

Validation of the Relational Implementation of OCEL 2.0

Here you can find the validation of the relational implementation of OCEL 2.0 on top of SQLite. Different databases provide different tables to access the table names, fields, primary/foreign keys, therefore the proposed validation is just specific for SQLite.

Constraints on the Existence of Tables

1) Existence of the type-independent tables

```
SELECT Count(*) FROM sqlite_master WHERE type = "table" AND tbl_name IN ("event_corr_type", "object_corr_type", "event", "object", "event_object", "object_object");
```

Should be 6

2) Existence of the object type tables and correspondence with the object types in object_corr_type

```
SELECT Count(*) FROM (SELECT a.ocel_type_corr, b.tbl_name FROM (SELECT ocel_type_corr FROM object_corr_type) a LEFT OUTER JOIN (SELECT tbl_name FROM sqlite_master WHERE type = "table" AND tbl_name LIKE "object_%") b ON b.tbl_name = "object_" || a.ocel_type_corr WHERE b.tbl_name IS NULL);
```

Should be 0

```
SELECT Count(*) FROM (SELECT a.ocel_type_corr, b.tbl_name FROM (SELECT tbl_name FROM sqlite_master WHERE type = "table" AND tbl_name LIKE "object_%") b LEFT OUTER JOIN (SELECT ocel_type_corr FROM object_corr_type) a ON b.tbl_name = "object_" || a.ocel_type_corr WHERE a.ocel_type_corr IS NULL);
```

Should be 2 (object_object, object_corr_type)

3) Existence of the event type tables and correspondence with the event types in event_corr_type

```
SELECT Count(*) FROM (SELECT a.ocel_type_corr, b.tbl_name FROM (SELECT ocel_type_corr FROM event_corr_type) a LEFT OUTER JOIN (SELECT tbl_name FROM sqlite_master WHERE type = "table" AND tbl_name LIKE "event_%") b ON b.tbl_name = "event_" || a.ocel_type_corr WHERE b.tbl_name IS NULL);
```

Should be 0

```
SELECT Count(*) FROM (SELECT a.ocel_type_corr, b.tbl_name FROM (SELECT
tbl_name FROM sqlite_master WHERE type = "table" AND tbl_name LIKE
"event_%") b LEFT OUTER JOIN (SELECT ocel_type_corr FROM
event_corr_type) a ON b.tbl_name = "event_" || a.ocel_type_corr WHERE
a.ocel_type_corr IS NULL);
```

Should be 2 (event_object, event_corr_type)

Constraints on the Existence of Fields

4) Existence of the ocel_type column

```
SELECT Count(*) FROM (SELECT m.tbl_name, p.* FROM sqlite_master m JOIN
pragma_table_info(m.tbl_name) p WHERE m.tbl_name IN ("object_corr_type",
"event_corr_type", "event", "object") AND m.type = "table" AND p.name =
"ocel_type");
```

Should be 4

5) Existence of the ocel_type_corr column

```
SELECT Count(*) FROM (SELECT m.tbl_name, p.* FROM sqlite_master m JOIN
pragma_table_info(m.tbl_name) p WHERE m.tbl_name IN ("object_corr_type",
"event_corr_type") AND m.type = "table" AND p.name = "ocel_type_corr");
```

Should be 2

6) Existence of the ocel_id column

```
SELECT Count(*) FROM (SELECT m.tbl_name, p.* FROM sqlite_master m JOIN
pragma_table_info(m.tbl_name) p WHERE m.tbl_name IN ("event", "object")
AND m.type = "table" AND p.name = "ocel_id");
```

Should be 2

7) Existence of the ocel_qualifier column

```
SELECT Count(*) FROM (SELECT m.tbl_name, p.* FROM sqlite_master m JOIN
pragma_table_info(m.tbl_name) p WHERE m.tbl_name IN ("event_object",
"object_object") AND m.type = "table" AND p.name = "ocel_qualifier");
```

Should be 2

8) Existence of the ocel_event-id and ocel_object_id columns

```
SELECT Count(*) FROM (SELECT m.tbl_name, p.* FROM sqlite_master m JOIN
pragma_table_info(m.tbl_name) p WHERE m.tbl_name = "event_object" AND
m.type = "table" AND p.name IN ("ocel_event_id", "ocel_object_id"));
```

Should be 2

9) Existence of the ocel_source_id and ocel_target_id columns

```
SELECT Count(*) FROM (SELECT m.tbl_name, p.* FROM sqlite_master m JOIN
pragma_table_info(m.tbl_name) p WHERE m.tbl_name = "object_object" AND
m.type = "table" AND p.name IN ("ocel_source_id", "ocel_target_id"));
```

Should be 2

10) Existence of the ocel_id column for all object type specific tables

```
SELECT m.tbl_name, Count(*) FROM sqlite_master m JOIN object_corr_type ty
on m.tbl_name = "object_" || ty.ocel_type_corr JOIN
pragma_table_info(m.tbl_name) p WHERE m.type = "table" AND p.name =
"ocel_id" GROUP BY m.tbl_name;
```

Should be 1 for all the object type specific tables.

11) Existence of the ocel_id column for all event type specific tables

```
SELECT m.tbl_name, Count(*) FROM sqlite_master m JOIN event_corr_type ty
on m.tbl_name = "event_" || ty.ocel_type_corr JOIN
pragma_table_info(m.tbl_name) p WHERE m.type = "table" AND p.name =
"ocel_id" GROUP BY m.tbl_name;
```

Should be 1 for all the event type specific tables.

12) Existence and type of the ocel_time column for all object type specific tables

```
SELECT m.tbl_name, Count(*) FROM sqlite_master m JOIN object_corr_type ty
on m.tbl_name = "object_" || ty.ocel_type_corr JOIN
pragma_table_info(m.tbl_name) p WHERE m.type = "table" AND p.name =
"ocel_time" AND p.type = "TIMESTAMP" GROUP BY m.tbl_name;
```

Should be 1 for all the object type specific tables.

13) Existence and type of the ocel_time column for all event type specific tables

```
SELECT m.tbl_name, Count(*) FROM sqlite_master m JOIN event_corr_type ty
on m.tbl_name = "event_" || ty.ocel_type_corr JOIN
pragma_table_info(m.tbl_name) p WHERE m.type = "table" AND p.name =
"ocel_time" AND p.type = "TIMESTAMP" GROUP BY m.tbl_name;
```

Constraints on the Primary Keys

14) Primary key object_corr_type and event_corr_type tables

```
SELECT Count(*) FROM (SELECT m.tbl_name, p.* FROM sqlite_master m JOIN
pragma_table_info(m.tbl_name) p WHERE m.type = "table" AND m.tbl_name
IN ("object_corr_type", "event_corr_type") AND p.name = "ocel_type" AND
p.pk > 0);
```

Should be 2

15) Primary key object and event tables

```
SELECT Count(*) FROM (SELECT m.tbl_name, p.* FROM sqlite_master m JOIN
pragma_table_info(m.tbl_name) p WHERE m.type = "table" AND m.tbl_name
IN ("object", "event") AND p.name = "ocel_id" AND p.pk > 0);
```

Should be 2

16) Primary keys event_object table

```
SELECT Count(*) FROM (SELECT m.tbl_name, p.* FROM sqlite_master m JOIN
pragma_table_info(m.tbl_name) p WHERE m.type = "table" AND m.tbl_name =
"event_object" AND p.name IN ("ocel_event_id", "ocel_object_id",
"ocel_qualifier") AND p.pk > 0);
```

Should be 3

17) Primary keys object_object table

```
SELECT Count(*) FROM (SELECT m.tbl_name, p.* FROM sqlite_master m JOIN
pragma_table_info(m.tbl_name) p WHERE m.type = "table" AND m.tbl_name =
"object_object" AND p.name IN ("ocel_source_id", "ocel_target_id",
"ocel_qualifier") AND p.pk > 0);
```

Should be 3

18) Primary key event type specific table

```
SELECT m.tbl_name, sum(p.pk) FROM sqlite_master m JOIN event_corr_type
ty on m.tbl_name = "event_" || ty.ocel_type_corr JOIN
pragma_table_info(m.tbl_name) p WHERE m.type = "table" AND p.name =
"ocel_id" GROUP BY m.tbl_name;
```

Should be 1 for all the tables

Constraints on the Foreign Keys

19) Foreign key event table

```
SELECT Count(*) FROM (SELECT * from pragma_foreign_key_list("event") p
WHERE p."table" = "event_corr_type" AND p."from" = "ocel_type" AND p."to"
= "ocel_type");
```

Should be 1

20) Foreign key object table

```
SELECT Count(*) FROM (SELECT * from pragma_foreign_key_list("object") p
WHERE p."table" = "object_corr_type" AND p."from" = "ocel_type" AND p."to"
= "ocel_type");
```

Should be 1

21) Foreign keys event_object table

```
SELECT Count(*) FROM (SELECT * from
pragma_foreign_key_list("event_object") p WHERE p."table" = "event" AND
p."from" = "ocel_event_id" AND p."to" = "ocel_id");
```

Should be 1

```
SELECT Count(*) FROM (SELECT * from
pragma_foreign_key_list("event_object") p WHERE p."table" = "object" AND
p."from" = "ocel_object_id" AND p."to" = "ocel_id");
```

Should be 1

22) Foreign key object_object table

```
SELECT Count(*) FROM (SELECT * from
pragma_foreign_key_list("object_object") p WHERE p."table" = "object" AND
p."from" = "ocel_source_id" AND p."to" = "ocel_id");
```

Should be 1

```
SELECT Count(*) FROM (SELECT * from
pragma_foreign_key_list("object_object") p WHERE p."table" = "object" AND
p."from" = "ocel_target_id" AND p."to" = "ocel_id");
```

Should be 1

23) Foreign key event type specific tables

```
SELECT Count(*) FROM (SELECT m.tbl_name, p.* FROM (SELECT tbl_name
FROM sqlite_master WHERE type = "table") m JOIN event_corr_type ty on
m.tbl_name = "event_" || ty.ocel_type_corr LEFT OUTER JOIN
pragma_foreign_key_list(m.tbl_name) p ON p."table" = "event" AND p."from"
= "ocel_id" AND p."to" = "ocel_id" WHERE p."table" IS NULL);
```

Should be 0

24) Foreign key object type specific tables

```
SELECT Count(*) FROM (SELECT m.tbl_name, p.* FROM (SELECT tbl_name
FROM sqlite_master WHERE type = "table") m JOIN object_corr_type ty on
m.tbl_name = "object_" || ty.ocel_type_corr LEFT OUTER JOIN
pragma_foreign_key_list(m.tbl_name) p ON p."table" = "object" AND p."from"
= "ocel_id" AND p."to" = "ocel_id" WHERE p."table" IS NULL);
```

Should be 0