**Проектирование физической модели.**

**Изменение документа сопоставления таблиц**

Моделирование данных позволяет вам понимать и применять правила именования Oracle для концептуальной модели данных, а также применять их при создании физической модели данных. Физическая модель должна таким образом представлять информацию, хранящуюся в ERD, чтобы облегчить создание реляционной базы данных.

Используя документ сопоставления таблиц, созданный в части 1 данного упражнения, заполните таблицы, указав также соответствующие типы данных и размеры.

Инструкции по сопоставлению таблиц

* 1. Рекомендуемый отправной пункт, указанный в данном документе, показывает связи между таблицами с образцами данных для каждого поля.
  2. Цветовое кодирование указывает, имеются ли связи с первичным ключом или внешним ключом.
  3. Столбцы, содержащие значения внешнего ключа, должны иметь одинаковый тип данных (и предпочтительный размер), чтобы содержать данные, которые реализуют эту связь.
  4. Данные приведены только в качестве примера, и не следует считать, что эти данные максимального размера.
  5. Для каждого поля следует рассчитать максимальный размер, который, по вашему мнению, лучше всего подходит для типа информации, которая будет там храниться.
* качестве примера для вас заполнена первая таблица (customers).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Имя таблицы** | **Краткое имя таблицы** | |  |  |
| customers | ctr |  |  |  |
| **Key Type** | **Optionality** | **ColumnName** | **Datatype** | **size** |
|  |  |  |  |  |
| pk | \* | ctr\_number | VARCHAR | 6 |
| uk | \* | email | VARCHAR | 50 |
|  | \* | first\_name | VARCHAR | 20 |
|  | \* | last\_name | VARCHAR | 30 |
|  | \* | phone\_number | VARCHAR | 11 |
|  | \* | current\_balance | NUMERIC | 6,2 |
| uk | o | loyalty\_card\_number | VARCHAR | 6 |
| fk1 | o | tem\_id | VARCHAR | 4 |
| fk2 | o | sre\_id | VARCHAR | 4 |

Используя данный пример и следующий шаблон, заполните отдельную таблицу для каждого объекта в концептуальной модели данных, где указаны тип данных и размер (в соответствующих случаях) для каждого атрибута.

**Рекомендуемый отправной пункт:**

**Образец данных в таблицах**.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | |  | | | **customers** | | | | | **ctr** | | | |  | | |  | | |  | | |  | | |  | | |  | | |  | | |  | | |  | | | |  | | | | | |  |  | | | | | | |  | | | | |  | | | | | |  | | | |  | | | | | |  | | |  | | | | | |  | | | | | |  | | | |  | | | | | |  | | | | | |  | | | | | |  | | | | | | |  | | | | | |  | | | |  | | | | | | |  | | | | | | | |  | | |
|  | | |  | | | ctr\_number | |  | | | email | | | | | | | | | | | | | | | | first\_ | | | | | | last\_ | | | | | | Phone\_ | | | | | | | | | | | | | | | current\_ | | | | | | | | | | | | | | | loyalty\_card\_ | | | | | | | | |  | | | | | | |  | | | | | | | |  | tem\_id | | | | | | | | | | | | |  | | | | | |  | | | | | |  | | | | | |  | | | | sre\_id | | | | | | |  | | | | | | |  | |
|  | | |  | | |  | | | name | | | | | | name | | | | | | number | | | | | | | | | | | | | | | balance | | | | | | | | | | | | | | | number | | | | | | | | |  | | | | | | |  | | | | | | | |  |  | | | | | |  | | | | | |  | | | | | |  | | | |  | | | | | | |  | |
|  | | |  | | |  | |  | | |  | | | |  | | |  | | |  | | |  | | |  | | | | | | |  | | | | | | | |  |  | | | | | | |  | | | | | |  | | | | | |  | | | | | |  | | | | | |  | | | |  | | | | | | |  | | | | | | |  | |
|  | | |  | | | c00001 | | | | | bob.thornberry@heatmail.com | | | | | | | | | | | | | | | | Robert | | | | | | Thornberry | | | | | | 01234567898 | | | | | | | | | |  | | | | | 150.00 | | | | | | | | | | | | | | |  | | |  | | | | | |  | | |  | | | | | |  | | | | | |  | | | |  | | | | | |  | | | | | | t001 | | | | | | | | | | |  | | | | | | | |  | | | | sr01 | | | | | |  | | | | | | | | | | | |
|  | |  | | | customers\_addresses | | | | | | | | | | | | | | | | | | | | |  | | |  | | |  | | |  | | |  | | | |  | | | | | | | | | |  |  | | |  | | | | | | | |  | | | | | | |  | | |  | | | | | | |  | | | |  | | | |  | | | | | | |  | | |  | | | | | |  | | | | | |  | | | | | |  | | | | | | |  | | | | | | |  | | |  | | | | | | | | | | |  | | | |  |
|  | |  | | | id | | | | |  | | |  | | | | | | | | | | | | |  | | |  | | | | | | | | | | | | | | | | |  | | city | | | | | | | | | | | | | | | | |  | | | | | | |  | | |  | | postal\_code | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | |  | | | | | | ctr\_number | | | | | | | | | | | | | | | | |  | | | | | |  | |
|  | |  | | | ca0101 | | | | | | | |  | | | | | | | | | |  | | | | | | | | | | | | | | |  | | |  | | | |  |  | |  | | | | | | | | | | | Liverpool | | | | | | | | | | | | | | | |  | |  | | | | | | Lp79HJK | | | | | | | | | | | | | | | | | | | | | | |  | | | | | |  | | | | | |  | | | | | | |  | | | c00001 | | | | | | | | | | | | |  | |
|  | |  | | | ca0102 | | | | | | | |  | | | | | | | | | |  | | | | | | | | | | | | | | |  | | |  | | | |  |  | |  | | | | | | | | | | | bb | | | | | | | | | | | | | | | |  | |  | | | | | | bb | | | | | | | | | | | | | | | | | | | | | | |  | | | | | |  | | | | | | c00001 | | | | | | | | | | | | | | | | | | | | | | |  | |
|  | |  | | | teams | | | | |  | | |  | | | |  | | |  | | |  | | |  | | |  | | |  | | |  | | |  | | |  | | | |  |  | |  | | | | | | | | | | |  | | | | | |  | | | | | | |  | | |  | |  | | | | | |  | | | | | | |  | | |  | | | | | | |  | | | | | |  | | | | | |  | | | | | |  | | | | | | |  | | |  | | | | | | |  | | | | | |  | |
|  | |  | | | id | | | | |  | | |  | | | |  | | |  | | | name | | |  | | |  | | |  | | |  | | |  | | |  | | | |  | number\_of\_players | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | |  | | | | | | |  | | |  | | | | | | | discount | | | | | | | | | | | | | | | | | |  | | | | | | |  | | |  | | | | | | |  | | | | | |  | |
|  | |  | | | t001 | | | | | | | | | | | |  | | |  | | |  | | |  | | | Rockets | | | | | | | | |  | | |  | | | |  |  | | | | | | |  | | | | | | | |  | | | | 25 | | | | | | | | | |  | |  | | | | | |  | | | | | | |  | | |  | | | | | | |  | | | | | |  | | | | | |  | | | | | | 10 | | | | | | | | | | | | | | | | |  | | | | | |  | |
|  | |  | | | sales\_representatives | | | | | | | | | | | | | | | | | | | | |  | | |  | | |  | | |  | | |  | | |  | | | |  |  | | | | | | |  | | | | | | | |  | | | |  | | | | | | |  | | |  | |  | | | | | |  | | | | | | |  | | |  | | | | | | |  | | | | | |  | | | | | |  | | | | | |  | | | | | | |  | | |  | | | | | | |  | | | | | |  | |
|  | |  | | | id | | |  | | | | | | email | | | | | | | | | | | |  | | | first\_name | | | | | | | | |  | | | last\_name | | | | |  | | | | | | |  | | | | | | | | phone\_number | | | | | | | | | | | | | | | |  | | | | | | commission\_rate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | supervisor\_id | | | | | | | | | | | | | | | | |  | | | | | |  | |
|  | |  | | | sr01 | | |  | | | | | |  | | |  | | | chray@obl.com | | | | | |  | | |  | | | Charles | | | | | |  | | | Raymond | | | | | | | | | | | | | | | | | | | |  | | | | 134598761 | | | | | | | | | |  | |  | | | | | | 5 | | | | | | | | | | | | | | | | | | | | | | |  | | | | | |  | | | | | |  | | | | | | |  | | | sr01 | | | | | | | | | | | | |  | |
|  | |  | | | sr02 | | |  | | | | | |  | | |  | | | bb | | | | | |  | | |  | | | b | | | | | |  | | | b | | | | | | | | | | | | | | | | | | | |  | | | | b | | | | | | | | | |  | |  | | | | | | b | | | | | | | | | | | | | | | | | | | | | | |  | | | | | |  | | | | | |  | | | | | | |  | | | sr01 | | | | | | | | | | | | |  | |
|  | | |  | | | sales\_representatives\_address | | | | | | | | | | | | | | | | | | | | |  | | |  | | |  | | |  | | |  | |  | | | | | | | |  |  | | | | | | |  | | | | |  | | | | | |  |  | | | | | | | | |  | |  | | | | | | |  | | | | |  | | | | |  | | | | | |  | | | | | |  | | | | | |  | | | | | | |  | | | | |  | | | | |  | | | | | |  | | | | | | | | |  | | |
|  | | |  | | | id | | | | |  | | | |  | | | | | | | | | | | |  | | |  | | |  | | |  | | | | | | | | | | |  | | | | | | |  | | | | | |  | | | | | |  | city | | | | | | | | | | |  | | | | | |  | | | | | | |  | | |  | | | | | | |  | | | | | |  | | | | | | postal\_code | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | |
|  | | |  | | | sr01 | | | | | | | | |  | | |  | | | | | |  | | | | | | | | |  | | |  | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  |  | | | | | | | | |  | | Detroit | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | |  | | | | | | DT48211 | | | | | | | | | | | | | | | | | | | | | | |  | |
|  | | |  | | | sr02 | | | | | | | | |  | | |  | | | | | |  | | | | | | | | |  | | |  | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | kkk | | | | | | | | |  | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | |  | | | | | | uiiii | | | | | | | | | | | | | | | | | | | | | | |  | |
|  | | |  | | | orders | | | | |  | | | |  | | |  | | | odr | | | | | |  | | |  | | |  | | |  | | |  | | | |  | | | | | |  |  | | | | | | |  | | | | |  | | | | | |  |  | | | | | | | | |  | |  | | | | | | |  | | | | |  | | | | |  | | | | | |  | | | | | |  | | | | | |  | | | | | | |  | | | | |  | | | | |  | | | | | |  | | | | | | | | |  | | |
|  | | |  | | | id | | | | |  | | | |  | | |  | | | date | | | | | |  | | |  | | |  | | |  | | | time | | | | | | | |  | | | | | | |  | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | ctr\_number | | | | | | | | | | | | | | | | | | | | | | |  | | | | | |  | |
|  | | |  | | | or0101250 | | | | | | | | |  | | |  | | |  | | | 17-Jun-2017 | | | | | | | | |  | | |  | | | 08:32:30 | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | |  | |  | | | | | | | | | | | | |  | | |  | | | | | | |  | | | | | |  | | | | | |  | | | | | | c00001 | | | | | | | | | | | | | | | | | | | | | | |  | |

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|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 11 | |
|  | ordered\_items |  |  | oim | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | quantity\_ordered |  |  | quantity\_shipped | | |  |  |  |  | odr\_id | | | |  |  |  |  | itm\_number | |
| 5 | |  |  |  |  |  | 5 |  |  |  |  |  |  | or0101250 | | | |  |  | Im01101025 |
|  | items | itm | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | itm\_number | name | | | |  | description | |  | category | | |  | color |  |  | size | |  | ilt\_id |
|  | Im01101025 |  | gloves | | |  | catchermitt | |  | clothing | | |  | brown |  |  | m | |  | il010230124 |
|  | Inventory\_list |  |  |  | ilt | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | id |  |  |  | unit\_cost | |  |  |  |  |  |  |  |  | units\_on\_hand | | | |  |  |
|  | il010230124 | | | |  | |  |  | 2.50 | |  |  |  |  |  |  |  |  | 100 |  |
|  | price\_history |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | start\_date |  | start\_time | | | |  | price |  |  |  |  | end\_date | |  | end\_time | | |  | itm\_number |
|  | 17-Jun-2017 |  | 09:00:00 | | |  |  |  | 4.99 | |  |  |  |  |  |  |  |  |  | Im01101025 |

**Решение:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Имя таблицы** | **Краткое имя таблицы** | |  |  |
| customers\_addresses | cas |  |  |  |
| **Key Type** | **Optionality** | **ColumnName** | **Data Type** | **Size** |
| pk | \* | cas\_id | VARCHAR | 8 |
|  | \* | city | VARCHAR | 15 |
|  | \* | postal\_code | VARCHAR | 7 |
| fk | \* | ctr\_number | VARCHAR | 6 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Имя таблицы** | **Краткое имя таблицы** | |  |  |
| teams | tem |  |  |  |
| **Key Type** | **Optionality** | **ColumnName** | **Data Type** | **Size** |
| pk | \* | tem\_id | VARCHAR | 4 |
|  | \* | name | VARCHAR | 20 |
|  | \* | number\_of\_players | NUMERIC | 2 |
|  | o | discount | NUMERIC | 2 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Имя таблицы** |  |  | **Краткое имя таблицы** | | | | | |  |  |
| sales\_representatives | | | sre | | |  |  |  |  |  |
| **Key Type** |  |  | **Optionality** | | | **ColumnName** | | | **Data Type** | **Size** |
| pk |  |  | \* | | | sre\_id | | | VARCHAR | 4 |
| uk |  |  | \* | | | email | | | VARCHAR | 50 |
|  |  |  | \* | | | first\_name | | | VARCHAR | 20 |
|  |  |  | \* | | | last\_name | | | VARCHAR | 30 |
|  |  |  | \* | | | phone\_number | | | VARCHAR | 11 |
|  |  |  | \* | | | commission\_rate | | | NUMERIC | 2 |
| fk |  |  | \* | | | supervisor\_id | | | VARCHAR | 4 |
|  |  |  |  | |  | |  |  |  |  |
| **Имя таблицы** |  |  |  | | **Краткое имя таблицы** | | | |  |  |
| sales\_representatives\_address | | | | | **sas** |  |  |  |  |  |
| **Key Type** |  |  | |  | **Optionality** |  | **ColumnName** | | **Data Type** | **Size** |
| Pk, fk |  |  | |  | \* |  | sre\_id | | VARCHAR | 4 |
|  |  |  | |  | \* |  | city | | VARCHAR | 15 |
|  |  |  | |  | \* |  | postal\_code | | VARCHAR | 7 |
|  |  |  | | | |  |  |  |  |  |
| **Имя таблицы** | **Краткое имя таблицы** | | | | |  |  |  |  |  |
| orders | odr | | |  |  |  |  |  |  |  |
| **Key Type** | **Optionality** |  | | **ColumnName** | |  |  |  | **Data Type** | **Size** |
| pk | \* |  | | odr\_id | |  |  |  | VARCHAR | 9 |
|  | \* |  | | odr\_date | |  |  |  | DATE |  |
|  | \* |  | | odr\_time | |  |  |  | TIMESTAMP | 0 |
| fk | \* |  | | ctr\_number | |  |  |  | VARCHAR | 6 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Имя таблицы** | | **Краткое имя таблицы** | | |  |  |
| ordered\_items | | oim |  |  |  |  |
| **Key Type** | | **Optionality** |  | **ColumnName** | **Data Type** | **Size** |
|  |  | \* |  | quantity\_ordered | NUMERIC | 3 |
|  |  | \* |  | quantity\_shipped | NUMERIC | 3 |
| pk, fk1 | | \* |  | odr\_id | VARCHAR | 9 |
| pk, fk2 | | \* |  | itm\_number | VARCHAR | 10 |
|  |  |  |  |  |  |  |
| **Имя таблицы** | | **Краткое имя таблицы** | | |  |  |
| items | | itm |  |  |  |  |
| **Key Type** | | **Optionality** |  | **ColumnName** | **Data Type** | **Size** |
| pk | | \* |  | itm\_number | VARCHAR | 10 |
|  |  | \* |  | name | VARCHAR | 20 |
|  |  | \* |  | description | VARCHAR | 50 |
|  |  | \* |  | category | VARCHAR | 25 |
|  |  | o |  | color | VARCHAR | 15 |
|  |  | o |  | razmer | CHAR | 4 |
| fk | | \* |  | ilt\_id | VARCHAR | 11 |
|  |  |  |  |  |  |  |
| **Имя таблицы** | | **Краткое имя таблицы** | | |  |  |
| inventory\_list | | ilt |  |  |  |  |
| **Key Type** | | **Optionality** |  | **ColumnName** | **Data Type** | **Size** |
| pk | | \* |  | ilt\_id | VARCHAR | 11 |
|  |  | \* |  | cost | NUMERIC | 7,2 |
|  |  | \* |  | units | NUMERIC | 4 |
|  |  |  |  | |  |  |
| **Имя таблицы** |  | **Краткое имя таблицы** | | |  |  |
| price\_history |  | phy |  |  |  |  |
| **Key Type** |  | **Optionality** | **ColumnName** | | **Data Type** | **Size** |
| pk |  | \* | phy\_start\_date | | DATE |  |
| pk |  | \* | phy\_start\_time | | TIMESTAMP | 0 |
|  |  | \* | price | | NUMERIC | 7,2 |
|  |  | o | end\_date | | DATE |  |
|  |  | o | end\_time | | TIMESTAMP | 0 |
| pk, fk1 |  | \* | itm\_number | | VARCHAR | 10 |