Plat\_Id **(fk)** |
| Cat\_Id **(fk)** | F\_Size | Link | Date\_Add | Rating | Ch\_Log |
| Discount | User\_Id**(fk)** |  |  |  |  |

**Comment Table:**

|  |  |  |  |
| --- | --- | --- | --- |
| Com\_Id**(pk)** | Title | Text | Com\_Date |
| Rating | User\_Id **(fk)** | Up\_Vote | Dw\_Vote | Pro\_Id**(fk)** |

**Transaction Table:**

|  |  |  |  |
| --- | --- | --- | --- |
| Trnsc\_Id **(pk)** | Sel\_Id **(fk)** | Buy\_Id **(fk)** | Date\_Time |
| Pro\_Id **(fk)** | Amount |  |  |

**Tranfer Table:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Trnf\_Id **(pk)** | User\_Id **(fk)** | Process | Amount | Date\_Time | Details |

|  |  |  |
| --- | --- | --- |
| Snap\_Id**(pk)** | Snapshot | Pro\_Id**(fk)** |

**Snapshot Table:**

**Tag Table:**

|  |  |
| --- | --- |
| Tag\_Id**(pk)** | Tag |

**Tag\_Project Table:**

|  |  |
| --- | --- |
| Tag\_Id**(fk)** | Pro\_Id**(fk)** |

**Tool Table:**

|  |  |
| --- | --- |
| Tool\_Id**(pk)** | Tool |

**Tool\_Project Table:**

|  |  |
| --- | --- |
| Tool\_Id**(fk)** | Pro\_Id**(fk)** |

**Feature Table:**

|  |  |  |
| --- | --- | --- |
| Fea\_Id**(pk)** | Pro\_Id**(fk)** | Feature |

**Platform Table:**

|  |  |
| --- | --- |
| Plat\_Id**(pk)** | Platform |

**Category Table:**

|  |  |
| --- | --- |
| Cat\_Id**(pk)** | Category |