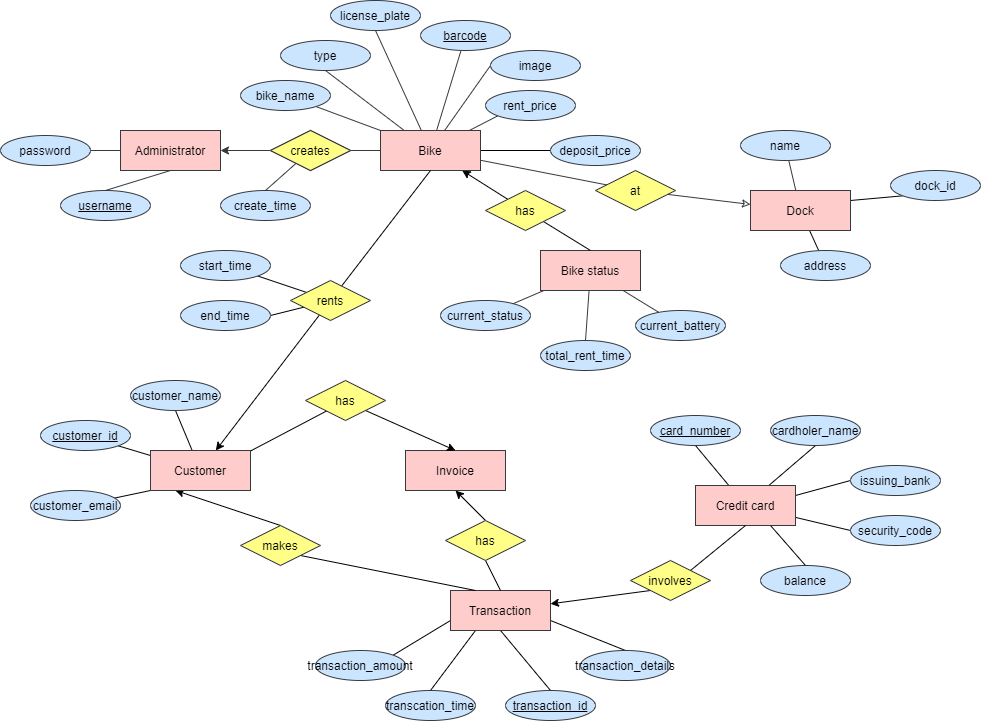
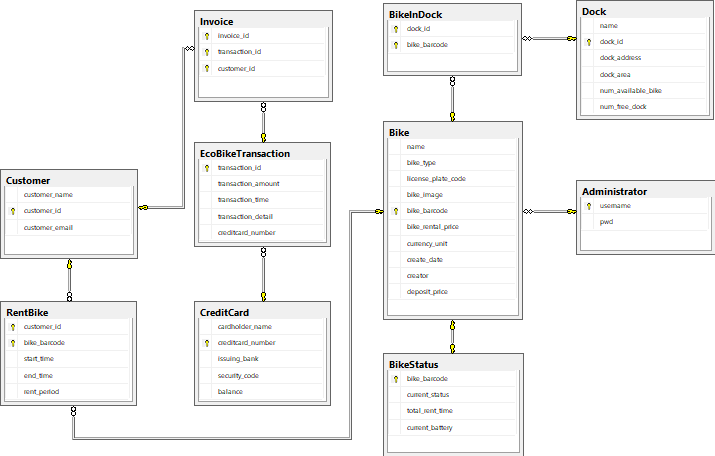
**Database specifications for EcoBike Application**

1. **ER-Diagram**

****

1. **Table relationships**

****

1. **Table specifications**

**Customer**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **PK** | **FK** | **Name** | **Data type** | **Mandatory** | **Description** |
| 1 | x | x | customer\_id | int | X | ID of customer |
| 2 |  |  | customer\_name | varchar(256) | x | Name of customer renting bike |
| 3 |  |  | customer\_email | varchar(256) | x | Email of customer renting bike for sending invoice |

## **Administrator**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **PK** | **FK** | **Name** | **Data type** | **Mandatory** | **Description** |
| 1 | x | x | username | varchar(256) | x | Username of the administrator |
| 2 |  |  | pwd | varchar(256) | x | Password of the administrator used to login |

## **Dock**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **PK** | **FK** | **Name** | **Data type** | **Mandatory** | **Description** |
| 1 | x | x | dock\_id | int | x | ID of dock |
| 2 |  |  | dock\_name | varchar(256) | x | Name of the dock |
| 3 |  |  | dock\_address | varchar(256) | x | Address of the dock |
| 4 |  |  | dock\_area | float |  | Area of the dock |
| 5 |  |  | num\_available\_bike | int | x | Number of current available bike in dock |
| 6 |  |  | num\_free\_dock | int | x | Number of current available bike slot in dock for returning bike |

## **Bike**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **PK** | **FK** | **Name** | **Data type** | **Mandatory** | **Description** |
| 1 |  |  | bike\_name | varchar(256) | x | Name of the bike |
| 2 |  |  | bike\_type | varchar(16) | x | Type of bike |
| 3 |  |  | license\_plate\_code | varchar(32) | x | Code of the license plate of the bike |
| 4 |  |  | bike\_image | varchar(256) |  | Path to image of the bike |
| 5 | x | x | bike\_barcode | int | x | Barcode of the bike |
| 6 |  |  | bike\_rental\_price | float | x | Price to rent the bike |
| 7 |  |  | deposit\_price | float | x | Deposit cost to rent the bike |
| 8 |  |  | currency\_unit | varchar(3) | x | Currency unit used to calculate rental fee and deposit fee |
| 9 |  |  | create\_date | date | x | Day imported bike data |
| 10 |  |  | creator | varchar(256) | x | The administrator who create data for the bike |

## **Bike in dock**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **PK** | **FK** | **Name** | **Data type** | **Mandatory** | **Description** |
| 1 |  |  | dock\_id | int | x | Id of the dock |
| 2 |  |  | bike\_barcode | int | x | Barcode of the bike in dock |

## **Bike status**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **PK** | **FK** | **Name** | **Data type** | **Mandatory** | **Description** |
| 1 |  |  | bike\_barcode | int | x | Barcode of the bike |
| 2 |  |  | current\_status | varchar(4) | x | ‘free’/’rent’ |
| 3 |  |  | total\_rent\_time | int | x | Total time that the bike is rented (in minute) |
| 4 |  |  | current battery | float | x | Current battery status of the bike |

**Invoice**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **PK** | **FK** | **Name** | **Data type** | **Mandatory** | **Description** |
| 1 | x |  | invoice\_id | int | X | ID of the invoice |
| 2 |  | x | transaction\_id | int | x | ID of the transaction |
| 3 |  | x | customer\_id | int | x | ID of the customer |

## **EcoBikeTransaction**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **PK** | **FK** | **Name** | **Data type** | **Mandatory** | **Description** |
| 1 | x |  | transaction\_id | int | x | ID of transaction |
| 2 |  |  | transaction\_amount | int | x | The amount of money for the transaction |
| 3 |  |  | transaction\_time | DATETIME | x | Time the transaction is made |
| 4 |  |  | transaction\_detail | varchar(256) |  | The content of the transaction |
| 5 |  | x | creditcard\_number | int | x | The number of the credit card |

**Rent Bike**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **PK** | **FK** | **Name** | **Data type** | **Mandatory** | **Description** |
| 1 | x | x | customer\_id | int | X | ID of customer |
| 2 | x |  | bike\_barcode | int | x | Barcode of the bike being rented |
| 3 |  |  | start\_time | time | x | Time start renting |
| 4 |  |  | end\_time | time |  | Time end renting (null if the bike is currently being rented) |
| 5 |  |  | rent\_period | int |  | Total time renting the bike, in terms of minutes (null if the bike is currently being rented) |

**Credit card**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **PK** | **FK** | **Name** | **Data type** | **Mandatory** | **Description** |
| 1 | x | x | card\_number | int | X | Number of the credit card |
| 2 |  |  | cardholder\_name | varchar(256) | x | Name of the cardholder |
| 3 |  |  | issuing\_bank | varchar(256) | x | Bank in charge of the card |
| 4 |  |  | security\_code | varchar(16) | x | Security code on the creditcard for transaction |
| 5 |  |  | balance | float | x | Current balance of the creditcard |