bike-rental-dbms

**Data Dictionary**

Server: Bike-Rental Connection Author: Administrator (GROUP-C)

Date: 2025-09-19 12:17:11

Initialized at: MAKERERE UNIVERSITY

Version: 1.0

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# Introduction



A data dictionary is a collection of metadata such as object name, data type, size, classification, and relationships with other data assets. It is used by data administrators, analysts, and engineers to understand and trust data assets. It helps in the creation of authentic, transparent, and consistent data throughout the organization.

In this data dictionary, following servers are chosen for documentation:

Bike-Rental Connection (MySQL)

For each server, definitions of tables (entities/collections), views, functions are listed in order. Detailed properties of data elements (data type, size, nullability, optionality, indexes, foreign keys, constraints) are organized in tabular format.

# Server: Bike-Rental Connection (MySQL)



Version: 5.7.14

1 database is listed below.

## Database: bike-rental-dbms

Database objects to be listed: 14 tables

## Tables

* + - 1. Table: audit\_logs Fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos | Name | Type | Not Null | Others |
| 1 | audit\_id | bigint(20)  Auto Increment | **✓** |  |
| 2 | entity | varchar(50) | **✓** |  |
| 3 | entity\_id | int(10) | **✓** |  |
| 4 | action | varchar(50) | **✓** |  |
| 5 | action\_detail | json |  |  |
| 6 | performed\_by | int(10) |  | Index: [p](#_bookmark3)[erformed\_by](#_bookmark2) |
| 7 | performed\_at | datetime | **✓** | Default: CURRENT\_TIMESTAMP |

Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Method | Fields |
| performed\_by | NORMAL | BTREE | performed\_by |

Foreign Keys

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Fields | Referenced Table | Referenced Fields | On Delete | On Update |
| audit\_logs\_ibfk\_1 | performe d\_by | bike-rental-dbms.use rs | user\_id | RESTRICT | RESTRICT |

* + - 1. Table: bike\_models Fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos | Name | Type | Not Null | Others |
| 1 | bike\_model\_id | int(10)  Auto Increment | **✓** |  |
| 2 | manufacturer | varchar(100) |  |  |
| 3 | model\_name | varchar(100) |  |  |
| 4 | bike\_type | enum |  |  |
| 5 | default\_rate\_per\_min | decimal(8, 2) | **✓** | Default: 0.00 |

* + - 1. Table: bike\_transfers Fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos | Name | Type | Not Null | Others |
| 1 | transfer\_id | int(10)  Auto Increment | **✓** |  |
| 2 | bike\_id | int(10) | **✓** | Index: [b](#_bookmark6)[ike\_id](#_bookmark5) |
| 3 | from\_location\_id | int(10) |  | Index: [f](#_bookmark8)[rom\_location\_id](#_bookmark7) |
| 4 | to\_location\_id | int(10) | **✓** | Index: [t](#_bookmark10)[o\_location\_id](#_bookmark9) |
| 5 | performed\_by | int(10) |  | Index: [p](#_bookmark12)[erformed\_by](#_bookmark11) |
| 6 | transfer\_date | datetime | **✓** | Default: CURRENT\_TIMESTAMP |
| 7 | notes | text |  |  |

Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Method | Fields |
| bike\_id | NORMAL | BTREE | bike\_id |
| from\_location\_id | NORMAL | BTREE | from\_location\_id |
| to\_location\_id | NORMAL | BTREE | to\_location\_id |
| performed\_by | NORMAL | BTREE | performed\_by |

Foreign Keys

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Fields | Referenced Table | Referenced Fields | On Delete | On Update |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| bike\_transfers\_ibf k\_1 | bike\_id | bike-rental-dbms.bik es | bike\_id | RESTRICT | RESTRICT |
| bike\_transfers\_ibf k\_2 | from\_loca tion\_id | bike-rental-dbms.loc ations | location\_id | RESTRICT | RESTRICT |
| bike\_transfers\_ibf k\_3 | to\_locatio n\_id | bike-rental-dbms.loc ations | location\_id | RESTRICT | RESTRICT |
| bike\_transfers\_ibf k\_4 | performe d\_by | bike-rental-dbms.staf f | staff\_id | RESTRICT | RESTRICT |

* + - 1. Table: bikes Fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos | Name | Type | Not Null | Others |
| 1 | bike\_id | int(10)  Auto Increment | **✓** |  |
| 2 | bike\_serial | varchar(100) | **✓** | Index: [b](#_bookmark15)[ike\_serial](#_bookmark14) |
| 3 | bike\_model\_id | int(10) |  | Index: [b](#_bookmark17)[ike\_model\_id](#_bookmark16) |
| 4 | custom\_model | varchar(100) |  |  |
| 5 | current\_status | enum |  |  |
| 6 | rental\_rate\_per\_min | decimal(8, 2) | **✓** |  |
| 7 | current\_location\_id | int(10) |  | Index: [c](#_bookmark19)[urrent\_location\_id](#_bookmark18) |
| 8 | last\_maintenance\_at | datetime |  |  |
| 9 | km\_or\_mileage | decimal(9, 2) |  |  |
| 10 | added\_at | datetime | **✓** | Default: CURRENT\_TIMESTAMP |

Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Method | Fields |
| bike\_serial | UNIQUE | BTREE | bike\_serial |
| bike\_model\_id | NORMAL | BTREE | bike\_model\_id |
| current\_location\_id | NORMAL | BTREE | current\_location\_id |

Foreign Keys

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Fields | Referenced Table | Referenced Fields | On Delete | On Update |
| bikes\_ibfk\_1 | bike\_mod el\_id | bike-rental-dbms.bik e\_models | bike\_model\_id | RESTRICT | RESTRICT |
| bikes\_ibfk\_2 | current\_lo cation\_id | bike-rental-dbms.loc ations | location\_id | RESTRICT | RESTRICT |

* + - 1. Table: customers Fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos | Name | Type | Not Null | Others |
| 1 | customer\_id | int(10)  Auto Increment | **✓** |  |
| 2 | user\_id | int(10) | **✓** | Index: [u](#_bookmark22)[ser\_id](#_bookmark21) |
| 3 | preferred\_payment\_method | varchar(50) |  |  |
| 4 | created\_by | int(10) |  | Index: [c](#_bookmark24)[reated\_by](#_bookmark23) |

Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Method | Fields |
| user\_id | NORMAL | BTREE | user\_id |
| created\_by | NORMAL | BTREE | created\_by |

Foreign Keys

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Fields | Referenced Table | Referenced Fields | On Delete | On Update |
| customers\_ibfk\_1 | user\_id | bike-rental-dbms.use rs | user\_id | RESTRICT | RESTRICT |
| customers\_ibfk\_2 | created\_b y | bike-rental-dbms.staf f | staff\_id | RESTRICT | RESTRICT |

* + - 1. Table: damage\_reports Fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos | Name | Type | Not Null | Others |
| 1 | damage\_id | int(10)  Auto Increment | **✓** |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2 | rental\_id | int(10) |  | Index: [r](#_bookmark27)[ental\_id](#_bookmark26) |
| 3 | bike\_id | int(10) | **✓** | Index: [b](#_bookmark29)[ike\_id](#_bookmark28) |
| 4 | reported\_by\_customer\_id | int(10) |  | Index: [r](#_bookmark31)[eported\_by\_customer\_id](#_bookmark30) |
| 5 | reported\_by\_staff\_id | int(10) |  | Index: [r](#_bookmark33)[eported\_by\_staff\_id](#_bookmark32) |
| 6 | reported\_at | datetime | **✓** | Default: CURRENT\_TIMESTAMP |
| 7 | description | text | **✓** |  |
| 8 | estimated\_repair\_cost | decimal(10, 2) |  |  |
| 9 | status | enum |  |  |

Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Method | Fields |
| rental\_id | NORMAL | BTREE | rental\_id |
| bike\_id | NORMAL | BTREE | bike\_id |
| reported\_by\_customer\_id | NORMAL | BTREE | reported\_by\_customer\_id |
| reported\_by\_staff\_id | NORMAL | BTREE | reported\_by\_staff\_id |

Foreign Keys

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Fields | Referenced Table | Referenced Fields | On Delete | On Update |
| damage\_reports\_i bfk\_1 | rental\_id | bike-rental-dbms.rent als | rental\_id | RESTRICT | RESTRICT |
| damage\_reports\_i bfk\_2 | bike\_id | bike-rental-dbms.bik es | bike\_id | RESTRICT | RESTRICT |
| damage\_reports\_i bfk\_3 | reported\_ by\_custo mer\_id | bike-rental-dbms.cus tomers | customer\_id | RESTRICT | RESTRICT |
| damage\_reports\_i bfk\_4 | reported\_ by\_staff\_i d | bike-rental-dbms.staf f | staff\_id | RESTRICT | RESTRICT |

* + - 1. Table: locations Fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos | Name | Type | Not Null | Others |
| 1 | location\_id | int(10)  Auto Increment | **✓** |  |
| 2 | location\_name | varchar(150) | **✓** |  |
| 3 | address | varchar(255) |  |  |
| 4 | city | varchar(100) |  |  |
| 5 | longitude | decimal(10, 7) |  |  |
| 6 | latitude | decimal(10, 7) |  |  |
| 7 | capacity | int(10) |  | Default: 0 |
| 8 | created\_at | datetime | **✓** | Default: CURRENT\_TIMESTAMP |

* + - 1. Table: maintenance\_logs Fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos | Name | Type | Not Null | Others |
| 1 | maintenance\_id | int(10)  Auto Increment | **✓** |  |
| 2 | bike\_id | int(10) | **✓** | Index: [b](#_bookmark36)[ike\_id](#_bookmark35) |
| 3 | staff\_id | int(10) |  | Index: [s](#_bookmark38)[taff\_id](#_bookmark37) |
| 4 | maintenance\_date | datetime | **✓** | Default: CURRENT\_TIMESTAMP |
| 5 | description | text | **✓** |  |
| 6 | cost | decimal(10, 2) | **✓** | Default: 0.00 |
| 7 | next\_due\_date | date |  |  |

Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Method | Fields |
| bike\_id | NORMAL | BTREE | bike\_id |
| staff\_id | NORMAL | BTREE | staff\_id |

Foreign Keys

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Fields | Referenced Table | Referenced Fields | On Delete | On Update |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| maintenance\_logs  \_ibfk\_1 | bike\_id | bike-rental-dbms.bik es | bike\_id | RESTRICT | RESTRICT |
| maintenance\_logs  \_ibfk\_2 | staff\_id | bike-rental-dbms.staf f | staff\_id | RESTRICT | RESTRICT |

* + - 1. Table: payments Fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos | Name | Type | Not Null | Others |
| 1 | payment\_id | int(10)  Auto Increment | **✓** |  |
| 2 | rental\_id | int(10) |  | Index: [r](#_bookmark43)[ental\_id](#_bookmark42) |
| 3 | customer\_id | int(10) |  | Index: [c](#_bookmark45)[ustomer\_id](#_bookmark44) |
| 4 | payment\_date | datetime | **✓** | Default: CURRENT\_TIMESTAMP |
| 5 | amount | decimal(12, 2) | **✓** |  |
| 6 | currency | char(3) | **✓** | Default: 'UGX' |
| 7 | method | enum |  |  |
| 8 | processor\_transaction\_id | varchar(255) |  | Index: [p](#_bookmark41)[rocessor\_transaction\_id](#_bookmark40) |
| 9 | status | enum |  |  |
| 10 | receipt\_url | varchar(255) |  |  |

Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Method | Fields |
| processor\_transaction\_id | UNIQUE | BTREE | processor\_transaction\_id |
| rental\_id | NORMAL | BTREE | rental\_id |
| customer\_id | NORMAL | BTREE | customer\_id |

Foreign Keys

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Fields | Referenced Table | Referenced Fields | On Delete | On Update |
| payments\_ibfk\_1 | rental\_id | bike-rental-dbms.rent als | rental\_id | RESTRICT | RESTRICT |
| payments\_ibfk\_2 | customer  \_id | bike-rental-dbms.cus tomers | customer\_id | RESTRICT | RESTRICT |

* + - 1. Table: penalties Fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos | Name | Type | Not Null | Others |
| 1 | penalty\_id | int(10)  Auto Increment | **✓** |  |
| 2 | customer\_id | int(10) | **✓** | Index: [c](#_bookmark48)[ustomer\_id](#_bookmark47) |
| 3 | rental\_id | int(10) |  | Index: [r](#_bookmark50)[ental\_id](#_bookmark49) |
| 4 | amount | decimal(10, 2) | **✓** |  |
| 5 | reason | varchar(255) | **✓** |  |
| 6 | issued\_by | int(10) |  | Index: [i](#_bookmark52)[ssued\_by](#_bookmark51) |
| 7 | issued\_at | datetime | **✓** | Default: CURRENT\_TIMESTAMP |
| 8 | paid | tinyint(1) | **✓** | Default: 0 |

Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Method | Fields |
| customer\_id | NORMAL | BTREE | customer\_id |
| rental\_id | NORMAL | BTREE | rental\_id |
| issued\_by | NORMAL | BTREE | issued\_by |

Foreign Keys

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Fields | Referenced Table | Referenced Fields | On Delete | On Update |
| penalties\_ibfk\_1 | customer  \_id | bike-rental-dbms.cus tomers | customer\_id | RESTRICT | RESTRICT |
| penalties\_ibfk\_2 | rental\_id | bike-rental-dbms.rent als | rental\_id | RESTRICT | RESTRICT |
| penalties\_ibfk\_3 | issued\_by | bike-rental-dbms.staf f | staff\_id | RESTRICT | RESTRICT |

* + - 1. Table: rentals Fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos | Name | Type | Not Null | Others |
| 1 | rental\_id | int(10)  Auto Increment | **✓** |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2 | rental\_reference\_no | varchar(50) | **✓** | Index: [r](#_bookmark54)[ental\_reference\_no](#_bookmark53) |
| 3 | customer\_id | int(10) | **✓** | Index: [c](#_bookmark56)[ustomer\_id](#_bookmark55) |
| 4 | bike\_id | int(10) | **✓** | Index: [b](#_bookmark58)[ike\_id](#_bookmark57) |
| 5 | start\_location\_id | int(10) | **✓** | Index: [s](#_bookmark60)[tart\_location\_id](#_bookmark59) |
| 6 | end\_location\_id | int(10) |  | Index: [e](#_bookmark62)[nd\_location\_id](#_bookmark61) |
| 7 | rental\_start | datetime | **✓** |  |
| 8 | rental\_end | datetime |  |  |
| 9 | minutes\_used | int(10) |  |  |
| 10 | base\_cost | decimal(10, 2) | **✓** | Default: 0.00 |
| 11 | late\_fee | decimal(10, 2) | **✓** | Default: 0.00 |
| 12 | damage\_fee | decimal(10, 2) | **✓** | Default: 0.00 |
| 13 | total\_cost | decimal(12, 2) | **✓** | Default: 0.00 |
| 14 | payment\_status | enum |  |  |
| 15 | status | enum |  |  |
| 16 | created\_at | datetime | **✓** | Default: CURRENT\_TIMESTAMP |
| 17 | completed\_by | int(10) |  | Index: [c](#_bookmark64)[ompleted\_by](#_bookmark63) |

Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Method | Fields |
| rental\_reference\_no | UNIQUE | BTREE | rental\_reference\_no |
| customer\_id | NORMAL | BTREE | customer\_id |
| bike\_id | NORMAL | BTREE | bike\_id |
| start\_location\_id | NORMAL | BTREE | start\_location\_id |
| end\_location\_id | NORMAL | BTREE | end\_location\_id |
| completed\_by | NORMAL | BTREE | completed\_by |

Foreign Keys

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Fields | Referenced Table | Referenced Fields | On Delete | On Update |
| rentals\_ibfk\_1 | customer  \_id | bike-rental-dbms.cus tomers | customer\_id | RESTRICT | RESTRICT |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| rentals\_ibfk\_2 | bike\_id | bike-rental-dbms.bik es | bike\_id | RESTRICT | RESTRICT |
| rentals\_ibfk\_3 | start\_loca tion\_id | bike-rental-dbms.loc ations | location\_id | RESTRICT | RESTRICT |
| rentals\_ibfk\_4 | end\_locat ion\_id | bike-rental-dbms.loc ations | location\_id | RESTRICT | RESTRICT |
| rentals\_ibfk\_5 | complete d\_by | bike-rental-dbms.staf f | staff\_id | RESTRICT | RESTRICT |

* + - 1. Table: reservations Fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos | Name | Type | Not Null | Others |
| 1 | reservation\_id | int(10)  Auto Increment | **✓** |  |
| 2 | customer\_id | int(10) |  | Index: [c](#_bookmark67)[ustomer\_id](#_bookmark66) |
| 3 | bike\_id | int(10) |  | Index: [b](#_bookmark69)[ike\_id](#_bookmark68) |
| 4 | location\_id | int(10) |  | Index: [l](#_bookmark71)[ocation\_id](#_bookmark70) |
| 5 | start\_datetime | datetime | **✓** |  |
| 6 | end\_datetime | datetime |  |  |
| 7 | status | enum |  |  |
| 8 | created\_at | datetime | **✓** | Default: CURRENT\_TIMESTAMP |

Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Method | Fields |
| customer\_id | NORMAL | BTREE | customer\_id |
| bike\_id | NORMAL | BTREE | bike\_id |
| location\_id | NORMAL | BTREE | location\_id |

Foreign Keys

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Fields | Referenced Table | Referenced Fields | On Delete | On Update |
| reservations\_ibfk\_ 1 | customer  \_id | bike-rental-dbms.cus tomers | customer\_id | RESTRICT | RESTRICT |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| reservations\_ibfk\_ 2 | bike\_id | bike-rental-dbms.bik es | bike\_id | RESTRICT | RESTRICT |
| reservations\_ibfk\_ 3 | location\_i d | bike-rental-dbms.loc ations | location\_id | RESTRICT | RESTRICT |

* + - 1. Table: staff Fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos | Name | Type | Not Null | Others |
| 1 | staff\_id | int(10)  Auto Increment | **✓** |  |
| 2 | user\_id | int(10) | **✓** | Index: [u](#_bookmark74)[ser\_id](#_bookmark73) |
| 3 | role | enum |  | Default: 'agent' |
| 4 | date\_hired | date |  |  |
| 5 | location\_id | int(10) |  | Index: [l](#_bookmark76)[ocation\_id](#_bookmark75) |

Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Method | Fields |
| user\_id | NORMAL | BTREE | user\_id |
| location\_id | NORMAL | BTREE | location\_id |

Foreign Keys

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Fields | Referenced Table | Referenced Fields | On Delete | On Update |
| staff\_ibfk\_1 | user\_id | bike-rental-dbms.use rs | user\_id | RESTRICT | RESTRICT |
| staff\_ibfk\_2 | location\_i d | bike-rental-dbms.loc ations | location\_id | RESTRICT | RESTRICT |

* + - 1. Table: users Fields

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos | Name | Type | Not Null | Others |
| 1 | user\_id | int(10)  Auto Increment | **✓** |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2 | user\_type | enum | **✓** |  |
| 3 | national\_id | varchar(50) |  | Index: [n](#_bookmark80)[ational\_id](#_bookmark79) |
| 4 | first\_name | varchar(100) | **✓** |  |
| 5 | last\_name | varchar(100) | **✓** |  |
| 6 | email | varchar(255) | **✓** | Index: [e](#_bookmark78)[mail](#_bookmark77) |
| 7 | phone | varchar(30) | **✓** |  |
| 8 | date\_of\_birth | date |  |  |
| 9 | password | varchar(255) | **✓** |  |
| 10 | password\_reset\_token | varchar(255) |  |  |
| 11 | status | enum | **✓** | Default: 'active' |
| 12 | registered\_at | datetime | **✓** | Default: CURRENT\_TIMESTAMP |
| 13 | updated\_at | datetime |  |  |
| 14 | deleted\_at | datetime |  |  |

Indexes

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Method | Fields |
| email | UNIQUE | BTREE | email |
| national\_id | UNIQUE | BTREE | national\_id |