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|  | | **NeuroFlash** | | |  | |
|  | Decorative | | | | |  |
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|  | | | May 11, 2025—Database System—Assignment 03 ================= **Team Members:**Fathima Warda Mohamed Akram – 534529Khawaja Muhammad Ali – 532594Muhammad Hammad Ur Rehman – 506285Muhammad Majid - 520101 |  | | |

**Strong Entities**

PK: FK:

* **USERS** (id, username, email, password\_hash, age, gender, country, city, created\_at)
* **DECKS** (id, user\_id -> USERS(id), name, description, created\_at)
* **NOTE\_TYPES** (id, name, fields, templates)
* **NOTES** (id, user\_id, note\_type\_id -> NOTE\_TYPES(id), field\_values, created\_at)
* **FLASHCARDS** (id, note\_id -> NOTES(id), deck\_id -> DECKS(id), template\_name, card\_type, due\_date, intervals, ease\_factor, reps, lapses, last\_reviewed, is\_suspended, is\_buried, flag\_color, created\_at)
* **TAGS** (id, name)
* **REVIEW\_LOGS** (id, flashcard\_id -> FLASHCARDS(id), user\_id -> USERS(id), rating, review\_time, intervals\_before, intervals\_after, ease\_factor\_before, ease\_factor\_after)
* **USER\_REVIEWS** (id, user\_id -> USERS(id), rating, feedback, submitted\_at)
* **REVIEW\_SESSIONS** (id, user\_id -> USERS(id), session\_start, session\_end, cards\_reviewed, cards\_learned, time\_spent\_seconds)
* **LEADERBOARD\_SNAPSHOTS** (id, captured\_at, user\_id -> USERS(id), username, points, rank)

**Weak Entities:**

* **SETTINGS** (user\_id -> USERS(id), new\_cards\_per\_day, max\_reviews\_per\_day, learning\_steps, ease\_bonus)
* **DECK\_SETTINGS** (deck\_id -> DECKS(id), new\_cards\_per\_day, max\_reviews\_per\_day, learning\_steps, ease\_bonus)
* **USER\_STATS** (user\_id -> USERS(id), total\_reviews, total\_cards\_learned, total\_time\_spent\_seconds, review\_streak\_days, current\_streak\_start, last\_reviewed\_date, points)

**1:1 Relations:**

* USERS (id) ⟷ SETTINGS (user\_id)
* USERS (id) ⟷ USER\_STATS (user\_id)
* DECKS (id) ⟷ DECK\_SETTINGS (deck\_id)

**1:N Relations:**

* USERS → DECKS
* USERS → NOTES
* USERS → REVIEW\_LOGS
* USERS → REVIEW\_SESSIONS
* USERS → SHARED\_DECKS
* USERS → FILTERED\_DECKS
* DECKS → FLASHCARDS
* NOTE\_TYPES → NOTES
* NOTES → FLASHCARDS
* FLASHCARDS → REVIEW\_LOGS
* DECKS → SHARED\_DECKS

**N:M Relations:**

* **NOTE\_TAGS** (note\_id -> NOTES(id), tag\_id -> TAGS(id))
* **DECK\_TAGS** (deck\_id -> DECKS(id), tag\_id -> TAGS(id))
* **FLASHCARD\_TAGS**(flashcard\_id -> FLASHCARDS(id), tag\_id -> TAGS(id))
* **FILTERED\_DECK\_CARDS**(filtered\_deck\_id -> FILTERED\_DECK\_ID(id), flashcard\_id -> FLASHCARDS(id))

**Multivalued Attributes:**

**NONE**

**Derived Attributes:**

**USERS** have a derived attribute age.

* **USERS**(id, username, email, password\_hash, **date\_of\_birth**, gender, country, city, created\_at)

**N-Ary Relations**

**NONE**

**Specialization:**

Using Approach 2, Making separate Tables for Them.

* **FILTERED\_DECKS**(id, user\_id -> USERS(id), name, search\_query, is\_active, created\_at)
* **SHARED\_DECKS**(id, deck\_id -> DECKS(id), shared\_by -> USERS(id), title, description, is\_public, shared\_at)

**Final Schema:**

* **USERS**(id, username, email, password\_hash,date\_of\_birth, gender, country, city, created\_at)
* **DECKS**(id, user\_id -> USERS(id), name, description, created\_at)
* **FILTERED\_DECKS**(id, user\_id -> USERS(id), name, search\_query, is\_active, created\_at)
* **SHARED\_DECKS**(id, deck\_id -> DECKS(id), shared\_by -> USERS(id), title, description, is\_public, shared\_at)
* **NOTE\_TYPES**(id, name, fields, templates)
* **NOTES**(id, user\_id, note\_type\_id -> NOTE\_TYPES(id), field\_values, created\_at)
* **FLASHCARDS**(id, note\_id -> NOTES(id), deck\_id -> DECKS(id), template\_name, card\_type, due\_date, intervals, ease\_factor, reps, lapses, last\_reviewed, is\_suspended, is\_buried, flag\_color, created\_at)
* **TAGS**(id, name)
* **REVIEW\_LOGS**(id, flashcard\_id -> FLASHCARDS(id), user\_id -> USERS(id), rating, review\_time, intervals\_before, intervals\_after, ease\_factor\_before, ease\_factor\_after)
* **USER\_REVIEWS**(id, user\_id -> USERS(id), rating, feedback, submitted\_at)
* **REVIEW\_SESSIONS**(id, user\_id -> USERS(id), session\_start, session\_end, cards\_reviewed, cards\_learned, time\_spent\_seconds)
* **LEADERBOARD\_SNAPSHOTS**(id, captured\_at, user\_id -> USERS(id), username, points, rank)
* **NOTE\_TAGS**(note\_id -> NOTES(id), tag\_id -> TAGS(id))
* **DECK\_TAGS**(deck\_id -> DECKS(id), tag\_id -> TAGS(id))
* **FLASHCARD\_TAGS**(flashcard\_id -> FLASHCARDS(id), tag\_id -> TAGS(id))
* **FILTERED\_DECK\_CARDS**(filtered\_deck\_id -> FILTERED\_DECK\_ID(id), flashcard\_id -> FLASHCARDS(id))
* **SETTINGS**(user\_id -> USERS(id), new\_cards\_per\_day, max\_reviews\_per\_day, learning\_steps, ease\_bonus)
* **DECK\_SETTINGS**(deck\_id -> DECKS(id), new\_cards\_per\_day, max\_reviews\_per\_day, learning\_steps, ease\_bonus)
* **USER\_STATS**(user\_id -> USERS(id), total\_reviews, total\_cards\_learned, total\_time\_spent\_seconds, review\_streak\_days, current\_streak\_start, last\_reviewed\_date, points)