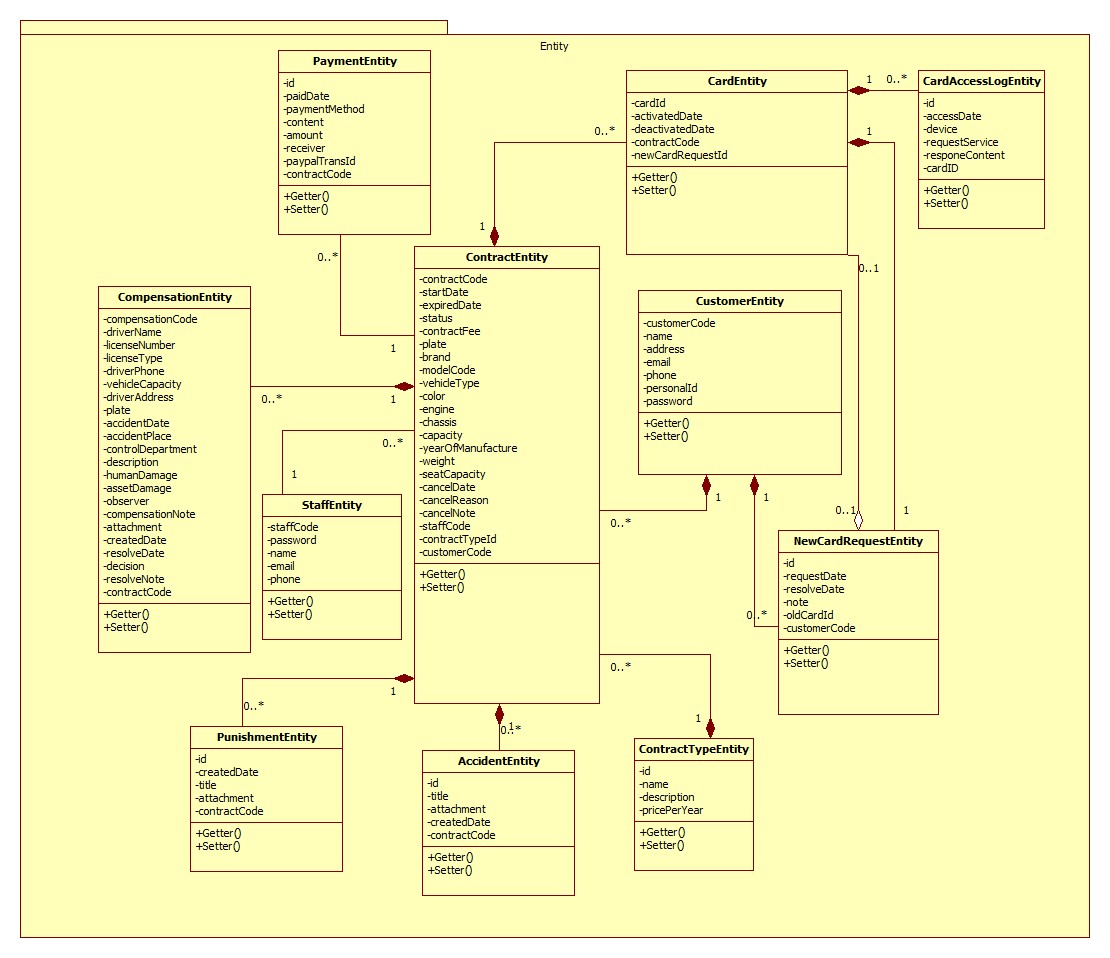
## Detailed Description

### Class Diagram



|  |  |  |
| --- | --- | --- |
| **Class dictionary: describe Class** | | |
| **Class Name** | **Mapping column with Conceptual diagram** | **Description** |
| PaymentEntity | Payment | Contain the payment information. |
| CardEntity | Card | Contain the card information. |
| CustomerEntity | Customer | Contain the customer information. |
| ContractEntity | Contract | Contain the contract information. |
| StaffEntity | Staff | Contain the staff information. |
| CompensationEntity | Compensation | Contain the compensation information. |
| PunishmentEntity | Punishment | Contain the punishment information. |
| AccidentEntity | Accident | Contain the accident information. |
| ContractTypeEntity | ContractType | Contain the contract type information. |
| NewCardRequestEntity | NewCardRequest | Contain the new card request information. |
| CardAccessLogEntity | N/A | Not exist in conceptual diagram. But needed in class diagram to contain the card access log information. |

### Class Diagram Explanation

### PaymentEntity

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Type** | **Visibility** | **Description** |
| Id | int | Private | Unique identifier of an payment |
| paidDate | Timestamp | Private | The day process the payment |
| paymentMethod | String | Private | The payment method |
| content | String | Private | The content of the payment |
| amount | Double | Private | Total amount of the payment |
| receiver | String | Private | The payment receiver |
| paypalTransId | String | Private | The PayPal transaction ID |
| contractCode | String | Private | The contract code. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Method** | **Return Type** | **Visibility** | **Description** |
| Getter | Attribute type | Public | Get attribute value. |
| Setter | Void | Public | Set value of attribute. |

### CardEntity

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Type** | **Visibility** | **Description** |
| cardId | String | Private | Unique identifier of an card |
| activatedDate | Timestamp | Private | The date the card was activated. |
| deactivatedDate | Timestamp | Private | The date the card was deactivated. |
| contractCode | String | Private | The contract code |
| newCardRequestId | String | Private | The new card request ID. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Method** | **Return Type** | **Visibility** | **Description** |
| Getter | Attribute type | Public | Get attribute value. |
| Setter | Void | Public | Set value of attribute. |

### CustomerEntity

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Type** | **Visibility** | **Description** |
| customerCode | String | Private | Unique identifier of an customer |
| name | String | Private | Customer’s name. |
| address | String | Private | Customer’s address. |
| email | String | Private | Customer’s email. |
| phone | String | Private | Customer’s phone number. |
| personalId | String | Private | The customer’s personal ID. |
| password | String | Private | Customer’s password. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Method** | **Return Type** | **Visibility** | **Description** |
| Getter | Attribute type | Public | Get attribute value. |
| Setter | Void | Public | Set value of attribute. |

### ContractEntity

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Type** | **Visibility** | **Description** |
| contractCode | String | Private | Unique identifier of a contract |
| startDate | Timestamp | Private | The start date of the contract. |
| expiredDate | Timestamp | Private | The expired date of the contract. |
| status | String | Private | The status of the contract. |
| contactFee | Double | Private | The contract fee. |
| plate | String | Private | The plate number of the motor. |
| brand | String | Private | The brand of the motor. |
| modelCode | String | Private | The model code of the motor. |
| vehicleType | String | Private | The vehicle type. |
| color | String | Private | The motor’s color. |
| engine | String | Private | The motor’s engine. |
| chassis | String | Private | The motor’s chassis. |
| capacity | String | Private | The motor’s capacity. |
| yearOfManufacture | int | Private | The year of manufacture. |
| weight | int | Private | The motor’s weight. |
| seatCapacity | int | Private | The seat capacity. |
| cancelDate | Timestamp | Private | The cancel date of the contract. |
| cancelReason | String | Private | The cancel reason. |
| cancelNote | String | Private | The cancel note. |
| contractTypeId | int | Private | The contract type ID. |
| customerCode | String | Private | The customer code. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Method** | **Return Type** | **Visibility** | **Description** |
| Getter | Attribute type | Public | Get attribute value. |
| Setter | Void | Public | Set value of attribute. |

### StaffEntity

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Type** | **Visibility** | **Description** |
| staffCode | String | Private | Unique identifier of a staff |
| password | String | Private | The staff’s password |
| name | String | Private | The staff’s name. |
| email | String | Private | The staff’s email. |
| phone | String | Private | The staff’s phone number. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Method** | **Return Type** | **Visibility** | **Description** |
| Getter | Attribute type | Public | Get attribute value. |
| Setter | Void | Public | Set value of attribute. |

### CompensationEntity

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Type** | **Visibility** | **Description** |
| compensationCode | String | Private | Unique identifier of a compensation |
| driverName | String | Private | The driver name. |
| licenseNumber | String | Private | The license number of the motor. |
| licenseType | String | Private | The license type of the motor. |
| driverPhone | String | Private | The driver’s phone number. |
| vehicleCapacity | String | Private | The vehicle capacity. |
| driverAddress | String | Private | The driver’s address. |
| plate | String | Private | The plate number. |
| accidentDate | Timestamp | Private | The accident date. |
| accidentPlace | String | Private | The accident place. |
| controlDepartment | String | Private | The police control department. |
| description | String | Private | The compensation’s description. |
| humanDamage | String | Private | The human damages. |
| assetDamage | String | Private | The asset damages. |
| observer | String | Private | The observer. |
| compensationNote | String | Private | The compensation note. |
| attachment | String | Private | The attachment. |
| createdDate | Timestamp | Private | The created date of the compensation. |
| resolveDate | Timestamp | Private | The resolve date. |
| decision | String | Private | The decision. |
| resolveNote | String | Private | The resolve note. |
| contractCode | String | private | The contract code. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Method** | **Return Type** | **Visibility** | **Description** |
| Getter | Attribute type | Public | Get attribute value. |
| Setter | Void | Public | Set value of attribute. |

### PunishmentEntity

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Type** | **Visibility** | **Description** |
| id | int | Private | Unique identifier of a punishment |
| createdDate | Timestamp | Private | The created date. |
| title | String | Private | The title of the punishment. |
| attachment | String | Private | The attachment. |
| contractCode | String | Private | The contract code. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Method** | **Return Type** | **Visibility** | **Description** |
| Getter | Attribute type | Public | Get attribute value. |
| Setter | Void | Public | Set value of attribute. |

### AccidentEntity

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Type** | **Visibility** | **Description** |
| id | int | Private | Unique identifier of an accident |
| title | String | Private | The title of the accident. |
| attachment | String | Private | The attachment. |
| createdDate | Timestamp | Private | The created date. |
| contractCode | String | Private | The contract code. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Method** | **Return Type** | **Visibility** | **Description** |
| Getter | Attribute type | Public | Get attribute value. |
| Setter | Void | Public | Set value of attribute. |

### ContractTypeEntity

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Type** | **Visibility** | **Description** |
| id | int | Private | unique identifier of a contract type |
| name | String | Private | The contract’s name. |
| description | String | Private | The description. |
| pricePerYear | Double | Private | The price per year of the contract. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Method** | **Return Type** | **Visibility** | **Description** |
| Getter | Attribute type | Public | Get attribute value. |
| Setter | Void | Public | Set value of attribute. |

### NewCardRequestEntity

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Type** | **Visibility** | **Description** |
| id | int | Private | Unique identifier of a new card request |
| requestDate | Timestamp | Private | The request date. |
| resolveDate | Timestamp | Private | The resolve date. |
| note | String | Private | The new card request note. |
| oldCardId | String | Private | The ID of the old card. |
| customerCode | String | Private | The customer code. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Method** | **Return Type** | **Visibility** | **Description** |
| Getter | Attribute type | Public | Get attribute value. |
| Setter | Void | Public | Set value of attribute. |

### CardAccessLogEntity

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Type** | **Visibility** | **Description** |
| id | int | Private | Unique identifier of an card access log |
| accessDate | Timestamp | Private | The access date. |
| device | String | Private | The device name. |
| requestService | String | Private | The request service. |
| responseContent | String | Private | The response content. |

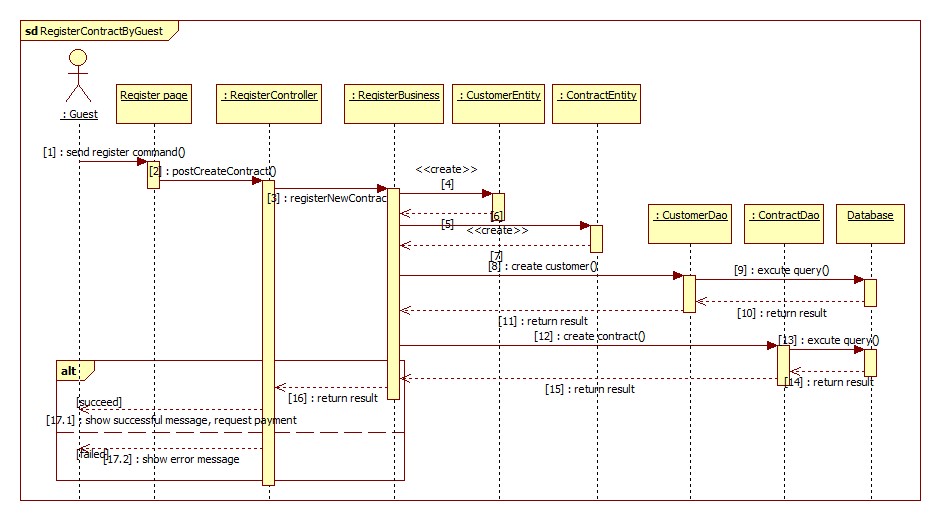
|  |  |  |  |
| --- | --- | --- | --- |
| **Method** | **Return Type** | **Visibility** | **Description** |
| Getter | Attribute type | Public | Get attribute value. |
| Setter | Void | Public | Set value of attribute. |

### Interactive Diagram

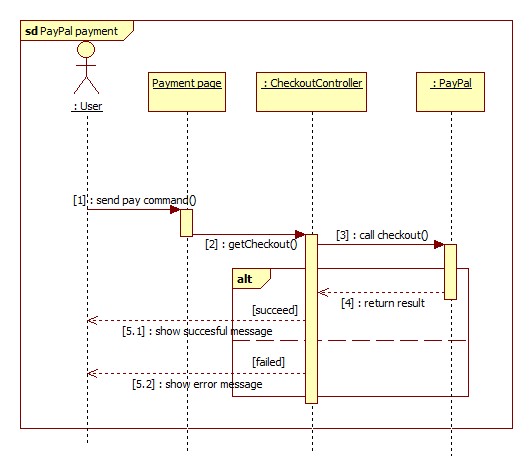
#### Web Application

Guest :

* Register new contract:



* PayPal payment:

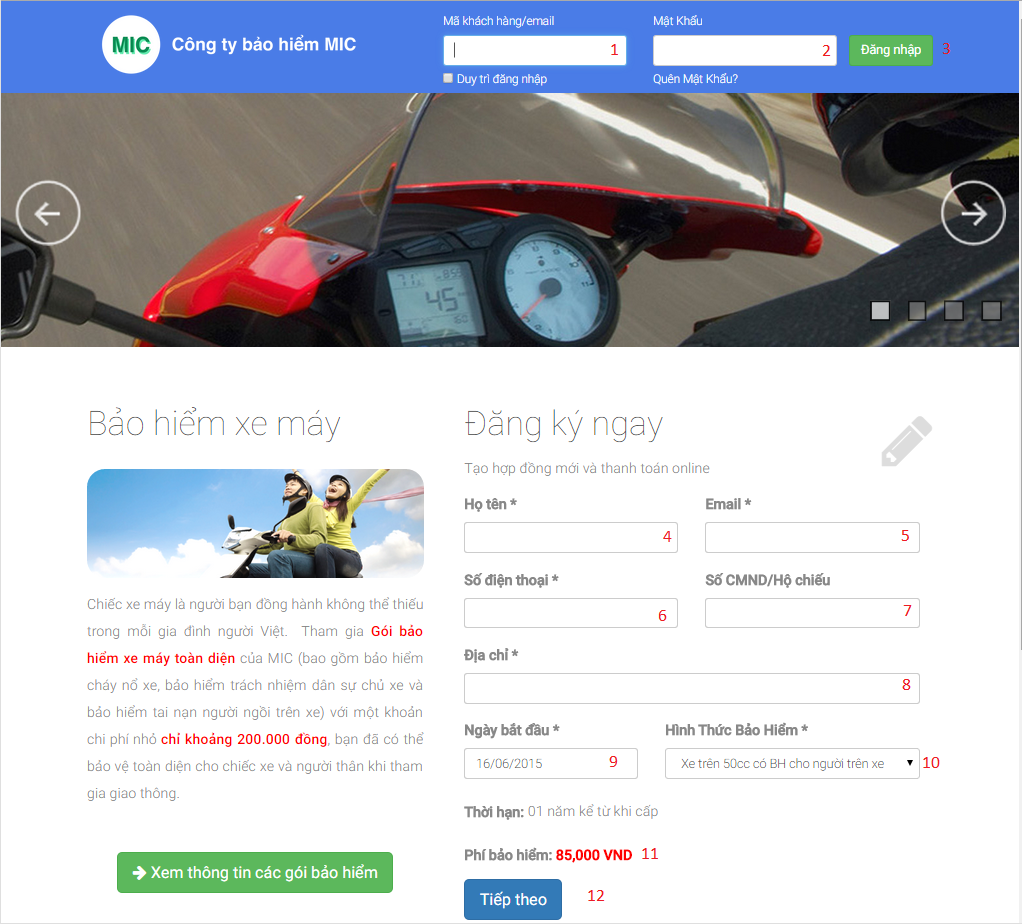


## **User Interface Design**

### Web application design

#### Guest Interface Design

##### **Guest home page**



**Fields**

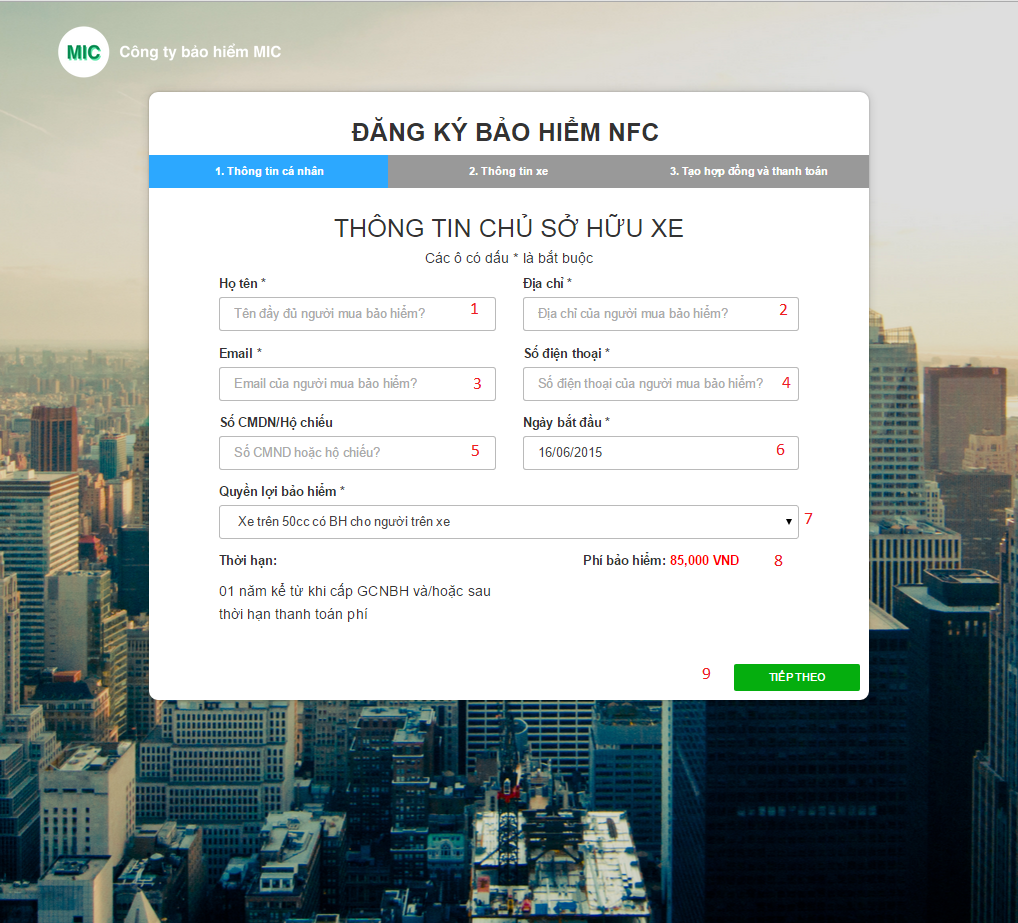
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field Name** | **Description** | **Read only** | **Mandatory** | **Control Type** | **Data Type** | **Length** |
| 1 | txtUsername | Username | No | No | Text | String | 4-10 |
| 2 | txtPassword | Password | No | No | Text | String | 8-32 |
| 4 | txtName | Customer name | No | Yes | Text | String | 3-80 |
| 5 | txtEmail | Customer’s email | No | Yes | Text | String | 8-250 |
| 6 | txtPhone | Customer’s phone number | No | Yes | Text | String | 8-15 |
| 7 | txtPersonalId | Customer’s personal ID. | No | No | Text | String | 8-15 |
| 8 | txtAddress | Customer’s address | No | Yes | Text | String | 8-250 |
| 9 | txtStartDate | Contract’s start date. | No | Yes | date | date | N/A |
| 10 | ddlContractType | Contract type | No | Yes | Select | String | N/A |
| 11 | txtFee | Contract fee. | Yes | Yes | label | String | N/A |

**Button/Hyperlinks**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Function** | **Description** | **Validation** | **Outcome** |
| 3 | btnLogin | Login into the system | N/A | Transfer to customer page/ staff page. |
| 12 | btnNext | Forward to detail register page. | N/A | Transfer to register new contract page. |

##### **Register new contract page**

##### **Input personal information tab**



**Fields**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field Name** | **Description** | **Read only** | **Mandatory** | **Control Type** | **Data Type** | **Length** |
| 1 | txtName | Customer name | No | Yes | Text | String | 3-80 |
| 2 | txtAddress | Customer’s address | No | Yes | Text | String | 8-250 |
| 3 | txtEmail | Customer’s email | No | Yes | Text | String | 8-250 |
| 4 | txtPhone | Customer’s phone number | No | Yes | Text | String | 8-15 |
| 5 | txtPersonalId | Customer’s personal ID. | No | No | Text | String | 8-15 |
| 6 | txtStartDate | Contract’s start date. | No | Yes | date | date | N/A |
| 7 | ddlContractType | Contract type | No | Yes | Select | String | N/A |
| 8 | txtFee | Contract fee. | Yes | Yes | label | String | N/A |

**Button/Hyperlinks**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Function** | **Description** | **Validation** | **Outcome** |
| 9 | btnNext | Next to input motor information tab. | N/A | Transfer to input motor information tab. |

##### **Input motor information tab**



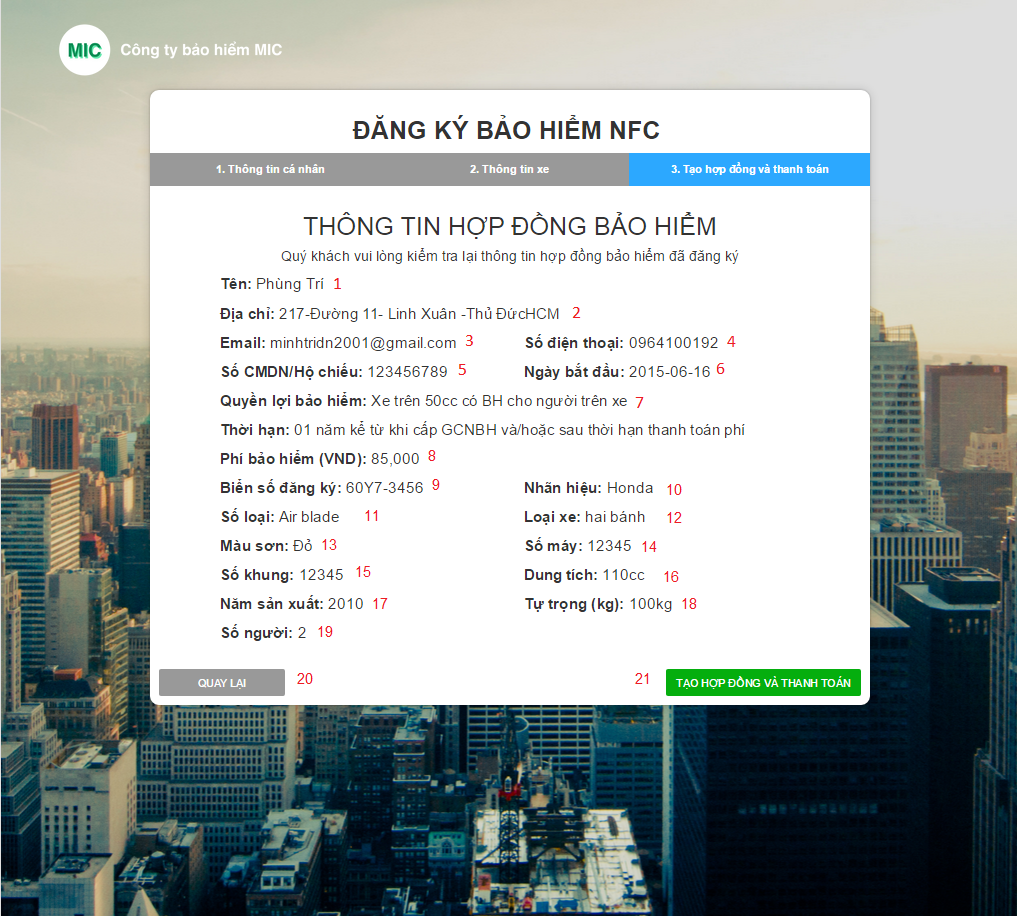
**Fields**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field Name** | **Description** | **Read only** | **Mandatory** | **Control Type** | **Data Type** | **Length** |
| 1 | txtPlate | Motor’s plate number | No | Yes | Text | String | 4-15 |
| 2 | txtBrand | Motor’s brand | No | Yes | Text | String | 2-20 |
| 3 | txtChassis | Motor’s chassis number | No | Yes | Text | String | 2-20 |
| 4 | txtEngine | Motor’s engine number | No | Yes | Text | String | 2-20 |
| 5 | txtCapacity | Motor’s capacity | No | Yes | Text | String | 2-20 |
| 6 | txtModel | Motor’s model. | No | No | Text | String | 2-20 |
| 7 | txtType | Motor’s type | No | No | Text | String | 2-20 |
| 8 | txtColor | Motor’s color | No | No | Text | String | 2-20 |
| 9 | txtYearOfMan | Year of manufacture | No | No | Text | int | 1900-2200 |
| 10 | txtWeight | Motor’s weight | No | No | Text | int | 1-1000 |
| 11 | txtSeatCapacity | Motor’s seat capacity | No | No | Text | int | 1-100 |

**Button/Hyperlinks**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Function** | **Description** | **Validation** | **Outcome** |
| 12 | btnBack | Back to input personal information tab. | N/A | Transfer to personal information tab. |
| 13 | btnNext | Next to create contract and payment tab. | N/A | Transfer to create contract and payment tab. |

##### **Create contract and payment tab**



**Fields**

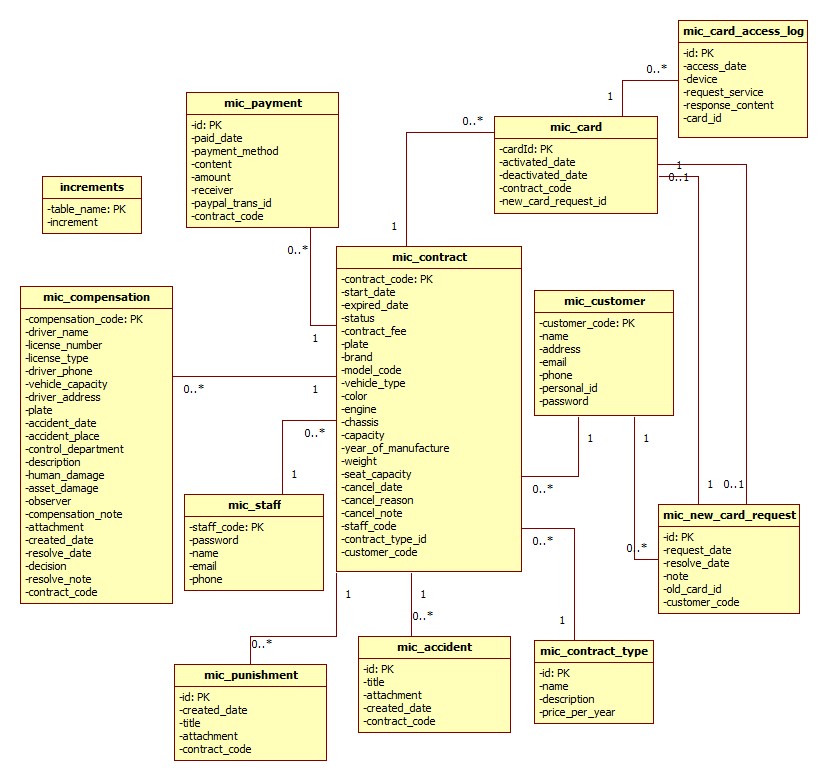
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Field Name** | **Description** | **Read only** | **Mandatory** | **Control Type** | **Data Type** | **Length** |
| 1 | txtName1 | Customer name | Yes | Yes | Label | String | N/A |
| 2 | txtAddress1 | Customer’s address | Yes | Yes | Label | String | N/A |
| 3 | txtEmail1 | Customer’s email | Yes | Yes | Label | String | N/A |
| 4 | txtPhone1 | Customer’s phone number | Yes | Yes | Label | String | N/A |
| 5 | txtPersonalId1 | Customer’s personal ID. | Yes | No | Label | String | N/A |
| 6 | txtStartDate1 | Contract’s start date. | Yes | Yes | Label | Date | N/A |
| 7 | ddlContractType1 | Contract type | Yes | Yes | Label | String | N/A |
| 8 | txtFee1 | Contract fee. | Yes | Yes | Label | String | N/A |
| 9 | txtPlate1 | Motor’s plate number | Yes | Yes | Label | String | N/A |
| 10 | txtBrand1 | Motor’s brand. | Yes | Yes | Label | String | N/A |
| 11 | txtModel1 | Motor’s model. | Yes | No | Label | String | N/A |
| 12 | txtType1 | Motor’s type. | Yes | No | Label | String | N/A |
| 13 | txtColor1 | Motor’s color. | Yes | No | Label | String | N/A |
| 14 | txtEngine1 | Motor’s engine | Yes | Yes | Label | String | N/A |
| 15 | txtChassis1 | Motor’s chassis | Yes | Yes | Label | String | N/A |
| 16 | txtCapacity1 | Motor’s capacity | Yes | Yes | Label | String | N/A |
| 17 | txtYearOfMan1 | Year of manufacture. | Yes | No | Label | int | N/A |
| 18 | txtWeight1 | Motor’s weight | Yes | No | Label | String | N/A |
| 19 | txtSeatCapacity1 | Seat capacity | Yes | No | Label | int | N/A |

**Button/Hyperlinks**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Function** | **Description** | **Validation** | **Outcome** |
| 20 | btnBack | Back to input motor’s information tab. | N/A | Transfer to input motor’s information tab. |
| 21 | btnFinish | Create contract and payment. | N/A | Create contract and transfer to payment page. |

## Database design

### Logical database



### Data Dictionary

|  |  |
| --- | --- |
| **Database Data Dictionary: describe content of all tables** | |
| **Table name** | **Description** |
| mic\_customer | Contain the customer information. |
| mic\_contract | Contain the contract information. |
| mic\_card | Contain the card information. |
| mic\_payment | Contain the payment information. |
| mic\_staff | Contain the staff information. |
| mic\_compensation | Contain the compensation information. |
| mic\_punishment | Contain the punishment information. |
| mic\_accident | Contain the accident information. |
| mic\_contract\_type | Contain the contract type information. |
| mic\_new\_card\_request | Contain the new card request information. |
| mic\_card\_access\_log | Contain the new card access log. |
| increments | Contain the number identity auto increment of other table (compensation, contract, customer, staff). |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Entity Name** | **Attributes** | **Description** | **Domain** | **Null** |
| mic\_customer | customer\_code {PK} | Unique identifier of customer. | VARCHAR(10) | NO |
| name | Customer name | VARCHAR(80) | NO |
| address | Customer address | VARCHAR(250) | NO |
| email | Customer email | VARCHAR(250) | NO |
| phone | Customer phone number | VARCHAR(15) | NO |
| personal\_id | Customer personal id. | VARCHAR(15) | YES |
| password | Customer password. | VARCHAR(32) | NO |
| mic\_contract | contract\_code {PK} | Unique identifier of contract. | VARCHAR(10) | NO |
| start\_date | Start date of the contract | DATETIME | NO |
| expired\_date | Expired date of the contract | DATETIME | NO |
| status | Contract’s status | VARCHAR(50) | NO |
| contract\_fee | Contract’s fee. | FLOAT | NO |
| plate | Plate number of the motor. | VARCHAR(15) | NO |
| brand | Brand of the motor. | VARCHAR(20) | NO |
| model\_code | Model code of the motor. | VARCHAR(20) | YES |
| vehicle\_type | Vehicle type of the motor. | VARCHAR(20) | YES |
| color | Motor’s color. | VARCHAR(20) | YES |
| engine | Motor’s engine. | VARCHAR(20) | NO |
| chassis | Motor’s chassis | VARCHAR(20) | NO |
| capacity | Motor’s capacity. | VARCHAR(20) | NO |
| year\_of\_manufature | Year of manufacture. | INT UNSIGNED | YES |
| weight | Motor’s weight | INT UNSIGNED | YES |
| seat\_capacity | Motor’s seat capacity. | INT UNSIGNED | YES |
| cancel\_date | The contract cancel date. | DATETIME | YES |
| cancel\_reason | The cancel reason. | VARCHAR(250) | YES |
| cancel\_note | The cancel note. | VARCHAR(2000) | YES |
| staff\_code | The staff code. | VARCHAR(10) | YES |
| contract\_type\_id | The contract type id. | INT UNSIGNED | NO |
| customer\_code | The customer code. | VARCHAR(10) | NO |
| mic\_card | card\_id {PK} | The unique identifier of card. | VARCHAR(20) | NO |
| activated\_date | The activated date of card. | DATETIME | NO |
| deactivated\_date | The deactivated date of card. | DATETIME | YES |
| contract\_code | The contract code | VARCHAR(10) | NO |
| new\_card\_request\_id | The new card request id. | INT UNSIGNED | YES |
| mic\_payment | id {PK} | The unique identifier of payment. | INT UNSIGNED | NO |
| paid\_date | The date payment was processed. | DATETIME | NO |
| payment\_method | The payment method | VARCHAR(20) | NO |
| content | The payment content. | VARCHAR(250) | NO |
| amount | The total amount. | FLOAT | NO |
| receiver | The receiver. | VARCHAR(80) | YES |
| paypal\_trans\_id | The paypal transaction id. | VARCHAR(50) | YES |
| contract\_code | The contract code. | VARCHAR(10) | NO |
| mic\_staff | staff\_code | The unique identifier of staff. | VARCHAR(10) | NO |
| password | The staff password. | VARCHAR(32) | NO |
| name | The staff name | VARCHAR(80) | NO |
| email | The staff email. | VARCHAR(250) | NO |
| phone | The staff phone number. | VARCHAR(15) | NO |
| mic\_compensation | compensation\_code {PK} | The unique identifier of compensation | VARCHAR(10) | NO |
| driver\_name | The driver name. | VARCHAR(80) | NO |
| license\_number | The license number of the motor. | VARCHAR(15) | NO |
| license\_type | The license type. | VARCHAR(10) | NO |
| vehicle\_capacity | The vehicle capacity. | VARCHAR(20) | NO |
| driver\_address | The driver’s address. | VARCHAT(250) | NO |
| plate | The plate number | VARCHAR(15) | NO |
| accident\_date | The accident date. | DATETIME | NO |
| accident\_place | The accident place. | VARCHAR)(250) | NO |
| control\_department | The police control department. | VARCHAR(2000) | NO |
| description | The compensation description. | VARCHAR(2000) | NO |
| human\_damage | The human damage. | VARCHAR(2000) | NO |
| asset\_damage | The asset damage | VARCHAR(2000) | NO |
| observer | The observer name. | VARCHAR(80) | NO |
| compensation\_note | The compensation note. | VARCHAR(2000) | YES |
| attachment | The attachment | VARCHAR(255) | YES |
| created\_date | The created date of the compensation. | DATETIME | NO |
| resolve\_date | The resolve date of the compensation | DATETIME | YES |
| desicion | The decision of the compensation | VARCHAR(250) | YES |
| resolve\_note | The resolve note | VARCHAR(2000) | YES |
| contract\_code | The contract code. | VARCHAR(10) | NO |
| mic\_punishment | id {PK} | The unique identifier of punishment. | INT UNSIGNED | NO |
| created\_date | The created date of the punishment. | DATETIME | NO |
| title | The punishment title | VARCHAR(250) | NO |
| attachment | The attachment file link. | VARCHAR(255) | NO |
| contract\_code | The contract code. | VARCHAR(10) | NO |
| mic\_accident | id {PK} | The unique identifier of accident. | INT UNSIGNED | NO |
| title | The accident title | VARCHAR(250) | NO |
| attachment | The attachment link file. | VARCHAR(255) | NO |
| created\_date | The accident created date | DATETIME | NO |
| contract\_code | The contract code | VARCHAR(10) | NO |
| mic\_contract\_type | id | The unique identifier of the contract type. | INT UNSIGNED | NO |
| name | The contract type name | VARCHAR(250) | NO |
| description | The contract type description | VARCHAR(2000) | NO |
| price\_per\_year | The price per year. | FLOAT | NO |
| mic\_new\_card\_request | id | The unique identifier of new card request. | INT UNSIGNED | NO |
| request\_date | The request date. | DATETIME | NO |
| resolve\_date | The resolve date. | DATETIME | YES |
| note | The new card request note. | VARCHAR(2000) | NO |
| old\_card\_id | The card id of the old motor. | VARCHAR(20) | NO |
| customer\_code | The customer code | VARCHAR(10) | NO |
| mic\_card\_access\_log | id {PK} | The unique identifier of card access log. | INT UNSIGNED | NO |
| access\_date | The access date. | DATETIME | NO |
| device | The access device. | VARCHAR(50) | NO |
| request\_service | The request service. | VARCHAR(200) | NO |
| response\_content | The response content. | VARCHAR(200) | NO |
| card\_id | The card id. | VARCHAR(20) | NO |
| increments | table\_name | The unique identifier of the increments table. | VARCHAR(255) | NO |
|  | increment | The auto increment number of other table (staff, contract, customer, compensation) | INT | YES |