商场促销系统

数据库设计文档（Proposed version）

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# 介绍

## 目的

这篇文档是商场促销系统的数据库设计文档。本文档说明的过程是：在需求分析文档的基础之上，对需求分析中提出的用例模型（数据库概念模型）进行扩展，进一步细化细节后设计生成了本文档中的数据库逻辑模型和物理模型，使得系统在数据上能够直接有能够运行的数据库作为数据源支撑其业务层的运行。

作为促销系统的数据支撑，数据库需要存储并提供高效的数据变化支持，这些支持包括但不仅仅限于：促销规则、购物订单、购物付款单。

## 范围

这篇文档所介绍的内容范围紧紧围绕商场促销系统数据库建立所需要的分析和设计，包括其中数据库的逻辑模型和物理模型这两个重要的环节，以及建立数据库的PL/SQL脚本；除了数据库概念模型外（已经在需求分析用例部分体现），本文档还不包括与数据库关系不大的部分或非数据库中心的部分，如系统的设计、如何连接数据库等。

## 定义，缩写词

1. 促销系统：商场促销系统；
2. ERD/E-R图：Entity-Relationship Diagram；
3. 逻辑模型：数据库逻辑模型；
4. 物理模型：数据库物理模型；
5. BuyFree：买X件减Y元优惠类型；
6. BuyCount：买X件打Y折优惠类型；
7. BuySpecial：买X件享受特价优惠类型；
8. BuyPresent：买X件赠送Y件商品或优惠券优惠类型；
9. FullFree：满X元减Y元优惠类型；
10. FullCount：满X元打Y折优惠类型；
11. FullPresent：满X元赠送Y件商品或优惠券优惠类型。

## 参考资料

1. 百度百科 – E-R图
2. 百度百科 – 数据库逻辑模型
3. 百度百科 – 数据库物理模型

## 内容概览

### 逻辑模型

逻辑模型部分主要阐述促销系统中需要存储的各个实体，实体所具有的属性，实体与实体之间的各种关系以及在更新删除等等操作上各个实体之间应当是如何一致进行的。

### 物理模型

物理模型部分主要是在逻辑模型的基础之上，把逻辑模型中的实体、实体的属性以及实体间的关系分别映射到物理模型中的表、字段、外键概念，进而阐述如何将逻辑模型用于真实的DBMS中。

# 数据库设计表示方法

## 数据库设计范式

关系数据库中的关系必须满足一定的要求，即满足不同的范式。关系数据库有六种范式：第一范式（1NF）、第二范式（2NF）、第三范式（3NF）、巴德斯科范式（BCNF）、第四范式（4NF）和第五范式（5NF）。满足最低要求的范式是第一范式（1NF）。在第一范式的基础上进一步满足更多要求的称为第二范式（2NF），其余范式以次类推。一般说来，数据库只需满足第三范式（3NF）就行了。设计关系型数据库时，遵从不同的规范要求，设计出合理的关系型数据库。这些规范被称作范式。越高的范式数据库的冗余度就越低。其中第一范式的要求是：无重复的列；第二范式的要求是：属性完全依赖于主键；第三范式的要求是：无传递函数依赖。

## ERD

E-R图也称实体-联系图(Entity Relationship Diagram)，提供了表示实体类型、属性和联系的方法，用来描述现实世界的概念模型。

它是描述现实世界概念结构模型的有效方法。是表示概念模型的一种方式，用矩形表示实体型，矩形框内写明实体名；用椭圆表示实体的属性，并用无向边将其与相应的实体型连接起来；用菱形表示实体型之间的联系，在菱形框内写明联系名，并用无向边分别与有关实体型连接起来，同时在无向边旁标上联系的类型（1:1,1:n或m:n）。

## 数据库逻辑设计

数据库逻辑设计是整个设计的前半段，包括所需的实体和关系，实体规范化等工作。此过程需要设计数据库的逻辑结构，逻辑设计模型与具体的DBMS无关，主要反映业务逻辑。在逻辑设计阶段，通用的设计方法是采用ERD来描绘实体与属性间的关系，设计最直接的体现即是ERD。

## 数据库物理设计

设计数据库的物理结构，根据数据库的逻辑结构来选定RDBMS（如Oracle、Sybase等），并设计和实施数据库的存储结构、存取方式等。数据库物理设计，包括选择数据库产品，确定数据库实体属性（字段）、数据类型、长度、精度确定、DBMS页面大小等。物理结构依赖于给定的DBMS和和硬件系统，因此设计人员必须充分了解所用RDBMS的内部特征、存储结构、存取方法。数据库的物理设计通常分为两步，第一，确定数据库的物理结构，第二，评价实施空间效率和时间效率

确定数据库的物理结构包含下面四方面的内容：

1. 确定数据的存储结构

2. 设计数据的存取路径

3. 确定数据的存放位置

4. 确定系统配置

数据库物理设计过程中需要对时间效率、空间效率、维护代价和各种用户要求进行权衡，选择一个优化方案作为数据库物理结构。在数据库物理设计中，最有效的方式是集中地存储和检索对象。

# DBMS环境

促销系统采用Oracle 12c数据库系统，用户、表空间等的建立都应符合此版本的DBMS要求。

# 数据库设计逻辑模型

## ERD View

ERD View contains Entity-Relationship Diagrams.

ERD View

Version 1.0 Phase 1.0 Proposed

created on 2017/5/20. Last modified 2011/3/24

Alias

## Entity Relationship Diagram diagram

Entity Relationship diagram in package 'ERD View'



1. Entity Relationship Diagram

## Cash\_Side\_Employees

ERD\_Entity «ERD\_Entity» in package 'ERD View

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Em\_play\_Roles | |
| Source: Public (ERD\_Entity) Cash\_Side\_Employees «ERD\_Entity»  Cardinality: [1] | Target: Public (ERD\_Entity) Cash\_Side\_Roles «ERD\_Entity»  Cardinality: [1..\*] |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Em\_ID «ERD\_Attribute» | Target: Public (ERD\_Entity) Cash\_Side\_Employees «ERD\_Entity» |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Em\_Create\_Rules | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity»  Cardinality: [1..\*] | Target: Public (ERD\_Entity) Cash\_Side\_Employees «ERD\_Entity»  Cardinality: [1] |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Em\_Responsible\_Payments | |
| Source: Public (ERD\_Entity) Payments «ERD\_Entity»  Cardinality: [1..\*] | Target: Public (ERD\_Entity) Cash\_Side\_Employees «ERD\_Entity»  Cardinality: [1] |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Em\_Responsible\_Orders | |
| Source: Public (ERD\_Entity) Orders «ERD\_Entity»  Cardinality: [1..\*] | Target: Public (ERD\_Entity) Cash\_Side\_Employees «ERD\_Entity»  Cardinality: [1] |

## Cash\_Side\_Roles

ERD\_Entity «ERD\_Entity» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Em\_ID «ERD\_Attribute» | Target: Public (ERD\_Entity) Cash\_Side\_Roles «ERD\_Entity» |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Em\_play\_Roles | |
| Source: Public (ERD\_Entity) Cash\_Side\_Employees «ERD\_Entity»  Cardinality: [1] | Target: Public (ERD\_Entity) Cash\_Side\_Roles «ERD\_Entity»  Cardinality: [1..\*] |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Em\_Role «ERD\_Attribute» | Target: Public (ERD\_Entity) Cash\_Side\_Roles «ERD\_Entity» |

## Condition\_Value

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» | Target: Public (ERD\_Attribute) Condition\_Value «ERD\_Attribute» |

## Date

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Date «ERD\_Attribute» | Target: Public (ERD\_Entity) Saled\_Goods «ERD\_Entity» |
| 关联 (direction: 起始 -> 目标) | |
| Source: Public (接口) DiscountRule | Target: Private datePeriodStart (ERD\_Attribute) Date «ERD\_Attribute» |
| 关联 (direction: 起始 -> 目标) | |
| Source: Public (接口) Order | Target: Private oderBuildDate (ERD\_Attribute) Date «ERD\_Attribute» |
| 关联 (direction: 起始 -> 目标) | |
| Source: Public (接口) DiscountRule | Target: Private datePeriodEnd (ERD\_Attribute) Date «ERD\_Attribute» |

## Discount\_Goods

ERD\_Entity «ERD\_Entity» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Discount\_Goods «ERD\_Entity» | Target: Public (ERD\_Attribute) Rule\_UUID «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Discount\_Goods «ERD\_Entity» | Target: Public (ERD\_Attribute) Good\_ID «ERD\_Attribute» |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Rules\_have\_Goods | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity»  Cardinality: [1] | Target: Public (ERD\_Entity) Discount\_Goods «ERD\_Entity»  Cardinality: [1..\*] |

## Discount\_Rate

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» | Target: Public (ERD\_Attribute) Discount\_Rate «ERD\_Attribute» |

## Discount\_Rules

ERD\_Entity «ERD\_Entity» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Rules\_have\_Goods | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity»  Cardinality: [1] | Target: Public (ERD\_Entity) Discount\_Goods «ERD\_Entity»  Cardinality: [1..\*] |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Rule\_has\_many\_Presents | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity»  Cardinality: [1] | Target: Public (ERD\_Entity) Presents «ERD\_Entity»  Cardinality: [1..\*] |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Em\_Create\_Rules | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity»  Cardinality: [1..\*] | Target: Public (ERD\_Entity) Cash\_Side\_Employees «ERD\_Entity»  Cardinality: [1] |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» | Target: Public (ERD\_Attribute) Free\_Money «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» | Target: Public (ERD\_Attribute) Sprcial\_Price «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» | Target: Public (ERD\_Attribute) Condition\_Value «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» | Target: Public (ERD\_Attribute) Discount\_Rate «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» | Target: Public (ERD\_Attribute) Em\_ID «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Rule\_Name «ERD\_Attribute» | Target: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Rule\_Type «ERD\_Attribute» | Target: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Rule\_UUID «ERD\_Attribute» | Target: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_naryAssociation) Rules\_Orders «ERD\_naryAssociation» | Target: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity»  Cardinality: [\*] |

## Em\_ID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Em\_ID «ERD\_Attribute» | Target: Public (ERD\_Entity) Orders «ERD\_Entity» |

## Em\_ID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Em\_ID «ERD\_Attribute» | Target: Public (ERD\_Entity) Payments «ERD\_Entity» |

## Em\_ID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» | Target: Public (ERD\_Attribute) Em\_ID «ERD\_Attribute» |

## Em\_ID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Em\_ID «ERD\_Attribute» | Target: Public (ERD\_Entity) Cash\_Side\_Roles «ERD\_Entity» |

## Em\_ID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Em\_ID «ERD\_Attribute» | Target: Public (ERD\_Entity) Cash\_Side\_Employees «ERD\_Entity» |

## Em\_Role

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Em\_Role «ERD\_Attribute» | Target: Public (ERD\_Entity) Cash\_Side\_Roles «ERD\_Entity» |

## Free\_Money

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

For Cash Free Use.

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» | Target: Public (ERD\_Attribute) Free\_Money «ERD\_Attribute» |

## Good\_ID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Discount\_Goods «ERD\_Entity» | Target: Public (ERD\_Attribute) Good\_ID «ERD\_Attribute» |

## Good\_ID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Good\_ID «ERD\_Attribute» | Target: Public (ERD\_Entity) Saled\_Goods «ERD\_Entity» |

## Order\_Cus\_ID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Orders «ERD\_Entity» | Target: Public (ERD\_Attribute) Order\_Cus\_ID «ERD\_Attribute» |

## Order\_ID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Saled\_Goods «ERD\_Entity» | Target: Public (ERD\_Attribute) Order\_ID «ERD\_Attribute» |

## Order\_ID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Order\_ID «ERD\_Attribute» | Target: Public (ERD\_naryAssociation) Rules\_Orders «ERD\_naryAssociation» |

## Order\_ID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Order\_ID «ERD\_Attribute» | Target: Public (ERD\_Entity) Orders «ERD\_Entity» |

## Order\_Status

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Order\_Status «ERD\_Attribute» | Target: Public (ERD\_Entity) Orders «ERD\_Entity» |

## Order\_Sum

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Order\_Sum «ERD\_Attribute» | Target: Public (ERD\_Entity) Orders «ERD\_Entity» |

## Orders

ERD\_Entity «ERD\_Entity» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Orders «ERD\_Entity»  Cardinality: [\*] | Target: Public (ERD\_naryAssociation) Rules\_Orders «ERD\_naryAssociation» |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Order\_has\_many\_Goods | |
| Source: Public (ERD\_Entity) Orders «ERD\_Entity»  Cardinality: [1] | Target: Public (ERD\_Entity) Saled\_Goods «ERD\_Entity»  Cardinality: [1..\*] |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Em\_Responsible\_Orders | |
| Source: Public (ERD\_Entity) Orders «ERD\_Entity»  Cardinality: [1..\*] | Target: Public (ERD\_Entity) Cash\_Side\_Employees «ERD\_Entity»  Cardinality: [1] |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Orders «ERD\_Entity» | Target: Public (ERD\_Attribute) Payment\_ID «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Orders «ERD\_Entity» | Target: Public (ERD\_Attribute) Order\_Cus\_ID «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Sum\_Money «ERD\_Attribute» | Target: Public (ERD\_Entity) Orders «ERD\_Entity» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Order\_ID «ERD\_Attribute» | Target: Public (ERD\_Entity) Orders «ERD\_Entity» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Order\_Status «ERD\_Attribute» | Target: Public (ERD\_Entity) Orders «ERD\_Entity» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Em\_ID «ERD\_Attribute» | Target: Public (ERD\_Entity) Orders «ERD\_Entity» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Order\_Sum «ERD\_Attribute» | Target: Public (ERD\_Entity) Orders «ERD\_Entity» |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Payment\_has\_Orders | |
| Source: Public (ERD\_Entity) Payments «ERD\_Entity»  Cardinality: [1] | Target: Public (ERD\_Entity) Orders «ERD\_Entity»  Cardinality: [1..\*] |

## Payment\_Channel

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Payments «ERD\_Entity» | Target: Public (ERD\_Attribute) Payment\_Channel «ERD\_Attribute» |

## Payment\_ChannelSide\_ID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Payments «ERD\_Entity» | Target: Public (ERD\_Attribute) Payment\_ChannelSide\_ID «ERD\_Attribute» |

## Payment\_ID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Orders «ERD\_Entity» | Target: Public (ERD\_Attribute) Payment\_ID «ERD\_Attribute» |

## Payment\_ID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Payments «ERD\_Entity» | Target: Public (ERD\_Attribute) Payment\_ID «ERD\_Attribute» |

## Payment\_Sum

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Payments «ERD\_Entity» | Target: Public (ERD\_Attribute) Payment\_Sum «ERD\_Attribute» |

## Payments

ERD\_Entity «ERD\_Entity» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Payments «ERD\_Entity» | Target: Public (ERD\_Attribute) Payment\_ID «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Payments «ERD\_Entity» | Target: Public (ERD\_Attribute) Payment\_ChannelSide\_ID «ERD\_Attribute» |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Em\_Responsible\_Payments | |
| Source: Public (ERD\_Entity) Payments «ERD\_Entity»  Cardinality: [1..\*] | Target: Public (ERD\_Entity) Cash\_Side\_Employees «ERD\_Entity»  Cardinality: [1] |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Payments «ERD\_Entity» | Target: Public (ERD\_Attribute) Payment\_Channel «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Payments «ERD\_Entity» | Target: Public (ERD\_Attribute) Payment\_Sum «ERD\_Attribute» |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Payment\_has\_Orders | |
| Source: Public (ERD\_Entity) Payments «ERD\_Entity»  Cardinality: [1] | Target: Public (ERD\_Entity) Orders «ERD\_Entity»  Cardinality: [1..\*] |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Em\_ID «ERD\_Attribute» | Target: Public (ERD\_Entity) Payments «ERD\_Entity» |

## Present\_Condition\_Value

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Presents «ERD\_Entity» | Target: Public (ERD\_Attribute) Present\_Condition\_Value «ERD\_Attribute» |

## Present\_Discount\_Value

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Presents «ERD\_Entity» | Target: Public (ERD\_Attribute) Present\_Discount\_Value «ERD\_Attribute» |

## Present\_Type

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Present\_Type «ERD\_Attribute» | Target: Public (ERD\_Entity) Presents «ERD\_Entity» |

## Present\_UUID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Present\_UUID «ERD\_Attribute» | Target: Public (ERD\_Entity) Presents «ERD\_Entity» |

## Presents

ERD\_Entity «ERD\_Entity» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Presents «ERD\_Entity» | Target: Public (ERD\_Attribute) Present\_Condition\_Value «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Presents «ERD\_Entity» | Target: Public (ERD\_Attribute) Present\_Discount\_Value «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Presents «ERD\_Entity» | Target: Public (ERD\_Attribute) Rule\_UUID «ERD\_Attribute» |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Rule\_has\_many\_Presents | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity»  Cardinality: [1] | Target: Public (ERD\_Entity) Presents «ERD\_Entity»  Cardinality: [1..\*] |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Present\_Type «ERD\_Attribute» | Target: Public (ERD\_Entity) Presents «ERD\_Entity» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Present\_UUID «ERD\_Attribute» | Target: Public (ERD\_Entity) Presents «ERD\_Entity» |

## Price

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Saled\_Goods «ERD\_Entity» | Target: Public (ERD\_Attribute) Price «ERD\_Attribute» |

## Rule\_Name

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Rule\_Name «ERD\_Attribute» | Target: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» |

## Rule\_Type

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Rule\_Type «ERD\_Attribute» | Target: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» |

## Rule\_UUID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Discount\_Goods «ERD\_Entity» | Target: Public (ERD\_Attribute) Rule\_UUID «ERD\_Attribute» |

## Rule\_UUID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Rule\_UUID «ERD\_Attribute» | Target: Public (ERD\_naryAssociation) Rules\_Orders «ERD\_naryAssociation» |

## Rule\_UUID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Presents «ERD\_Entity» | Target: Public (ERD\_Attribute) Rule\_UUID «ERD\_Attribute» |

## Rule\_UUID

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Rule\_UUID «ERD\_Attribute» | Target: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» |

## Rules\_Orders

ERD\_naryAssociation «ERD\_naryAssociation» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_naryAssociation) Rules\_Orders «ERD\_naryAssociation» | Target: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity»  Cardinality: [\*] |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Order\_ID «ERD\_Attribute» | Target: Public (ERD\_naryAssociation) Rules\_Orders «ERD\_naryAssociation» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Orders «ERD\_Entity»  Cardinality: [\*] | Target: Public (ERD\_naryAssociation) Rules\_Orders «ERD\_naryAssociation» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Rule\_UUID «ERD\_Attribute» | Target: Public (ERD\_naryAssociation) Rules\_Orders «ERD\_naryAssociation» |

## Saled\_Goods

ERD\_Entity «ERD\_Entity» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Saled\_Goods «ERD\_Entity» | Target: Public (ERD\_Attribute) Sum «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Saled\_Goods «ERD\_Entity» | Target: Public (ERD\_Attribute) Order\_ID «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Saled\_Goods «ERD\_Entity» | Target: Public (ERD\_Attribute) Price «ERD\_Attribute» |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Date «ERD\_Attribute» | Target: Public (ERD\_Entity) Saled\_Goods «ERD\_Entity» |
| ERD\_Relationship (direction: 不指定的) «ERD\_Relationship» Order\_has\_many\_Goods | |
| Source: Public (ERD\_Entity) Orders «ERD\_Entity»  Cardinality: [1] | Target: Public (ERD\_Entity) Saled\_Goods «ERD\_Entity»  Cardinality: [1..\*] |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Good\_ID «ERD\_Attribute» | Target: Public (ERD\_Entity) Saled\_Goods «ERD\_Entity» |

## Sprcial\_Price

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Discount\_Rules «ERD\_Entity» | Target: Public (ERD\_Attribute) Sprcial\_Price «ERD\_Attribute» |

## Sum

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Entity) Saled\_Goods «ERD\_Entity» | Target: Public (ERD\_Attribute) Sum «ERD\_Attribute» |

## Sum\_Money

ERD\_Attribute «ERD\_Attribute» in package 'ERD View'

| ASSOCIATIONS | |
| --- | --- |
| ERD\_Connector (direction: 不指定的) «ERD\_Connector» | |
| Source: Public (ERD\_Attribute) Sum\_Money «ERD\_Attribute» | Target: Public (ERD\_Entity) Orders «ERD\_Entity» |

# 数据库设计物理模型

## Data Model - Oracle

Package «DataModel» in package 'Model'

This part of model explains how database built.

Data Model - Oracle

Version 1.0 Phase 1.0 Proposed

EA created on 2017/5/20. Last modified 2014/6/19

## User and TableSpace

|  |
| --- |
| -- create user  /\*  ATTENTION:  Change passcode if NECCESARY!  Passcode should be the same as the programming side.  \*/  create user C##Promotion identified by arvinsichuan;  -- create tablespace  /\* ATTENTION:  Please create the dir:'C:\oracle\DB FILE\'  or change the datafile uri to your customized directory.  \*/  create tablespace promotion  datafile 'C:\oracle\DB FILE\promotion.dat' size 50M  autoextend on next 5M;  -- grant tablespace to user  alter user c##promotion default tablespace promotion;  alter user C##PROMOTION quota unlimited on promotion;  -- granting privilegs  grant  create session,  create tablespace,  create any index,  create any procedure,  create any table,  create any sequence,  create any trigger,  create any view,  create rollback segment,  alter any index,  alter any table,  alter any sequence,  alter any trigger,  alter any procedure,  backup any table,  drop any index,  drop any procedure,  drop any table,  drop any view,  drop any trigger,  insert any table,  update any table,  delete any table ,  select any table  to  c##promotion; |

## Data Model - Oracle diagram

Data Modeling diagram in package 'Data Model - Oracle'



1. Data Model - Oracle

## Packages

Package in package 'Oracle'

### Packages diagram

Data Modeling diagram in package 'Packages'



1. Packages

### checkout

Package in package 'Packages'

### checkout diagram

Data Modeling diagram in package 'checkout'



1. checkout

|  |
| --- |
| CREATE OR REPLACE PACKAGE checkout  is  PROCEDURE create\_order(em in orders.EM\_ID%TYPE,uuid out orders.Order\_ID%type);  PROCEDURE add\_good\_to\_order(good in saled\_goods%rowtype);  PROCEDURE remove\_good\_from\_order(id in saled\_goods.Good\_ID%type,oid in saled\_goods.Order\_ID%type);  PROCEDURE create\_payment  (sum in payments.Payment\_Sum%type,  channel\_id in payments.PAYMENT\_CHANNELSIDE\_ID%type,  channel in payments.Payment\_Channel%type,  em in payments.EM\_ID%type,  order\_id in orders.Order\_ID%type,  id out payments.Payment\_ID%type);  end checkout;  CREATE OR REPLACE PACKAGE BODY checkout  as  PROCEDURE create\_order  (em in orders.EM\_ID%TYPE,uuid out orders.Order\_ID%type)  AS  -- create an order  BEGIN  select  to\_char(sysdate,'YYYYMMDDHH24MISS')||to\_char(seq\_order.nextval,'fm000000000000000000')  into uuid  from dual;  insert into orders  (order\_id,order\_sum,sum\_money,order\_status,em\_id)  values  (uuid,0,0,'inited',em);  END create\_order;  PROCEDURE add\_good\_to\_order  (good in saled\_goods%rowtype)  AS  -- import goods  BEGIN  insert into saled\_goods  (good\_id,saled\_date,sum,price,order\_id)  values  (good.good\_id,good.saled\_date,good.sum,good.price,good.order\_id);  END add\_good\_to\_order;  PROCEDURE remove\_good\_from\_order  (id in saled\_goods.Good\_ID%type,oid in saled\_goods.Order\_ID%type)  AS  -- import goods  BEGIN  delete from saled\_goods where good\_id = id and order\_id = oid;  END remove\_good\_from\_order;  PROCEDURE create\_payment  (sum in payments.Payment\_Sum%type,  channel\_id in payments.PAYMENT\_CHANNELSIDE\_ID%type,  channel in payments.Payment\_Channel%type,  em in payments.EM\_ID%type,  order\_id in orders.Order\_ID%type,  id out payments.Payment\_ID%type)  AS  -- create new payment  BEGIN  select  to\_char(sysdate,'YYYYMMDDHH24MISS')||to\_char(seq\_payment.nextval,'fm000000000000000000')  into id  from dual;  insert into payments  (payment\_id,payment\_sum,PAYMENT\_CHANNELSIDE\_ID,payment\_channel,em\_id)  values  (id,sum,channel\_id,channel,em);  update orders  set payment\_id=id  where order\_id=order\_id;  END;  end checkout;  show error; |

### discount\_rules

Package in package 'Packages'

##### discount\_rules diagram

Data Modeling diagram in package 'discount\_rules'



1. discount\_rules

|  |
| --- |
| CREATE OR REPLACE PACKAGE discount\_rule  AS  PROCEDURE get\_Specific\_rules(type in discount\_rules.Rule\_Type%type,rules out discount\_rules%rowtype);  END discount\_rule;  CREATE OR REPLACE PACKAGE BODY discount\_rule  AS  PROCEDURE get\_Specific\_rules  (type in discount\_rules.Rule\_Type%type,rules out discount\_rules%rowtype)  AS  -- get Buy Free Rules  BEGIN  select \* into rules from discount\_rules where rule\_type=type;  END get\_Specific\_rules;  END discount\_rule;  SHOW ERROR; |

## Sequences

Package in package 'Oracle'

### Sequences diagram

Data Modeling diagram in package 'Sequences'



1. Sequences

### Seq\_Order

Database «dbsequence» in package 'Sequences'

Order Auto Increment Sequence

|  |
| --- |
| create sequence order\_seq  start with 1  increment by 1  maxvalue 9999999999999999  minvalue 1  cycle  cache 64 |

### Payment\_Seq

Database «dbsequence» in package 'Sequences'

Payment Auto increment Sequence

|  |
| --- |
| create sequence Seq\_Payment  start with 1  increment by 1  maxvalue 9999999999999999  minvalue 1  cycle  cache 32 |

## Tables

Package in package 'Oracle'

Tables

Version 1.0 Phase 1.0 Proposed

EA created on 2017/5/20. Last modified 2017/5/20

DBMS Oracle

### Tables diagram

Class diagram in package 'Tables'



1. Tables

### Cash\_Side\_Employees

Database table in package 'Tables'

| COLUMN NAME | DATATYPE | NOT NULL | COMMENTS |
| --- | --- | --- | --- |
| Em\_ID | VARCHAR2(64) | True | 员工号 |

|  |  |  |
| --- | --- | --- |
| PRIMARY KEY NAME | COLUMNS | COMMENTS |
| PK\_Cash\_Side\_Employees | Em\_ID |  |

|  |  |
| --- | --- |
| TRIGGER NAME | COMMENTS |
| TRIGGER\_DELETE | 员工删除同步数据处理触发器 |

|  |
| --- |
| /\* ---------------------------------------------------- \*/  /\* Generated by Enterprise Architect Version 12.0 \*/  /\* Created On : 30-05-2017 16:23:08 \*/  /\* DBMS : Oracle \*/  /\* Grammer Checked and Tested \*/  /\* ---------------------------------------------------- \*/  /\* Drop Tables \*/  DECLARE  C NUMBER;  BEGIN  SELECT COUNT(\*) INTO C  FROM USER\_TABLES  WHERE TABLE\_NAME = 'CASH\_SIDE\_EMPLOYEES' ;  IF (C > 0) THEN  EXECUTE IMMEDIATE 'DROP TABLE CASH\_SIDE\_EMPLOYEES CASCADE CONSTRAINTS';  END IF;  END;  /\* Create Tables \*/  CREATE TABLE Cash\_Side\_Employees  (  Em\_ID VARCHAR2(64) NOT NULL  )  ;  /\* Create Primary Keys, Indexes, Uniques, Checks, Triggers \*/  create or replace trigger trigger\_em\_delete  before delete on cash\_side\_employees  for each row  declare  marker int;  delete\_mark\_emid cash\_side\_employees.Em\_ID%type;  begin  select count(\*) into marker from new where emid = '\_\_\_\_\_\_\_\_';  if marker < 0 then  insert into new values ('\_\_\_\_\_\_\_\_');  end if;  update orders set EM\_ID= '\_\_\_\_\_\_\_\_' where emid=old.emid;  update payments set EM\_ID= '\_\_\_\_\_\_\_\_' where emid=old.emid;  update discount\_rules set EM\_ID= '\_\_\_\_\_\_\_\_' where emid=old.emid;  end trigger\_em\_delete;  SHOW ERRORS  ;  ALTER TABLE Cash\_Side\_Employees  ADD CONSTRAINT PK\_Cash\_Side\_Employees  PRIMARY KEY (Em\_ID) USING INDEX  ;  desc Cash\_Side\_Employees  insert into cash\_side\_employees  (em\_id)  values  ('\_\_\_\_\_\_\_\_'); |

### Cash\_Side\_Roles

Database table in package 'Tables'

| COLUMN NAME | DATATYPE | NOT NULL | COMMENTS |
| --- | --- | --- | --- |
| Em\_Role | VARCHAR2(64) | True | 员工角色 |
| Em\_ID | VARCHAR2(64) | True | 员工号 |

|  |  |  |
| --- | --- | --- |
| PRIMARY KEY NAME | COLUMNS | COMMENTS |
| PK\_Cash\_Side\_Roles | Em\_Role, Em\_ID |  |

|  |  |  |
| --- | --- | --- |
| FOREIGN KEY NAME | COLUMNS | REFERENCES |
| FK\_Em\_play\_Roles\_Cash\_Side\_Employees | Em\_ID | Cash\_Side\_Employees(Em\_ID) |

|  |
| --- |
| /\* ---------------------------------------------------- \*/  /\* Generated by Enterprise Architect Version 12.0 \*/  /\* Created On : 30-05-2017 16:23:08 \*/  /\* DBMS : Oracle \*/  /\* Grammer Checked and Tested \*/  /\* ---------------------------------------------------- \*/  /\* Drop Tables \*/  DECLARE  C NUMBER;  BEGIN  SELECT COUNT(\*) INTO C  FROM USER\_TABLES  WHERE TABLE\_NAME = 'CASH\_SIDE\_ROLES' ;  IF (C > 0) THEN  EXECUTE IMMEDIATE 'DROP TABLE CASH\_SIDE\_ROLES CASCADE CONSTRAINTS';  END IF;  END;  /\* Create Tables \*/  CREATE TABLE Cash\_Side\_Roles  (  Em\_Role VARCHAR2(64) NOT NULL,  Em\_ID VARCHAR2(64) NOT NULL  )  ;  /\* Create Primary Keys, Indexes, Uniques, Checks, Triggers \*/  ALTER TABLE Cash\_Side\_Roles  ADD CONSTRAINT PK\_Cash\_Side\_Roles  PRIMARY KEY (Em\_Role,Em\_ID) USING INDEX  ;  /\* Create Foreign Key Constraints \*/  ALTER TABLE Cash\_Side\_Roles  ADD CONSTRAINT FK\_Em\_play\_Roles  FOREIGN KEY (Em\_ID) REFERENCES Cash\_Side\_Employees(Em\_ID) ON DELETE Cascade  ;  INSERT INTO CASH\_SIDE\_ROLES  (em\_role,em\_id)  values  ('Deleted','\_\_\_\_\_\_\_\_'); |

### Discount\_Goods

Database table in package 'Tables'

| COLUMN NAME | DATATYPE | NOT NULL | COMMENTS |
| --- | --- | --- | --- |
| Rule\_UUID | CHAR(32) | True | 规则序列号 |
| Good\_ID | VARCHAR2(64) | True | 货物号 |

|  |  |  |
| --- | --- | --- |
| PRIMARY KEY NAME | COLUMNS | COMMENTS |
| PK\_Discount\_Goods | Rule\_UUID, Good\_ID |  |

|  |  |  |
| --- | --- | --- |
| TYPE / NAME | COLUMNS | COMMENTS |
| «index» IXFK\_Discount\_Goo\_Discoun01 | Rule\_UUID |  |

|  |  |  |
| --- | --- | --- |
| FOREIGN KEY NAME | COLUMNS | REFERENCES |
| FK\_Rules\_have\_Goods | Rule\_UUID | Discount\_Rules(Rule\_UUID) |

|  |
| --- |
| /\* ---------------------------------------------------- \*/  /\* Generated by Enterprise Architect Version 12.0 \*/  /\* Created On : 30-05-2017 16:23:08 \*/  /\* DBMS : Oracle \*/  /\* Grammer Checked and Tested \*/  /\* ---------------------------------------------------- \*/  /\* Drop Tables \*/  DECLARE  C NUMBER;  BEGIN  SELECT COUNT(\*) INTO C  FROM USER\_TABLES  WHERE TABLE\_NAME = 'DISCOUNT\_GOODS' ;  IF (C > 0) THEN  EXECUTE IMMEDIATE 'DROP TABLE DISCOUNT\_GOODS CASCADE CONSTRAINTS';  END IF;  END;  /\* Create Tables \*/  CREATE TABLE Discount\_Goods  (  Rule\_UUID CHAR(32) NOT NULL,  Good\_ID VARCHAR2(64) NOT NULL  )  ;  /\* Create Primary Keys, Indexes, Uniques, Checks, Triggers \*/  CREATE INDEX IXFK\_Discount\_Goo\_Discoun01  ON Discount\_Goods(Rule\_UUID)  ;  ALTER TABLE Discount\_Goods  ADD CONSTRAINT PK\_Discount\_Goods  PRIMARY KEY (Rule\_UUID,Good\_ID) USING INDEX  ;  /\* Create Foreign Key Constraints \*/  ALTER TABLE Discount\_Goods  ADD CONSTRAINT FK\_Rules\_have\_Goods  FOREIGN KEY (Rule\_UUID) REFERENCES Discount\_Rules (Rule\_UUID)  ; |

### Discount\_Rules

Database table in package 'Tables'

| COLUMN NAME | DATATYPE | NOT NULL | COMMENTS |
| --- | --- | --- | --- |
| Rule\_UUID | CHAR(32) | True | 规则序列号 |
| Rule\_Type | VARCHAR2(50) | True | 规则类型 |
| Em\_ID | VARCHAR2(64) | True | 创建者员工号 |
| Rule\_Name | VARCHAR2(50) | True | 规则名称 |
| Discount\_Rate | NUMBER(8,2) | False | 折扣率 |
| Free\_Money | NUMBER(8,2) | False | 减免金额 |
| SPECIAL\_PRICE | NUMBER(8,2) | False | 特价值 |
| Condition\_Value | NUMBER(8,2) | False | 条件值 |
| DATE\_PERIOD\_START | DATE | True | 开始日期 |
| DATE\_PERIOD\_END | DATE | True | 结束日期 |
| DAY\_PERIOD\_START | NUMBER(4) | True | 开始时刻 |
| DAY\_PERIOD\_END | NUMBER(4) | True | 结束时刻 |

|  |  |  |
| --- | --- | --- |
| PRIMARY KEY NAME | COLUMNS | COMMENTS |
| PK\_Discount\_Rules | Rule\_UUID |  |

|  |  |  |
| --- | --- | --- |
| TYPE / NAME | COLUMNS | COMMENTS |
| «index» PK\_Discount\_Rules | Rule\_UUID |  |

|  |  |  |
| --- | --- | --- |
| FOREIGN KEY NAME | COLUMNS | REFERENCES |
| FK\_Em\_Create\_Rules\_Discount\_Rules | Em\_ID | Cash\_Side\_Employees(Em\_ID) |

|  |
| --- |
| /\* ---------------------------------------------------- \*/  /\* Generated by Enterprise Architect Version 12.0 \*/  /\* Created On : 30-05-2017 16:23:08 \*/  /\* DBMS : Oracle \*/  /\* Grammer Checked and Tested \*/  /\* ---------------------------------------------------- \*/  /\* Drop Tables \*/  DECLARE  C NUMBER;  BEGIN  SELECT COUNT(\*) INTO C  FROM USER\_TABLES  WHERE TABLE\_NAME = 'DISCOUNT\_RULES' ;  IF (C > 0) THEN  EXECUTE IMMEDIATE 'DROP TABLE DISCOUNT\_RULES CASCADE CONSTRAINTS';  END IF;  END;  /\* Create Tables \*/  CREATE TABLE Discount\_Rules  (  Rule\_UUID CHAR(32) NOT NULL,  Rule\_Type VARCHAR2(50) NOT NULL,  Em\_ID VARCHAR2(64) NOT NULL,  Rule\_Name VARCHAR2(50) NOT NULL,  Discount\_Rate NUMBER(8,2),  Free\_Money NUMBER(8,2),  SPECIAL\_PRICE NUMBER(8,2),  Condition\_Value NUMBER(8,2),  DATE\_PERIOD\_START DATE NOT NULL,  DATE\_PERIOD\_END DATE NOT NULL,  DAY\_PERIOD\_START NUMBER(4) NOT NULL,  DAY\_PERIOD\_END NUMBER(4) NOT NULL  )  ;  /\* Create Primary Keys, Indexes, Uniques, Checks, Triggers \*/  CREATE INDEX PK\_Discount\_Rules  ON Discount\_Rules (Rule\_UUID)  ;  ALTER TABLE Discount\_Rules  ADD CONSTRAINT PK\_Discount\_Rules  PRIMARY KEY (Rule\_UUID) USING INDEX  ;  /\* Create Foreign Key Constraints \*/  ALTER TABLE Discount\_Rules  ADD CONSTRAINT FK\_Em\_Create\_Rules  FOREIGN KEY (Em\_ID) REFERENCES Cash\_Side\_Employees (Em\_ID)  ; |

### Orders

Database table in package 'Tables'

| COLUMN NAME | DATATYPE | NOT NULL | COMMENTS |
| --- | --- | --- | --- |
| Order\_ID | CHAR(32) | True |  |
| Order\_Sum | NUMBER(8,2) | True |  |
| Sum\_Money | NUMBER(10,2) | True |  |
| Order\_Cus\_ID | VARCHAR2(50) | False |  |
| Order\_Status | VARCHAR2(50) | True |  |
| Payment\_ID | CHAR(32) | False |  |
| EM\_ID | VARCHAR2(64) | True |  |

|  |  |  |
| --- | --- | --- |
| PRIMARY KEY NAME | COLUMNS | COMMENTS |
| PK\_Orders | Order\_ID |  |

|  |  |  |
| --- | --- | --- |
| TYPE / NAME | COLUMNS | COMMENTS |
| «index» IXFK\_Payment\_has\_Orders\_P01 | Payment\_ID |  |
| «index» PK\_Orders | Order\_ID |  |

|  |  |
| --- | --- |
| TRIGGER NAME | COMMENTS |
| ORDER\_ID\_SEQ\_TRIGGER |  |

|  |  |  |
| --- | --- | --- |
| FOREIGN KEY NAME | COLUMNS | REFERENCES |
| FK\_Payment\_has\_Orders\_Payments | Payment\_ID | Payments(Payment\_ID) |
| FK\_Em\_Responsible\_Orders | EM\_ID | Cash\_Side\_Employees(Em\_ID) |

|  |
| --- |
| /\* ---------------------------------------------------- \*/  /\* Generated by Enterprise Architect Version 12.0 \*/  /\* Created On : 30-05-2017 16:23:08 \*/  /\* DBMS : Oracle \*/  /\* Grammer Checked and Tested \*/  /\* ---------------------------------------------------- \*/  /\* Drop Tables \*/  DECLARE  C NUMBER;  BEGIN  SELECT COUNT(\*) INTO C  FROM USER\_TABLES  WHERE TABLE\_NAME = 'ORDERS' ;  IF (C > 0) THEN  EXECUTE IMMEDIATE 'DROP TABLE ORDERS CASCADE CONSTRAINTS';  END IF;  END;  /\* Create Tables \*/  CREATE TABLE Orders  (  Order\_ID CHAR(32) NOT NULL,  Order\_Sum NUMBER(8,2) NOT NULL,  Sum\_Money NUMBER(10,2) NOT NULL,  Order\_Cus\_ID VARCHAR2(50),  Order\_Status VARCHAR2(50) NOT NULL,  Payment\_ID CHAR(32),  EM\_ID VARCHAR2(64) NOT NULL  )  ;  /\* Create Primary Keys, Indexes, Uniques, Checks, Triggers \*/  CREATE INDEX IXFK\_Payment\_has\_Orders\_P01  ON Orders(Payment\_ID)  ;  CREATE INDEX PK\_Orders  ON Orders(Order\_ID)  ;  ALTER TABLE orders  ADD CONSTRAINT PK\_Orders  PRIMARY KEY (Order\_id) USING INDEX  ;  create or replace trigger trigger\_order\_id\_seq  before insert on orders  for each row  declare  nextid orders.Order\_ID%TYPE;  begin  IF :new.Order\_ID IS NULL or :new.Order\_ID='00000000000000000000000000000000' THEN  select  to\_char(sysdate,'YYYYMMDDHH24MISS')||to\_char(seq\_order.nextval,'fm000000000000000000')  into nextid  from dual;  :new.Order\_ID:=nextid;  end if;  end trigger\_order\_id\_seq;  SHOW ERRORS  ;  /\* Create Foreign Key Constraints \*/  ALTER TABLE Orders  ADD CONSTRAINT FK\_Em\_Responsible\_Orders  FOREIGN KEY (EM\_ID) REFERENCES Cash\_Side\_Employees (Em\_ID)  ;  ALTER TABLE Orders  ADD CONSTRAINT FK\_Payment\_has\_Orders  FOREIGN KEY (Payment\_ID) REFERENCES Payments (Payment\_ID)  ; |

### Payments

Database table in package 'Tables'

| COLUMN NAME | DATATYPE | NOT NULL | COMMENTS |
| --- | --- | --- | --- |
| Payment\_ID | CHAR(32) | True |  |
| Payment\_Sum | NUMBER(16,2) | True |  |
| PAYMENT\_CHANNELSIDE\_ID | VARCHAR2(64) | True |  |
| Payment\_Channel | VARCHAR2(64) | True |  |
| EM\_ID | VARCHAR2(64) | True |  |

|  |  |  |
| --- | --- | --- |
| PRIMARY KEY NAME | COLUMNS | COMMENTS |
| PK\_Payments | Payment\_ID |  |

|  |  |
| --- | --- |
| TRIGGER NAME | COMMENTS |
| TRIGGER\_PAYMENT\_ID |  |

|  |  |  |
| --- | --- | --- |
| FOREIGN KEY NAME | COLUMNS | REFERENCES |
| FK\_Em\_Responsible\_Payments | EM\_ID | Cash\_Side\_Employees(Em\_ID) |

|  |
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| /\* ---------------------------------------------------- \*/  /\* Generated by Enterprise Architect Version 12.0 \*/  /\* Created On : 30-05-2017 16:23:08 \*/  /\* DBMS : Oracle \*/  /\* Grammer Checked and Tested \*/  /\* ---------------------------------------------------- \*/  /\* Drop Tables \*/  DECLARE  C NUMBER;  BEGIN  SELECT COUNT(\*) INTO C  FROM USER\_TABLES  WHERE TABLE\_NAME = 'PAYMENTS' ;  IF (C > 0) THEN  EXECUTE IMMEDIATE 'DROP TABLE Payments CASCADE CONSTRAINTS';  END IF;  END;  /\* Create Tables \*/  CREATE TABLE Payments  (  Payment\_ID CHAR(32) NOT NULL,  Payment\_Sum NUMBER(16,2) NOT NULL,  PAYMENT\_CHANNELSIDE\_ID VARCHAR2(64) NOT NULL,  Payment\_Channel VARCHAR2(64) NOT NULL,  EM\_ID VARCHAR2(64) NOT NULL  )  ;  /\* Create Primary Keys, Indexes, Uniques, Checks, Triggers \*/  create or replace trigger trigger\_payment\_id  before insert on payments  for each row  declare  nextid payments.Payment\_ID%TYPE;  begin  IF :new.payment\_id IS NULL or :new.payment\_id='00000000000000000000000000000000' THEN  select  to\_char(sysdate,'YYYYMMDDHH24MISS')||to\_char(seq\_payment.nextval,'fm000000000000000000')  into nextid  from dual;  :new.payment\_id:=nextid;  end if;  end trigger\_payment\_id;  SHOW ERRORS  ALTER TABLE Payments  ADD CONSTRAINT PK\_Payments  PRIMARY KEY (Payment\_ID) USING INDEX  ;  /\* Create Foreign Key Constraints \*/  ALTER TABLE Payments  ADD CONSTRAINT FK\_Em\_Responsible\_Payments  FOREIGN KEY (EM\_ID) REFERENCES Cash\_Side\_Employees (Em\_ID)  ; |

### Presents

Database table in package 'Tables'

| COLUMN NAME | DATATYPE | NOT NULL | COMMENTS |
| --- | --- | --- | --- |
| Present\_UUID | CHAR(32) | True |  |
| Present\_Type | VARCHAR2(64) | True |  |
| Present\_Condition\_Value | NUMBER(8,2) | False |  |
| Present\_Discount\_Value | NUMBER(8,2) | False |  |
| Rule\_UUID | CHAR(32) | True |  |

|  |  |  |
| --- | --- | --- |
| PRIMARY KEY NAME | COLUMNS | COMMENTS |
| PK\_Presents | Present\_UUID |  |

|  |  |  |
| --- | --- | --- |
| TYPE / NAME | COLUMNS | COMMENTS |
| «index» IXFK\_Rule\_has\_many\_Presen01 | Rule\_UUID |  |

|  |  |  |
| --- | --- | --- |
| FOREIGN KEY NAME | COLUMNS | REFERENCES |
| FK\_Rule\_has\_many\_Presents\_Discount\_Rules | Rule\_UUID | Discount\_Rules(Rule\_UUID) |

|  |
| --- |
| /\* ---------------------------------------------------- \*/  /\* Generated by Enterprise Architect Version 12.0 \*/  /\* Created On : 30-05-2017 16:23:08 \*/  /\* DBMS : Oracle \*/  /\* Grammer Checked and Tested \*/  /\* ---------------------------------------------------- \*/  /\* Drop Tables \*/  DECLARE  C NUMBER;  BEGIN  SELECT COUNT(\*) INTO C  FROM USER\_TABLES  WHERE TABLE\_NAME = 'PRESENTS' ;  IF (C > 0) THEN  EXECUTE IMMEDIATE 'DROP TABLE PRESENTS CASCADE CONSTRAINTS';  END IF;  END;  /\* Create Tables \*/  CREATE TABLE Presents  (  Present\_UUID CHAR(32) NOT NULL,  Present\_Type VARCHAR2(64) NOT NULL,  Present\_Condition\_Value NUMBER(8,2),  Present\_Discount\_Value NUMBER(8,2),  Rule\_UUID CHAR(32) NOT NULL  )  ;  /\* Create Primary Keys, Indexes, Uniques, Checks, Triggers \*/  CREATE INDEX IXFK\_Rule\_has\_many\_Presen01  ON Presents (Rule\_UUID)  ;  ALTER TABLE Presents  ADD CONSTRAINT PK\_Presents  PRIMARY KEY (Present\_UUID) USING INDEX  ;  /\* Create Foreign Key Constraints \*/  ALTER TABLE Presents  ADD CONSTRAINT FK\_Rule\_has\_many\_Presents  FOREIGN KEY (Rule\_UUID) REFERENCES Discount\_Rules (Rule\_UUID)  ; |

### Rules\_Orders

Database table in package 'Tables'

| COLUMN NAME | DATATYPE | NOT NULL | COMMENTS |
| --- | --- | --- | --- |
| Rule\_UUID | CHAR(32) | True |  |
| Order\_ID | CHAR(32) | True |  |

|  |  |  |
| --- | --- | --- |
| PRIMARY KEY NAME | COLUMNS | COMMENTS |
| PK\_Rules\_Orders | Rule\_UUID, Order\_ID |  |

|  |  |  |
| --- | --- | --- |
| TYPE / NAME | COLUMNS | COMMENTS |
| «index» IXFK\_Rules\_Orders\_Discoun01 | Rule\_UUID |  |

|  |  |  |
| --- | --- | --- |
| FOREIGN KEY NAME | COLUMNS | REFERENCES |
| FK\_Rules\_Orders\_Discount\_Rules | Rule\_UUID | Discount\_Rules(Rule\_UUID) |
| FK\_Orders\_Rules\_Orders | Order\_ID | Orders(Order\_ID) |

|  |
| --- |
| /\* ---------------------------------------------------- \*/  /\* Generated by Enterprise Architect Version 12.0 \*/  /\* Created On : 30-05-2017 16:23:08 \*/  /\* DBMS : Oracle \*/  /\* Grammer Checked and Tested \*/  /\* ---------------------------------------------------- \*/  /\* Drop Tables \*/  DECLARE  C NUMBER;  BEGIN  SELECT COUNT(\*) INTO C  FROM USER\_TABLES  WHERE TABLE\_NAME = 'RULES\_ORDERS' ;  IF (C > 0) THEN  EXECUTE IMMEDIATE 'DROP TABLE RULES\_ORDERS CASCADE CONSTRAINTS';  END IF;  END;  /\* Create Tables \*/  CREATE TABLE Rules\_Orders  (  Rule\_UUID CHAR(32) NOT NULL,  Order\_ID CHAR(32) NOT NULL  )  ;  /\* Create Primary Keys, Indexes, Uniques, Checks, Triggers \*/  CREATE INDEX IXFK\_Rules\_Orders\_Discoun01  ON Rules\_Orders (Rule\_UUID)  ;  ALTER TABLE Rules\_Orders  ADD CONSTRAINT PK\_Rules\_Orders  PRIMARY KEY (Rule\_UUID,Order\_ID) USING INDEX  ;  /\* Create Foreign Key Constraints \*/  ALTER TABLE Rules\_Orders  ADD CONSTRAINT FK\_Rules\_Orders\_Discount\_Rules  FOREIGN KEY (Rule\_UUID) REFERENCES Discount\_Rules (Rule\_UUID)  ;  ALTER TABLE Rules\_Orders  ADD CONSTRAINT FK\_Orders\_Rules\_Orders  FOREIGN KEY (Order\_ID) REFERENCES Orders (Order\_ID)  ; |

### Saled\_Goods

Database table in package 'Tables'

| COLUMN NAME | DATATYPE | NOT NULL | COMMENTS |
| --- | --- | --- | --- |
| Good\_ID | VARCHAR2(64) | True |  |
| Date | DATE | True |  |
| Sum | NUMBER(8,2) | True |  |
| Price | NUMBER(9,2) | True |  |
| Order\_ID | CHAR(32) | True |  |

|  |  |  |
| --- | --- | --- |
| PRIMARY KEY NAME | COLUMNS | COMMENTS |
| PK\_Saled\_Goods | Good\_ID, Date |  |

|  |  |  |
| --- | --- | --- |
| TYPE / NAME | COLUMNS | COMMENTS |
| «index» IXFK\_Order\_has\_many\_Goods01 | Order\_ID |  |

|  |  |  |
| --- | --- | --- |
| FOREIGN KEY NAME | COLUMNS | REFERENCES |
| FK\_Order\_has\_many\_Goods\_Orders | Order\_ID | Orders(Order\_ID) |

|  |
| --- |
| /\* ---------------------------------------------------- \*/  /\* Generated by Enterprise Architect Version 12.0 \*/  /\* Created On : 30-05-2017 16:23:08 \*/  /\* DBMS : Oracle \*/  /\* Grammer Checked and Tested \*/  /\* ---------------------------------------------------- \*/  /\* Drop Tables \*/  DECLARE  C NUMBER;  BEGIN  SELECT COUNT(\*) INTO C  FROM USER\_TABLES  WHERE TABLE\_NAME = 'SALED\_GOODS' ;  IF (C > 0) THEN  EXECUTE IMMEDIATE 'DROP TABLE SALED\_GOODS CASCADE CONSTRAINTS';  END IF;  END;  /\* Create Tables \*/  CREATE TABLE Saled\_Goods  (  Good\_ID VARCHAR2(64) NOT NULL,  Saled\_Date DATE NOT NULL,  Sum NUMBER(8,2) NOT NULL,  Price NUMBER(9,2) NOT NULL,  Order\_ID CHAR(32) NOT NULL  )  ;  /\* Create Primary Keys, Indexes, Uniques, Checks, Triggers \*/  CREATE INDEX IXFK\_Order\_has\_many\_Goods01  ON Saled\_Goods (Order\_ID)  ;  ALTER TABLE Saled\_Goods  ADD CONSTRAINT PK\_Saled\_Goods  PRIMARY KEY (Good\_ID,Saled\_Date) USING INDEX  ;  /\* Create Foreign Key Constraints \*/  ALTER TABLE Saled\_Goods  ADD CONSTRAINT FK\_Order\_has\_many\_Goods  FOREIGN KEY (Order\_ID) REFERENCES Orders (Order\_ID) ON DELETE CASCADE  ; |