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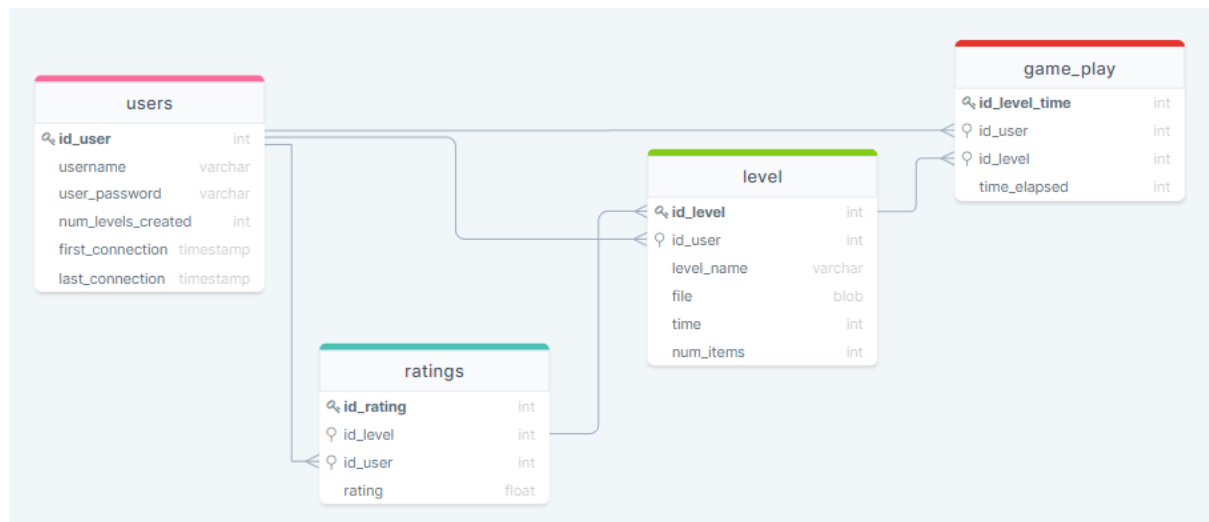Andreína Sanánez, A01024927
June 2nd 2022
Prof. Esteban Castillo

Relational Database Creation

Entity-Relation Diagram Version 1:

- The cardinality from user to level is one to many.
- The cardinality from user and game_play is one to many.
- The cardinality from users to ratings in one to many.
- The cardinality from ratings to level is one to many.
- The cardinality from level to game_play is one to many.
- Integrity Restrictions:
  - Every attribute of every table is not nullable.
  - Every table has a unique, integer, primary key, not nullable and auto-incremental.
  - Every table except for users has a foreign key.
- 3rd Normal Form
  - Every table has an integer, unique, auto incremental, not NULL, primary key.
  - There are no empty values.
  - Every attribute is atomic.
  - The attributes of a table are wholly dependent on their primary key.
  - Modifying or deleting an attribute does not affect the existence of the other attributes within the table.
  - There are no impostor keys.
  - There are no transitive functional dependencies.
  - The database is in the 1st and 2nd Normal Form

MySQL Script Version 1:

```sql
1    SET NAMES utf8mb4;
2    SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0;
3    SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS, FOREIGN_KEY_CHECKS=0;
4    SET @OLD_SQL_MODE=@@SQL_MODE, SQL_MODE='TRADITIONAL';
5
6    DROP SCHEMA IF EXISTS asleep_db;
7    CREATE SCHEMA asleep_db;
8    USE asleep_db;
9
10   CREATE TABLE users(
11       id_user INT NOT NULL AUTO_INCREMENT,
12       username VARCHAR(45) NOT NULL,
13       user_password VARCHAR(45) NOT NULL,
14       num_levels_created INT NOT NULL DEFAULT 0,
15       first_connection TIMESTAMP NOT NULL,
16       last_connection TIMESTAMP NOT NULL,
17       PRIMARY KEY (id_user)
18   ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;
--
20   CREATE TABLE levels(
21       id_level INT NOT NULL AUTO_INCREMENT,
22       id_user INT NOT NULL, #esta es la foreign key
23       level_name VARCHAR(255) NOT NULL,
24       level_file BLOB NOT NULL,
25       level_time INT NOT NULL,
26       num_items INT NOT NULL,
27       PRIMARY KEY (id_level),
28       KEY idx_fk_user_id (id_user),
29       CONSTRAINT `fk_level_id_user` FOREIGN KEY (id_user) REFERENCES users(id_user)
30   ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;

32   CREATE TABLE ratings(
33       id_rating INT NOT NULL AUTO_INCREMENT,
34       id_user INT NOT NULL, #foreign key
35       id_level INT NOT NULL, #foreign key
36       rating FLOAT NOT NULL DEFAULT 0 COMMENT '1-5',
37       PRIMARY KEY (id_rating),
38       KEY idx_fk_user_id (id_user),
39       CONSTRAINT `fk_rating_id_user` FOREIGN KEY (id_user) REFERENCES users(id_user),
40       KEY idx_fk_level_id (id_level),
41       CONSTRAINT `fk_rating_id_level` FOREIGN KEY (id_level) REFERENCES levels(id_level)
42   )ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;

44   CREATE TABLE gameplays(
45       id_gameplay INT NOT NULL AUTO_INCREMENT,
46       id_user INT NOT NULL, #foreign key
47       id_level INT NOT NULL, #foreign key
48       time_elapsed INT NOT NULL,
49       PRIMARY KEY (id_gameplay),
50       KEY idx_fk_user_id (id_user),
51       CONSTRAINT `fk_game_id_user` FOREIGN KEY (id_user) REFERENCES users(id_user),
52       KEY idx_fk_level_id (id_level),
53       CONSTRAINT `fk_game_id_level` FOREIGN KEY (id_level) REFERENCES levels(id_level)
54   ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;
```

```sql
SET NAMES utf8mb4;
SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0;
SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS, FOREIGN_KEY_CHECKS=0;
SET @OLD_SQL_MODE=@@SQL_MODE, SQL_MODE='TRADITIONAL';
SET @old_autocommit=@@autocommit;

USE asleep_db;

-- Dummy data for table users
SET AUTOCOMMIT=0;
INSERT INTO users VALUES (1,'supremaciaTopo','eltoposiguevivo', 1, '2022-05-21 11:34:22', '2022-05-23 19:43:47'),
(2,'testUser','userTest', 0, '2022-05-23 13:43:47', '2022-05-23 13:43:47'),
(3,'user123','computadora', 0, '2022-05-23 17:02:56', '2022-06-19 9:29:52'),
(4,'wtfIsAsleep','wtfIsRemi', 0, '2022-05-26 10:29:18', '2022-05-26 10:29:18'),
(5,'carlitos','clavoUnClavito', 3, '2022-05-27 16:18:06', '2022-06-08 13:01:47'),
(6,'Topo','quieroUnTopo', 0, '2022-05-27 20:26:01', '2022-05-27 20:26:01'),
(7,'tigres','tragaronTrigo', 5, '2022-05-27 18:56:57', '2022-06-14 22:16:20'),
(8,'andy1D','teamo1D', 2, '2022-06-03 15:45:51', '2022-06-06 23:06:24'),
(9,'JiminMiVaron','BTS2002', 2, '2022-06-04 00:33:11', '2022-06-09 16:37:43'),
(10,'Akemi', 'soyracista', 1, '2022-06-04 09:34:33', '2022-06-04 08:35:23');
COMMIT;
```

```sql
USE asleep_db;
SHOW TABLES;
SELECT * FROM users;
SELECT * FROM levels;
SELECT * FROM ratings;
SELECT * FROM gameplays;
```

id_rating	id_user	id_level	rating
1	1	1	5
2	1	4	5
3	7	1	3.2
4	7	3	2.7
5	7	6	4.6
6	7	11	1.2
7	7	12	5
8	7	13	4.8
9	7	14	2.1
10	9	12	4.5
11	9	13	4.2
12	10	12	4.9

Result Grid — Filter Rows:

Tables_in_asleep_db
gameplays
levels
ratings
users

id_game_play	id_user	id_level	time_elapsed
1	1	1	170
2	1	4	120
3	7	1	154
4	7	3	200
5	7	6	140
6	7	11	336
7	7	12	350
8	7	13	123
9	7	14	109
10	9	12	375
11	9	13	119
12	10	12	348

id_user	username	user_password	num_levels_created	first_connection	last_connection
1	supremaciaTopo	eltoposiguevivo	1	2022-05-21 11:34:22	2022-05-23 19:43:47
2	testUser	userTest	0	2022-05-23 13:43:47	2022-05-23 13:43:47
3	user123	computadora	0	2022-05-23 17:02:56	2022-06-19 09:29:52
4	wtfIsAsleep	wtfIsRemi	0	2022-05-26 10:29:18	2022-05-26 10:29:18
5	carlitos	clavoUnClavito	3	2022-05-27 16:18:06	2022-06-08 13:01:47
6	Topo	quieroUnTopo	0	2022-05-27 20:26:01	2022-05-27 20:26:01
7	tigres	tragaronTrigo	5	2022-05-27 18:56:57	2022-06-14 22:16:20
8	andy1D	teamo1D	2	2022-06-03 15:45:51	2022-06-06 23:06:24
9	JiminMiVaron	BTS2002	2	2022-06-04 00:33:11	2022-06-09 16:37:43
10	Akemi	soyracista	1	2022-06-04 09:34:33	2022-06-04 08:35:23
NULL	NULL	NULL	NULL	NULL	NULL

	id_level	id_user	level_name	level_file	level_time	num_items
▶	1	1	Donde esta el topo	BLOB	120	150
	2	5	New level	BLOB	90	176
	3	5	3 stories level	BLOB	150	224
	4	7	Nivel 1: Facil	BLOB	120	134
	5	7	Nivel 2: Dif Media	BLOB	150	194
	6	5	Sprint level	BLOB	100	188
	7	7	Nivel 3: Avanzado	BLOB	120	189 189
	8	7	Nivel 4: Dificil	BLOB	90	197
	9	7	Nivel 5: Nightmare	BLOB	45	210
	10	8	Basic	BLOB	120	157
	11	9	New Level	BLOB	200	340
	12	9	Nivel Laberinto	BLOB	180	427
	13	8	Nightmare	BLOB	30	124
	14	10	New Level	BLOB	100	114
*	NULL	NULL	NULL	NULL	NULL	NULL

- Integrity Restrictions:
  - The script's integrity restrictions are the same as the entity-relation diagram above.
  - Every attribute is not nullable because we only considered the most valuable information to create each table.
  - For attributes that will later be updated or don't necessarily start with a value different from 0, a "default 0" was added in the script (num_levels_created in users and rating in ratings).
  - Every table and piece of information within the database fits the need of our project, as developers we are storing the information we consider valuable to then create views that allow us to produce visual aids such as graphics in order to present information to the users.