**NORMALIZATION**

**Normalization for your database schema, step-by-step up to Third Normal Form (3NF) using the Users, Tasks, and Submissions collections as examples. This will help ensure your database is efficient, non-redundant, and properly structured.**

**UNNORMALIZED FORM (UNF):**

| **UserID** | **Name** | **Email** | **TaskID** | **Task Title** | **Reward** | **SubmissionIDs** | **SubmissionDetails** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| U1 | Alex | [alex@mail.com](mailto:alex@mail.com) | T1 | Survey App | 10 | [S1, S2] | ["Done properly", "Uploaded screenshot"] |
| U2 | Binta | [binta@mail.com](mailto:binta@mail.com) | T2 | Review Site | 15 | [S3] | ["Submitted review link"] |
| U3 | Carlos | [carlos@mail.com](mailto:carlos@mail.com) | T3 | Data Entry | 8 | [] | [] |
| U1 | Alex | [alex@mail.com](mailto:alex@mail.com) | T4 | Instagram Follow | 5 | [S4] | ["Followed and submitted username"] |
| U4 | Dana | [dana@mail.com](mailto:dana@mail.com) | T5 | YouTube Like | 7 | [S5, S6, S7] | ["Liked video", "Subscribed", "Commented"] |

**1st Normal Form (1NF):**

| **UserID** | **Name** | **Email** | **TaskID** | **Task Title** | **Reward** | **SubmissionID** | **SubmissionDetail** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| U1 | Alex | [alex@mail.com](mailto:alex@mail.com) | T1 | Survey App | 10 | S1 | Done properly |
| U1 | Alex | [alex@mail.com](mailto:alex@mail.com) | T1 | Survey App | 10 | S2 | Uploaded screenshot |
| U2 | Binta | [binta@mail.com](mailto:binta@mail.com) | T2 | Review Site | 15 | S3 | Submitted review link |
| U3 | Carlos | [carlos@mail.com](mailto:carlos@mail.com) | T3 | Data Entry | 8 | NULL | NULL |
| U1 | Alex | [alex@mail.com](mailto:alex@mail.com) | T4 | Instagram Follow | 5 | S4 | Followed and submitted username |
| U4 | Dana | [dana@mail.com](mailto:dana@mail.com) | T5 | YouTube Like | 7 | S5 | Liked video |
| U4 | Dana | [dana@mail.com](mailto:dana@mail.com) | T5 | YouTube Like | 7 | S6 | Subscribed |
| U4 | Dana | [dana@mail.com](mailto:dana@mail.com) | T5 | YouTube Like | 7 | S7 | Commented |

**2nd Normal Form (2NF):**

Eliminate partial dependencies.

**User Table:**

| **UserID** | **Name** | **Email** |
| --- | --- | --- |
| U1 | Alex | [alex@mail.com](mailto:alex@mail.com) |
| U2 | Binta | [binta@mail.com](mailto:binta@mail.com) |
| U3 | Carlos | [carlos@mail.com](mailto:carlos@mail.com) |
| U4 | Dana | [dana@mail.com](mailto:dana@mail.com) |

**Task Table:**

| **TaskID** | **Task Title** | **Reward** | **CreatorID** |
| --- | --- | --- | --- |
| T1 | Survey App | 10 | U1 |
| T2 | Review Site | 15 | U2 |
| T3 | Data Entry | 8 | U3 |
| T4 | Instagram Follow | 5 | U1 |
| T5 | YouTube Like | 7 | U4 |

**Submission Table:**

| **SubmissionID** | **SubmissionDetail** | **TaskID** | **WorkerID** |
| --- | --- | --- | --- |
| S1 | Done properly | T1 | U1 |
| S2 | Uploaded screenshot | T1 | U1 |
| S3 | Submitted review link | T2 | U2 |
| S4 | Followed and submitted username | T4 | U1 |
| S5 | Liked video | T5 | U4 |
| S6 | Subscribed | T5 | U4 |
| S7 | Commented | T5 | U4 |

**3rd Normal Form (3NF):**

There should be no transitive dependencies.

**User Table:**

| **UserID** | **Name** | **Email** |
| --- | --- | --- |
| U1 | Alex | [alex@mail.com](mailto:alex@mail.com) |
| U2 | Binta | [binta@mail.com](mailto:binta@mail.com) |
| U3 | Carlos | [carlos@mail.com](mailto:carlos@mail.com) |
| U4 | Dana | [dana@mail.com](mailto:dana@mail.com) |

**Task Table:**

| **TaskID** | **TaskTitleID** | **Reward** | **CreatorID** |
| --- | --- | --- | --- |
| T1 | TT1 | 10 | U1 |
| T2 | TT2 | 15 | U2 |
| T3 | TT3 | 8 | U3 |
| T4 | TT4 | 5 | U1 |
| T5 | TT5 | 7 | U4 |

**TaskTitle Table:**

| **TaskTitleID** | **Task Title** |
| --- | --- |
| TT1 | Survey App |
| TT2 | Review Site |
| TT3 | Data Entry |
| TT4 | Instagram Follow |
| TT5 | YouTube Like |

**Submission Table:**

| **SubmissionID** | **SubmissionDetail** | **TaskID** | **WorkerID** |
| --- | --- | --- | --- |
| S1 | Done properly | T1 | U1 |
| S2 | Uploaded screenshot | T1 | U1 |
| S3 | Submitted review link | T2 | U2 |
| S4 | Followed and submitted username | T4 | U1 |
| S5 | Liked video | T5 | U4 |
| S6 | Subscribed | T5 | U4 |
| S7 | Commented | T5 | U4 |