

Prestige Enterprise Group Project

# Location of the website

<http://courses.cs.niu.edu/~cs566103/main.html>

# Description of assumption and limitation for the website

The Prestige Enterprises has designed this cruise website making few assumptions.

* One of the assumptions is that the customer can do the booking on more than one cabin for the cruise.
* The limitations in the project are that the customer can only choose from five cruises, ships and five destinations and the customer can only choose five dates.

# Entity Relationship Diagram for the Project

Stays

(1, 4)

Customer

(1, f)

(1, 1)

(1, p) (1, q) (1, m)

Costs

Books

Date

Cabins

(1, n)

(1, k)

Has

Follows

(1, m) (1, 1)

Price

Ship

(1, 1)

Itinerary

(1, m)

(1, s)

Excursions

Contain

Offers

Ports

(1, 1) (1, u)

**Entities**

Customer

1. Customer number (primary key)
2. Name
3. Address
4. Phone number
5. Email address
6. Credit card type
7. Card number
8. Expiration
9. Date of last cruise taken
10. Number of cruise taken

Ships

1. Ship identification number(primary key)
2. Ship name
3. Captain name
4. Year built
5. Last maintenance date
6. Capacity
7. Number of life boats
8. Number of cabins

Cabins

1. Cabin ID(primary key)
2. Cabin number
3. Suites
4. Ocean view
5. Inside cabin
6. Capacity
7. Ship Id number

Itinerary

1. Route ID(primary key)
2. Ship Id number
3. Port Id
4. Date Booking Id
5. Length of the cruise

Excursions

1. Excursion Id (primary key)
2. Scuba diving
3. Helicopter ride
4. Sail and snorkel
5. Island tour
6. Golf
7. Duration

Date

1. Date Booking Id (primary key)
2. Ship Id
3. Cabin Id
4. Port Id (primary key)
5. Booking date
6. Cruise starting date
7. Cruise ending date
8. Port visiting date
9. Cancelation date

Ports

1. Port Id (primary key)
2. Port name
3. Country
4. City
5. Address
6. Phone number

**Relationships**

Costs

1. Price

# The Relational Database converted to third normal form (3NF)

**Customer**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Customer ID | Name | Address | Phone number | Email |
| PK |  |  |  |  |

**Credit**

|  |  |  |  |
| --- | --- | --- | --- |
| Customer ID | Credit card Number | Type of card | Expiration date |
| FK | PK |  |  |

**Customer cruise history**

|  |  |  |
| --- | --- | --- |
| Customer ID | Ship ID | Date |
| PK, FK | FK |  |

**Ship**

|  |  |  |
| --- | --- | --- |
| Ship ID | Ship name | Captain Name |
| PK |  |  |

**Cabins**

|  |  |  |  |
| --- | --- | --- | --- |
| Cabin ID | Ship ID | Type of cabin | Capacity |
| PK | FK, PK |  |  |

**Itinerary**

|  |  |  |  |
| --- | --- | --- | --- |
| Route ID | Ship ID | Port of departure | Departure date |
| PK | FK |  |  |

**Ports**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Port ID | Port Name | Country | City | Address | Phone number |
| PK |  |  |  |  |  |

**Stops**

|  |  |  |
| --- | --- | --- |
| Route ID | Port ID | Date visited |
| PK, FK | PK, FK |  |

**Excursions**

|  |  |  |  |
| --- | --- | --- | --- |
| Excursion ID | Port ID | Name of excursion | Duration |
| PK | FK |  |  |

**Booking**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Booking ID | Customer ID | Booking date | Departure  date | Cabin ID | Ship ID |
| PK | FK |  |  | FK | FK |

**Cost**

|  |  |  |  |
| --- | --- | --- | --- |
| Ship ID | Cabin ID | Price | Date |
| FK,PK | FK,PK |  |  |

# Questions

## What indexes would you provide for each table?  Why?

* 1. Customer name and ID in the customer table.
  2. Customer name in credit table.
  3. Ship ID in ship table.
  4. Cabin ID and ship ID in cabin table.
  5. Route ID in Itinerary table.
  6. Port ID in ports table.
  7. Route ID and Port ID in stops table and excursion table.
  8. Booing ID and Customer ID in the Booking table.
  9. Ship ID and Cabin ID in the cost table.

These indexes are unique to their tables and unique indexes are beneficial for processing.

## What attributes will you allow to be null?  Why?

1. Customer email address because we only require phone number.
2. Name of excursions in excursion table
3. Duration of the excursion in the excursion table.

These attributes do not affect the tables other values and can be used as null values.

## For each foreign key, what option (cascade, restrict, nullify) would be best if the matching primary key is deleted? Updated?

If deleted the best option would be to nullify for all primary keys and for updating the primary keys the best option would be to cascade them.

## Show at least two views that would be useful to a customer.

1. Customer Name, Address, Phone Number, Email,
2. Customer Name, Credit Card Number, Expiration Date

## Two views that would be useful to the ship’s purser

1. Customer Name, Ship Name, Cabin Id, Cabin Type
2. Customer Name, Ship ID, Date

## Describe how the integrity rules will apply to your database

**Domain Integrity-**The customer name fields should not be left empty when inserting new customer into the database. Similarly the credit card information should have fixed length to be filled and it should not allow any other character other than numbers.

**Referential Integrity**- A foreign key contains a valid value of the primary key in the home relation.

**Entity Integrity-** The attributes of the primary key does not contain a null value. All the tables contain valid value and have no null data.

## Describe security needed by the database.

The database security strives to insure that only authenticated users perform authorized activates at authorized times. Customer can add, delete and Update his/her personal information. One customer cannot modify other customer information.

The database should not display customer information without permission to anyone. One customer should not be able to see another customer credit card information and address and contact information.

## For each attribute in every table, who can view/change/insert/delete it

The administrator or the programmer with read and write access level can do add, update and delete operation on all the attributes of the table. Customers will be able to edit only few of the information and renter the information if he/she wants to change the information.

## A printout of the contents of the tables

mysql> show tables;

+--------------------+

| Tables\_in\_cs566103 |

+--------------------+

| BOOKING |

| CABIN |

| COST |

| CREDIT |

| CUSTOMER |

| CUSTOMER\_HISTORY |

| EXCURSION |

| ITINERARY |

| PORTS |

| SHIP |

| STOPS |

+--------------------+

mysql> describe BOOKING;

+-------------+---------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+-------------+---------+------+-----+---------+-------+

| BOOK\_ID | char(3) | NO | PRI | NULL | |

| CUSTOMER\_ID | char(2) | NO | | NULL | |

| BOOK\_DATE | date | YES | | NULL | |

| DEPART\_DATE | date | YES | | NULL | |

| CABIN\_ID | char(3) | NO | | NULL | |

| SHIP\_ID | char(3) | NO | | NULL | |

+-------------+---------+------+-----+---------+-------+

mysql> DESCRIBE CABIN;

+------------+----------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+------------+----------+------+-----+---------+-------+

| CABIN\_ID | char(3) | NO | PRI | NULL | |

| SHIP\_ID | char(3) | YES | | NULL | |

| CABIN\_TYPE | char(15) | YES | | NULL | |

| CAPACITY | char(2) | YES | | NULL | |

+------------+----------+------+-----+---------+-------+

mysql> DESCRIBE COST;

+-----------+----------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+-----------+----------+------+-----+---------+-------+

| SHIP\_ID | char(3) | NO | PRI | NULL | |

| CABIN\_ID | char(3) | YES | | NULL | |

| PRICE | char(10) | YES | | NULL | |

| COST\_DATE | date | YES | | NULL | |

+-----------+----------+------+-----+---------+-------+

mysql> DESCRIBE CREDIT;

+-------------+----------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+-------------+----------+------+-----+---------+-------+

| CC\_NUM | char(16) | NO | PRI | NULL | |

| CC\_TYPE | char(15) | YES | | NULL | |

| EXP\_DATE | date | YES | | NULL | |

| CUSTOMER\_ID | char(2) | NO | | NULL | |

+-------------+----------+------+-----+---------+-------+

mysql> DESCRIBE CUSTOMER;

+---------------+----------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+---------------+----------+------+-----+---------+-------+

| CUSTOMER\_ID | char(2) | NO | PRI | NULL | |

| CUSTOMER\_NAME | char(35) | NO | | NULL | |

| STREET | char(15) | YES | | NULL | |

| CITY | char(15) | YES | | NULL | |

| STATE | char(2) | YES | | NULL | |

| ZIP | char(5) | YES | | NULL | |

| PHONE\_NUM | char(10) | YES | | NULL | |

| EMAIL | char(25) | NO | | NULL | |

+---------------+----------+------+-----+---------+-------+

mysql> DESCRIBE CUSTOMER\_HISTORY;

+-------------+---------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+-------------+---------+------+-----+---------+-------+

| CUSTOMER\_ID | char(2) | NO | PRI | NULL | |

| SHIP\_ID | char(3) | YES | | NULL | |

| CRUISE\_DATE | date | YES | | NULL | |

+-------------+---------+------+-----+---------+-------+

mysql> DESCRIBE EXCURSION;

+----------+----------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+----------+----------+------+-----+---------+-------+

| EXC\_ID | char(2) | NO | PRI | NULL | |

| PORT\_ID | char(2) | NO | | NULL | |

| EXC\_NAME | char(15) | YES | | NULL | |

| DURATION | char(10) | YES | | NULL | |

+----------+----------+------+-----+---------+-------+

mysql> DESCRIBE ITINERARY;

+----------------+----------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+----------------+----------+------+-----+---------+-------+

| ROUTE\_ID | char(2) | NO | PRI | NULL | |

| SHIP\_ID | char(3) | NO | | NULL | |

| DEPARTURE\_PORT | char(50) | YES | | NULL | |

| DEPARTURE\_DATE | date | YES | | NULL | |

| PORT\_ID | char(2) | YES | | NULL | |

+----------------+----------+------+-----+---------+-------+

mysql> DESCRIBE PORTS;

+-----------+----------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+-----------+----------+------+-----+---------+-------+

| PORT\_ID | char(2) | NO | PRI | NULL | |

| PORT\_NAME | char(20) | YES | | NULL | |

| COUNTRY | char(20) | YES | | NULL | |

| ADDRESS | char(50) | YES | | NULL | |

| PHONE | char(10) | YES | | NULL | |

+-----------+----------+------+-----+---------+-------+

mysql> DESCRIBE SHIP;

+--------------+----------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+--------------+----------+------+-----+---------+-------+

| SHIP\_ID | char(3) | NO | PRI | NULL | |

| SHIP\_NAME | char(15) | NO | | NULL | |

| CAPTAIN\_NAME | char(35) | NO | | NULL | |

+--------------+----------+------+-----+---------+-------+

mysql> DESCRIBE STOPS;

+--------------+---------+------+-----+---------+-------+

| Field | Type | Null | Key | Default | Extra |

+--------------+---------+------+-----+---------+-------+

| ROUTE\_ID | char(2) | NO | PRI | NULL | |

| PORT\_ID | char(2) | YES | | NULL | |

| DATE\_VISITED | date | YES | | NULL | |

+--------------+---------+------+-----+---------+-------+

mysql> SELECT \* FROM BOOKING;

+---------+-------------+------------+-------------+----------+---------+

| BOOK\_ID | CUSTOMER\_ID | BOOK\_DATE | DEPART\_DATE | CABIN\_ID | SHIP\_ID |

+---------+-------------+------------+-------------+----------+---------+

| 0AG | 01 | 2005-10-21 | 2005-11-21 | A13 | 102 |

| 5AF | 10 | 2004-03-12 | 2004-04-01 | B45 | 648 |

| 6RE | 21 | 2009-04-28 | 2009-05-03 | Q36 | 666 |

| 2GG | 55 | 2010-05-31 | 2010-06-03 | M96 | 321 |

| 9HQ | 71 | 2012-02-06 | 2012-02-10 | F18 | 789 |

+---------+-------------+------------+-------------+----------+---------+

mysql> SELECT \* FROM CABIN;

+----------+---------+------------+----------+

| CABIN\_ID | SHIP\_ID | CABIN\_TYPE | CAPACITY |

+----------+---------+------------+----------+

| A13 | 102 | INTERIOR | 4 |

| B45 | 648 | OUTSIDE | 4 |

| Q36 | 666 | BALCONY | 4 |

| M96 | 321 | SUITES | 6 |

| F18 | 789 | DELUXE | 6 |

+----------+---------+------------+----------+

mysql> SELECT \* FROM COST;

+---------+----------+-----------+------------+

| SHIP\_ID | CABIN\_ID | PRICE | COST\_DATE |

+---------+----------+-----------+------------+

| 102 | A13 | 2512.00 | 2005-11-21 |

| 648 | B45 | 3200.00 | 2004-04-01 |

| 666 | Q36 | 4550.00 | 2009-05-03 |

| 321 | M96 | 5700.00 | 2010-06-03 |

| 789 | F18 | 11,500.00 | 2012-02-10 |

+---------+----------+-----------+------------+

mysql> SELECT \* FROM CREDIT;

+------------------+-----------------+------------+-------------+

| CC\_NUM | CC\_TYPE | EXP\_DATE | CUSTOMER\_ID |

+------------------+-----------------+------------+-------------+

| 2983784600082178 | VISA | 2014-04-01 | 01 |

| 5638993721130987 | MASTER CARD | 2015-08-01 | 10 |

| 7735636308786354 | VISA | 2013-03-01 | 21 |

| 2904809380013748 | AMERICAN EXPRES | 2014-06-01 | 55 |

| 4920487500273849 | DISCOVER | 2012-12-01 | 71 |

+------------------+-----------------+------------+-------------+

mysql> SELECT \* FROM CUSTOMER;

+-------------+-------------------+----------------+-----------+-------+-------+------------+-------------------------+

| CUSTOMER\_ID | CUSTOMER\_NAME | STREET | CITY | STATE | ZIP | PHONE\_NUM | EMAIL |

+-------------+-------------------+----------------+-----------+-------+-------+------------+-------------------------+

| 01 | OLIVE PENDERGHAST | 2340 EASY | OJAI | CA | 93023 | 2095551212 | COKEZERO@GMAIL.COM |

| 10 | FRED FLINSTONE | 123 DINO | BEDROCK | NY | 10015 | 2124328976 | TWINKLETOES@COMCAST.NET |

| 21 | ALBERT EINSTEIN | 112 MERCER | PRINCETON | NJ | 07813 | 7326708340 | GENIUS1@HOTMAIL.COM |

| 55 | SHAQUILLE ONEAL | 555 CONCORD | BRENTWOOD | CA | 94513 | 2133285667 | SIZEAUTHORITY@GMAIL.COM |

| 71 | ELVIS PRESLEY | 3866 PATTE ANN | MEMPHIS | TN | 38116 | 9014163074 | ROCKNROLL@AOL.COM |

+-------------+-------------------+----------------+-----------+-------+-------+------------+-------------------------+

mysql> SELECT \* FROM CUSTOMER\_HISTORY;

+-------------+---------+-------------+

| CUSTOMER\_ID | SHIP\_ID | CRUISE\_DATE |

+-------------+---------+-------------+

| 01 | 648 | 2010-02-14 |

| 10 | 102 | 2006-08-28 |

| 21 | 789 | 2007-07-05 |

| 55 | 321 | 2009-01-21 |

| 71 | 666 | 2012-12-21 |

+-------------+---------+-------------+

mysql> SELECT \* FROM EXCURSION;

+--------+---------+--------------+-----------+

| EXC\_ID | PORT\_ID | EXC\_NAME | DURATION |

+--------+---------+--------------+-----------+

| 05 | 92 | SCUBA DIVING | 1-2HOURS |

| 55 | 88 | PARASAILING | 30MINUTES |

| 68 | 90 | ZIP-LINING | 1-2HOURS |

| 13 | 11 | TOUR | 3-4HOURS |

| 49 | 06 | BEACH DAY | 4-7HOURS |

+--------+---------+--------------+-----------+

mysql> SELECT \* FROM ITINERARY;

+----------+---------+----------------+----------------+---------+

| ROUTE\_ID | SHIP\_ID | DEPARTURE\_PORT | DEPARTURE\_DATE | PORT\_ID |

+----------+---------+----------------+----------------+---------+

| 2B | 102 | Orlando | 2012-10-15 | 92 |

| 3F | 648 | Miami | 2012-11-21 | 88 |

| 7C | 666 | Jacksonville | 2012-12-24 | 90 |

| 8G | 321 | seattle | 2012-06-21 | 11 |

| 9Z | 789 | Miami | 2013-01-10 | 06 |

+----------+---------+----------------+----------------+---------+

mysql> SELECT \* FROM PORTS;

+---------+---------------+---------+-------------------+------------+

| PORT\_ID | PORT\_NAME | COUNTRY | ADDRESS | PHONE |

+---------+---------------+---------+-------------------+------------+

| 92 | Nassau | Bahamas | 123 Spring circle | 8007771234 |

| 88 | Half MOON Cay | Bahamas | 345 Cavebeach Dr | 9124566784 |

| 90 | Key West | USA | 9031 Westside Dr | 8666902002 |

| 11 | Skagway | USA | 100 Bayside Dr | 8002221999 |

| 06 | Grand Turk | Bahamas | 831 Coral street | 8774327100 |

+---------+---------------+---------+-------------------+------------+

mysql> SELECT \* FROM SHIP;

+---------+-------------+--------------+

| SHIP\_ID | SHIP\_NAME | CAPTAIN\_NAME |

+---------+-------------+--------------+

| 102 | NAUTILUS | NEMO |

| 648 | BLACK PEARL | JACK SPARROW |

| 666 | PEQUOD | AHAB |

| 321 | ENTERPRISE | JAMES T KIRK |

| 789 | SS GUPPY | CRUNCH |

+---------+-------------+--------------+

mysql> SELECT \* FROM STOPS;

+----------+---------+--------------+

| ROUTE\_ID | PORT\_ID | DATE\_VISITED |

+----------+---------+--------------+

| 2B | 92 | 2012-10-16 |

| 3F | 88 | 2012-11-22 |

| 7C | 90 | 2012-12-25 |

| 8G | 11 | 2012-06-23 |

| 9Z | 06 | 2013-01-11 |

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## The graded milestones