bike-rental-dbms
Data Dictionary

Server: Bike-Rental Connection
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1. 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.

2. Server: Bike-Rental Connection (MySQL)

Version: 5.7.14

1 database is listed below.

2.1. Database: bike-rental-dbms

Database objects to be listed: 14 tables

2.1.1. Tables

2.1.1.1. 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: performed_by
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	performed_by	bike-rental-dbms.users	user_id	RESTRICT	RESTRICT

2.1.1.2. 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

2.1.1.3. Table: bike_transfers

Fields

Pos	Name	Type	Not Null	Others
1	transfer_id 🔑	int(10) Auto Increment	✓	
2	bike_id	int(10)	✓	Index: bike_id
3	from_location_id	int(10)		Index: from_location_id
4	to_location_id	int(10)	✓	Index: to_location_id
5	performed_by	int(10)		Index: performed_by
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_ibfk_1	bike_id	bike-rental-dbms.bikes	bike_id	RESTRICT	RESTRICT
bike_transfers_ibfk_2	from_location_id	bike-rental-dbms.locations	location_id	RESTRICT	RESTRICT
bike_transfers_ibfk_3	to_location_id	bike-rental-dbms.locations	location_id	RESTRICT	RESTRICT
bike_transfers_ibfk_4	performed_by	bike-rental-dbms.staff	staff_id	RESTRICT	RESTRICT

2.1.1.4. Table: bikes

Fields

Pos	Name	Type	Not Null	Others
1	bike_id 🔑	int(10) Auto Increment	✓	
2	bike_serial	varchar(100)	✓	Index: bike_serial
3	bike_model_id	int(10)		Index: bike_model_id
4	custom_model	varchar(100)		
5	current_status	enum		
6	rental_rate_per_min	decimal(8, 2)	✓	
7	current_location_id	int(10)		Index: current_location_id
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_model_id	bike-rental-dbms.bike_models	bike_model_id	RESTRICT	RESTRICT
bikes_ibfk_2	current_location_id	bike-rental-dbms.locations	location_id	RESTRICT	RESTRICT

2.1.1.5. Table: customers

Fields

Pos	Name	Type	Not Null	Others
1	customer_id 🔑	int(10) Auto Increment	✓	
2	user_id	int(10)	✓	Index: user_id
3	preferred_payment_method	varchar(50)		
4	created_by	int(10)		Index: created_by

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.users	user_id	RESTRICT	RESTRICT
customers_ibfk_2	created_by	bike-rental-dbms.staff	staff_id	RESTRICT	RESTRICT

2.1.1.6. Table: damage_reports

Fields

Pos	Name	Type	Not Null	Others
1	damage_id 🔑	int(10) Auto Increment	✓	

2	rental_id	int(10)		Index: rental_id
3	bike_id	int(10)	✓	Index: bike_id
4	reported_by_customer_id	int(10)		Index: reported_by_customer_id
5	reported_by_staff_id	int(10)		Index: reported_by_staff_id
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_ibfk_1	rental_id	bike-rental-dbms.rentals	rental_id	RESTRICT	RESTRICT
damage_reports_ibfk_2	bike_id	bike-rental-dbms.bikes	bike_id	RESTRICT	RESTRICT
damage_reports_ibfk_3	reported_by_customer_id	bike-rental-dbms.customers	customer_id	RESTRICT	RESTRICT
damage_reports_ibfk_4	reported_by_staff_id	bike-rental-dbms.staff	staff_id	RESTRICT	RESTRICT

2.1.1.7. 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

2.1.1.8. Table: maintenance_logs

Fields

Pos	Name	Type	Not Null	Others
1	maintenance_id 🔑	int(10) Auto Increment	✓	
2	bike_id	int(10)	✓	Index: bike_id
3	staff_id	int(10)		Index: staff_id
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.bikes	bike_id	RESTRICT	RESTRICT
maintenance_logs_ibfk_2	staff_id	bike-rental-dbms.staff	staff_id	RESTRICT	RESTRICT

2.1.1.9. Table: payments

Fields

Pos	Name	Type	Not Null	Others
1	payment_id 🔑	int(10) Auto Increment	✓	
2	rental_id	int(10)		Index: rental_id
3	customer_id	int(10)		Index: customer_id
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: processor_transaction_id
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.rentals	rental_id	RESTRICT	RESTRICT
payments_ibfk_2	customer_id	bike-rental-dbms.customers	customer_id	RESTRICT	RESTRICT

2.1.1.10. Table: penalties

Fields

Pos	Name	Type	Not Null	Others
1	penalty_id 🔑	int(10) Auto Increment	✓	
2	customer_id	int(10)	✓	Index: customer_id
3	rental_id	int(10)		Index: rental_id
4	amount	decimal(10, 2)	✓	
5	reason	varchar(255)	✓	
6	issued_by	int(10)		Index: issued_by
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.customers	customer_id	RESTRICT	RESTRICT
penalties_ibfk_2	rental_id	bike-rental-dbms.rentals	rental_id	RESTRICT	RESTRICT
penalties_ibfk_3	issued_by	bike-rental-dbms.staff	staff_id	RESTRICT	RESTRICT

2.1.1.11. Table: rentals

Fields

Pos	Name	Type	Not Null	Others
1	rental_id 🔑	int(10) Auto Increment	✓	

2	rental_reference_no	varchar(50)	✓	Index: rental_reference_no
3	customer_id	int(10)	✓	Index: customer_id
4	bike_id	int(10)	✓	Index: bike_id
5	start_location_id	int(10)	✓	Index: start_location_id
6	end_location_id	int(10)		Index: end_location_id
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: completed_by

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.customers	customer_id	RESTRICT	RESTRICT

rentals_ibfk_2	bike_id	bike-rental-dbms.bikes	bike_id	RESTRICT	RESTRICT
rentals_ibfk_3	start_location_id	bike-rental-dbms.locations	location_id	RESTRICT	RESTRICT
rentals_ibfk_4	end_location_id	bike-rental-dbms.locations	location_id	RESTRICT	RESTRICT
rentals_ibfk_5	completed_by	bike-rental-dbms.staff	staff_id	RESTRICT	RESTRICT

2.1.1.12. Table: reservations

Fields

Pos	Name	Type	Not Null	Others
1	reservation_id 🔑	int(10) Auto Increment	✓	
2	customer_id	int(10)		Index: customer_id
3	bike_id	int(10)		Index: bike_id
4	location_id	int(10)		Index: location_id
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.customers	customer_id	RESTRICT	RESTRICT

reservations_ibfk_2	bike_id	bike-rental-dbms.bikes	bike_id	RESTRICT	RESTRICT
reservations_ibfk_3	location_id	bike-rental-dbms.locations	location_id	RESTRICT	RESTRICT

2.1.1.13. Table: staff

Fields

Pos	Name	Type	Not Null	Others
1	staff_id 🔑	int(10) Auto Increment	✓	
2	user_id	int(10)	✓	Index: user_id
3	role	enum		Default: 'agent'
4	date_hired	date		
5	location_id	int(10)		Index: location_id

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.users	user_id	RESTRICT	RESTRICT
staff_ibfk_2	location_id	bike-rental-dbms.locations	location_id	RESTRICT	RESTRICT

2.1.1.14. 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: national_id
4	first_name	varchar(100)	✓	
5	last_name	varchar(100)	✓	
6	email	varchar(255)	✓	Index: email
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