

网购系统

1. 可行性分析

1.1 背景

伴着电子时代的迅猛发展和人民物质生活的水平的提高,越来越多的电子购物浪潮也汹涌而来。我们容身在这个信息化的大时代,网购也就成了许多人生活中必不可少的一部分,足不出户的便捷式购物与传统的购物方式大相径庭,人们在享受到方便、实惠的同时也不必担忧安全的问题,既方便了自身也推动着国家经济的发展。电子商务网络购物平台,无疑是这个时代的进步。

1.2 技术可行性

1.2.1 可行性因素

- a.项目的效率远大于成本;
- b.技术可行,以现有技术完全可以承担起开发的任务;
- c.操作可行,软件的简单易用能被原有的工作人员快速接受;

1.2.2 系统运行环境

数据库使用 SQL Server,服务器就在本机或 Linux 上搭建。

1.2.3 开发周期

文档编写 6 周,代码编写 2 周,软件测试 1 周。

1.2.4 费用开支与效益分析

代码开发,因项目开发为网购系统,所需开发与维护人员为 1。各项费用开支基本为 0,纯经济效益为 0。

2. 需求分析

客户功能:

- (1) 游客可以查看商品信息,浏览网站信息,经过注册可以成为注册客户。
- (2) 注册客户:注册、客户信息查看和修改。客户登录、确认客户信息,显示客户信息。商品信息浏览、购物车管理、商品查找、订单查询以及商品评论。结账、确认订单、订单状态查询、历史订单查询。
- (3) 部分客户需要查询价格在一定区间内的商品
- (4) 客户需要了解商家的评论如何
- (5) 客户需要查询不同商家的不同商品可以使用的优惠券
- (6) 客户查看自己的消费金额

商家功能:

- (1) 商品的增删改
- (2) 订单处理、订单配送。
- (3) 查看并统计某种商品的销售量
- (4) 实时掌握各种商品的存货

客户注册后,登录到电子商务网站,进入购物流程。

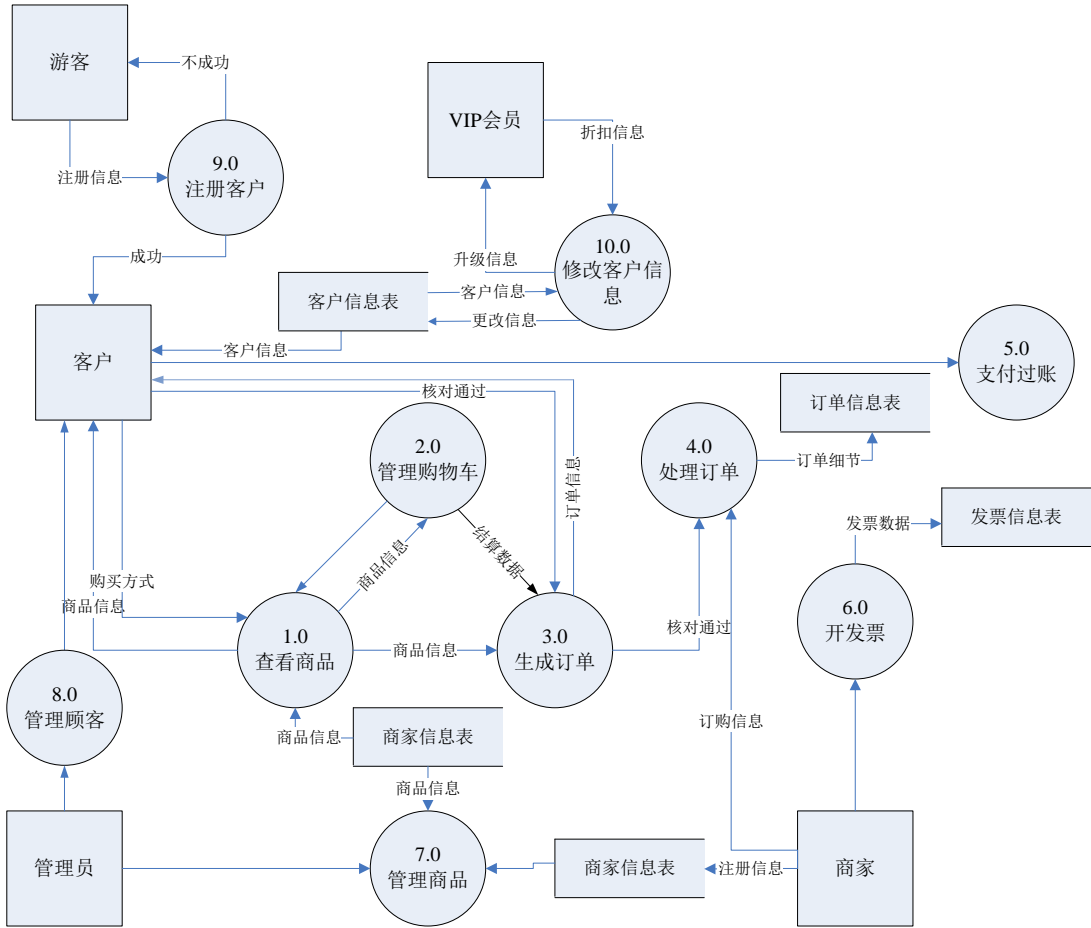
客户在浏览所有商品信息后,可以查看每个商品的详细信息,选择购买或加入购物车,购物车内可以随意增删商品,修改商品数量,并同时统计购物车内商品总额。

客户确认购物车内的商品，选中购买，即可生成订单。可以查看订单状态，“0”表示“商品未发出”，“1”表示商品已发出。

客户分为普通客户和VIP客户，依据购买商品的金额和数量，自动升级。不同的VIP等级享有不同的折扣。

3. 概要设计

3.1 数据流程图



3.2 数据表

表格 1 客户表

中文描述	数据类型	是否为空	备注
客户 ID	BigInt	Not null	主键
客户名	Varchar(30)	Not null	
客户真实姓名	Varchar(30)	Not null	
客户密码	Varchar(30)	Not null	
客户邮箱	Varchar(30)	Not null	
联系电话	Varchar(30)	Not null	
身份证号	Varchar(30)	Not null	
密码问题	Varchar(30)	Null	
答案	Varchar(30)	Null	
注册时间	Datetime	Not null	
会员等级	BigInt	Not null	
地址	Int	Not null	

表格 2 商品表

中文描述	数据类型	是否为空	备注
商品 ID	BigInt	Not null	主键
商品名称	Varchar(30)	Not null	
商品价格	Smallmoney	Not null	
商品社区号	BigInt	Not null	
商品描述	Varchar(200)	Null	
商品图片路径	Varchar(100)	Null	

商品计数	Int	Not null	
商品销量	BigInt	Not null	
商品重量	BigInt	Null	
上架日期	Datetime	Not null	
商品规格	Varchar(100)	Not null	

表格 3 商品社区表

中文描述	数据类型	是否为空	备注
商品社区号	BigInt	Not null	主键
社区描述	Varchar(50)	Not null	

表格 4 商家表

商家号	BigInt	Not null	主键
商家名	Varchar(30)	Not null	
商家地址	Varchar(50)	Not null	
商家电话	Varchar(30)	Not null	

表格 5 订单表

订单 ID	Varchar(30)	Not null	主键
客户 ID	BigInt	Not null	
商品 ID	BigInt	Not null	
送货地址	Varchar(50)	Not null	
订购日期	Datetime	Not null	

订购数量	Int	Not null	
单价	Smallmoney	Not null	
发票号	BigInt	Not null	
订单金额	Money	Not null	
发货时间	Datetime	Not null	
付款方式	Varchar(20)	Not null	
快递品牌	Varchar(20)	Not null	
邮费	Smallmoney	Not null	
订单状态	Int	Not null	
优惠券 ID	BigInt	null	

表格 6 购物车表

购物车 ID	BigInt	Not null	主键
客户 ID	Varchar(10)	Not null	
商品 ID	Varchar(20)	Not null	
订购时间	Datetime	Not null	
订购数量	Int	Not null	
单价	Smallmoney	Not null	
用户确认	Int	Not null	
购物总额	Money	Not null	

表格 7 会员等级表

会员等级 ID	BigInt	Not null	主键
---------	--------	----------	----

等级分类	Int	Not null	
------	-----	----------	--

表格 8 评论表

评论 ID	BigInt	Not null	主键
内容	Varchar(200)	Not null	
标题	Varchar(20)	Not null	
客户 ID	BigInt	Not null	
商家 ID	BigInt	Not null	
评论时间	Datetime	Not null	

表格 9 供应表

供应 ID	BigInt	Not null	主键
实际存货	Int	Not null	
最低存货	Int	Not null	
商品 ID	BigInt	Not null	
商家 ID	BigInt	Not null	

表格 10 发票表

发票 ID	BigInt	Not null	主键
订单号	BigInt	Not null	

表格 11 地址表

地址 ID	Int	Not null	主键
地址	Varchar(50)	Not null	

客户 ID	BigInt	Not null	
-------	--------	----------	--

表格 12 快递品牌表

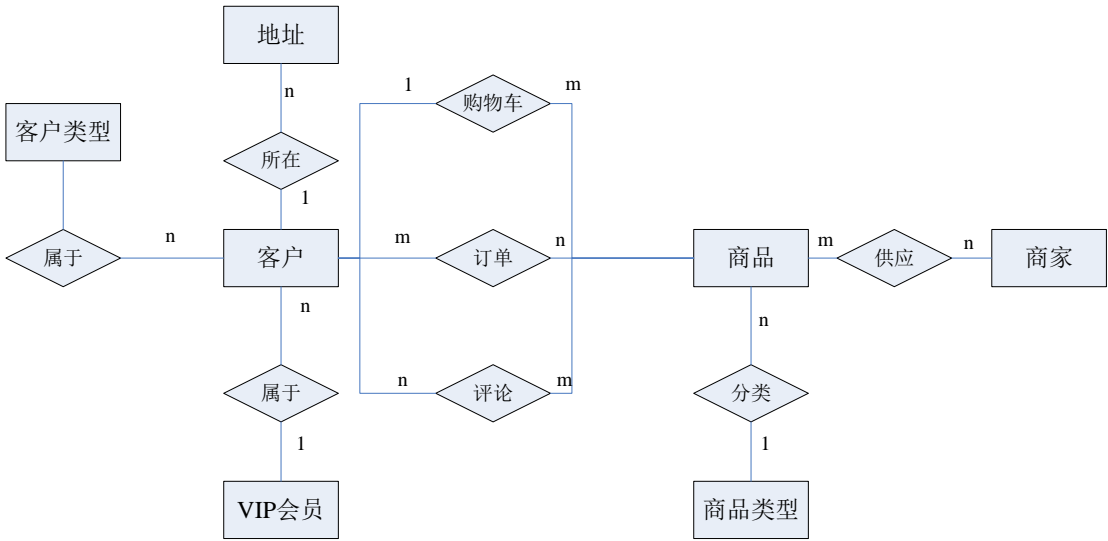
快递 ID	BigInt	Not null	主键
快递名	Varchar(30)	Not null	
配送范围	Varchar(30)	null	

表格 13 优惠券表

优惠券 ID	BigInt	Not null	主键
优惠金额	Int	Not null	
有效期限	Datetime	Not null	
是否可叠加	Varchar(30)	Not null	

3.3 主要关系表

3.4 E-R 图



4. 数据库设计

4.1 数据库源代码

客户表

```
USE [网购数据库]
```

```
GO
```

```
/****** Object:  Table [dbo].[客户]      Script Date: 2018/1/4 11:29:22 *****/
```

```
SET ANSI_NULLS ON
```

```
GO
```

```
SET QUOTED_IDENTIFIER ON
```

```
GO
```

```
CREATE TABLE [dbo].[客户](
```

```
    [客户ID] [bigint] NOT NULL,
```

```
    [客户名] [varchar](30) NOT NULL,
```

```
    [客户真实姓名] [varchar](30) NOT NULL,
```

```
    [客户密码] [varchar](30) NOT NULL,
```

```
    [客户邮箱] [varchar](30) NOT NULL,
```

```
    [客户电话] [varchar](30) NOT NULL,
```

```
    [客户身份证号] [varchar](30) NOT NULL,
```

```
    [密码问题] [varchar](30) NULL,
```

```
    [答案] [varchar](30) NULL,
```

```
    [注册时间] [datetime] NOT NULL,
```

```
    [会员等级] [bigint] NOT NULL,
```

```
    [地址ID] [int] NOT NULL,
```

```
PRIMARY KEY CLUSTERED
```

```
(
```

```
    [客户ID] ASC
```

```
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,
```

```
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
```

```
) ON [PRIMARY]
```

```
GO
```

```
ALTER TABLE [dbo].[客户] WITH NOCHECK ADD CONSTRAINT [fk_客户] FOREIGN  
KEY([客户ID])
```

```
REFERENCES [dbo].[VIP会员] ([会员等级ID])
```

```
GO
```

```
ALTER TABLE [dbo].[客户] CHECK CONSTRAINT [fk_客户]
GO
```

```
ALTER TABLE [dbo].[客户] WITH CHECK ADD CONSTRAINT [ck_email] CHECK (([客户
邮箱] like '%@%.%'))
GO
```

```
ALTER TABLE [dbo].[客户] CHECK CONSTRAINT [ck_email]
GO
```

```
ALTER TABLE [dbo].[客户] WITH CHECK ADD CONSTRAINT [ck_pass] CHECK
(((6)<=len([客户密码])))
GO
```

```
ALTER TABLE [dbo].[客户] CHECK CONSTRAINT [ck_pass]
GO
```

商品表

```
USE [网购数据库]
GO
```

```
/****** Object: Table [dbo].[商品] Script Date: 2018/1/4 11:33:55 *****/
SET ANSI_NULLS ON
GO
```

```
SET QUOTED_IDENTIFIER ON
GO
```

```
CREATE TABLE [dbo].[商品](
    [商品ID] [bigint] NOT NULL,
    [商品名称] [varchar](30) NOT NULL,
    [商品价格] [smallmoney] NOT NULL,
    [商品社区号] [bigint] NOT NULL,
    [商品描述] [varchar](200) NULL,
    [商品图片路径] [varchar](100) NULL,
    [商品计数] [int] NOT NULL,
    [商品销量] [bigint] NOT NULL,
    [商品重量] [bigint] NULL,
    [上架日期] [datetime] NOT NULL,
    [商品规格] [varchar](100) NOT NULL,
    CONSTRAINT [PK_商品] PRIMARY KEY CLUSTERED
```

```
(
    [商品ID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]
GO

ALTER TABLE [dbo].[商品] WITH NOCHECK ADD CONSTRAINT [fk_商品] FOREIGN
KEY([商品社区号])
REFERENCES [dbo].[商品社区] ([商品社区号])
GO

ALTER TABLE [dbo].[商品] CHECK CONSTRAINT [fk_商品]
GO
```

VIP 会员表

```
USE [网购数据库]
GO

/***** Object:  Table [dbo].[VIP会员]    Script Date: 2018/1/4 11:35:08
*****/
SET ANSI_NULLS ON
GO

SET QUOTED_IDENTIFIER ON
GO

CREATE TABLE [dbo].[VIP会员](
    [会员等级ID] [bigint] NOT NULL,
    [等级分类] [char](10) NOT NULL,
    PRIMARY KEY CLUSTERED
    (
        [会员等级ID] ASC
    )WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]
GO
```

地址表

```
USE [网购数据库]
```

```
GO
```

```
/****** Object: Table [dbo].[地址] Script Date: 2018/1/4 11:35:54 *****/
```

```
SET ANSI_NULLS ON
```

```
GO
```

```
SET QUOTED_IDENTIFIER ON
```

```
GO
```

```
CREATE TABLE [dbo].[地址](
```

```
    [地址ID] [int] NOT NULL,
```

```
    [地址] [varchar](50) NOT NULL,
```

```
    CONSTRAINT [PK_地址] PRIMARY KEY CLUSTERED
```

```
(
```

```
    [地址ID] ASC
```

```
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,
```

```
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
```

```
) ON [PRIMARY]
```

```
GO
```

订单表

```
USE [网购数据库]
```

```
GO
```

```
/****** Object: Table [dbo].[订单] Script Date: 2018/1/4 11:36:41 *****/
```

```
SET ANSI_NULLS ON
```

```
GO
```

```
SET QUOTED_IDENTIFIER ON
```

```
GO
```

```
CREATE TABLE [dbo].[订单](
```

```
    [订单号] [varchar](30) NOT NULL,
```

```
    [客户ID] [bigint] NOT NULL,
```

```
    [商品ID] [bigint] NOT NULL,
```

```
    [送货地址] [varchar](50) NOT NULL,
```

```
    [订购日期] [datetime] NOT NULL,
```

```
    [订购数量] [int] NOT NULL,
```

```

[单价] [smallmoney] NOT NULL,
[发票ID] [bigint] NOT NULL,
[订单金额] [money] NOT NULL,
[发货时间] [datetime] NOT NULL,
[付款方式] [varchar](20) NOT NULL,
[快递ID] [varchar](20) NOT NULL,
[邮费] [smallmoney] NOT NULL,
[订单状态] [int] NOT NULL,
[优惠券ID] [bigint] NULL,
CONSTRAINT [PK_订单] PRIMARY KEY CLUSTERED
(
    [订单号] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]
GO

ALTER TABLE [dbo].[订单] SET (LOCK_ESCALATION = DISABLE)
GO

ALTER TABLE [dbo].[订单] WITH NOCHECK ADD CONSTRAINT [ck_订单] CHECK (([订购
日期]<[发货时间]))
GO

ALTER TABLE [dbo].[订单] CHECK CONSTRAINT [ck_订单]
GO

ALTER TABLE [dbo].[订单] WITH NOCHECK ADD CONSTRAINT [ck_订单状态] CHECK
(([订单状态]=(1) OR [订单状态]=(0)))
GO

ALTER TABLE [dbo].[订单] CHECK CONSTRAINT [ck_订单状态]
GO

```

发票表

```

USE [网购数据库]
GO

/***** Object: Table [dbo].[发票]    Script Date: 2018/1/4 11:37:04 *****/
SET ANSI_NULLS ON
GO

```

```
SET QUOTED_IDENTIFIER ON
GO
```

```
CREATE TABLE [dbo].[发票](
    [发票ID] [bigint] NOT NULL,
    [订单号] [bigint] NOT NULL,
PRIMARY KEY CLUSTERED
(
    [发票ID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY],
CONSTRAINT [un_发票] UNIQUE NONCLUSTERED
(
    [发票ID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]
GO
```

发票表

```
USE [网购数据库]
GO
```

```
/****** Object:  Table [dbo].[供应]      Script Date: 2018/1/4 11:37:37 *****/
SET ANSI_NULLS ON
GO
```

```
SET QUOTED_IDENTIFIER ON
GO
```

```
CREATE TABLE [dbo].[供应](
    [供应ID] [bigint] NOT NULL,
    [实际存货] [int] NOT NULL,
    [最低存货] [int] NOT NULL,
    [商品ID] [bigint] NOT NULL,
    [商家ID] [bigint] NOT NULL
) ON [PRIMARY]
GO
```

购物车

```
USE [网购数据库]
```

```
GO
```

```
/****** Object:  Table [dbo].[购物车]      Script Date: 2018/1/4 11:37:59 *****/
```

```
SET ANSI_NULLS ON
```

```
GO
```

```
SET QUOTED_IDENTIFIER ON
```

```
GO
```

```
CREATE TABLE [dbo].[购物车] (
```

```
    [购物车ID] [bigint] NOT NULL,
```

```
    [客户ID] [bigint] NOT NULL,
```

```
    [商品ID] [bigint] NOT NULL,
```

```
    [订购时间] [datetime] NOT NULL,
```

```
    [订购数量] [int] NOT NULL,
```

```
    [单价] [smallmoney] NOT NULL,
```

```
    [用户确认] [int] NOT NULL,
```

```
    [购物总额] [money] NOT NULL,
```

```
    CONSTRAINT [PK_购物车] PRIMARY KEY CLUSTERED
```

```
(
```

```
    [购物车ID] ASC
```

```
) WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,
```

```
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
```

```
) ON [PRIMARY]
```

```
GO
```

快递品牌表

```
USE [网购数据库]
```

```
GO
```

```
/****** Object:  Table [dbo].[快递品牌]      Script Date: 2018/1/4 11:38:22
```

```
*****/
```

```
SET ANSI_NULLS ON
```

```
GO
```

```
SET QUOTED_IDENTIFIER ON
```

```
GO
```

```

CREATE TABLE [dbo].[快递品牌](
    [快递ID] [int] NOT NULL,
    [快递名] [varchar](30) NOT NULL,
    [配送范围] [varchar](30) NULL,
    CONSTRAINT [PK_快递品牌] PRIMARY KEY CLUSTERED
(
    [快递ID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]
GO

```

评论表

```

USE [网购数据库]
GO

```

```

/***** Object:  Table [dbo].[评论]    Script Date: 2018/1/4 11:38:51 *****/
SET ANSI_NULLS ON
GO

```

```

SET QUOTED_IDENTIFIER ON
GO

```

```

CREATE TABLE [dbo].[评论](
    [评论ID] [bigint] NOT NULL,
    [内容] [varchar](200) NOT NULL,
    [标题] [varchar](20) NOT NULL,
    [客户ID] [bigint] NOT NULL,
    [商家ID] [bigint] NOT NULL,
    [评论时间] [datetime] NOT NULL,
    PRIMARY KEY CLUSTERED
(
    [评论ID] ASC
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
) ON [PRIMARY]
GO

```


商家表

```
USE [网购数据库]
```

```
GO
```

```
/****** Object: Table [dbo].[商家] Script Date: 2018/1/4 11:39:17 *****/
```

```
SET ANSI_NULLS ON
```

```
GO
```

```
SET QUOTED_IDENTIFIER ON
```

```
GO
```

```
CREATE TABLE [dbo].[商家](
```

```
    [商家ID] [bigint] NOT NULL,
```

```
    [商家名] [varchar](30) NOT NULL,
```

```
    [商家地址] [varchar](50) NOT NULL,
```

```
    [商家电话] [varchar](30) NOT NULL,
```

```
    CONSTRAINT [PK_商家] PRIMARY KEY CLUSTERED
```

```
(
```

```
    [商家ID] ASC
```

```
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,
```

```
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]
```

```
) ON [PRIMARY]
```

```
GO
```

商品社区表

```
USE [网购数据库]
```

```
GO
```

```
/****** Object: Table [dbo].[商品社区] Script Date: 2018/1/4 11:39:46
```

```
*****/
```

```
SET ANSI_NULLS ON
```

```
GO
```

```
SET QUOTED_IDENTIFIER ON
```

```
GO
```

```
CREATE TABLE [dbo].[商品社区](
```

```
    [商品社区号] [bigint] NOT NULL,
```

```
    [社区描述] [varchar](50) NOT NULL,
```

```
    CONSTRAINT [PK_商品类别] PRIMARY KEY CLUSTERED
```

```
(  
    [商品社区号] ASC  
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,  
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]  
) ON [PRIMARY]  
GO
```

优惠券表

```
USE [网购数据库]  
GO
```

```
/***** Object: Table [dbo].[优惠券]    Script Date: 2018/1/4 11:40:07 *****/  
SET ANSI_NULLS ON  
GO
```

```
SET QUOTED_IDENTIFIER ON  
GO
```

```
CREATE TABLE [dbo].[优惠券](  
    [优惠券ID] [bigint] NOT NULL,  
    [优惠金额] [int] NOT NULL,  
    [有效期限] [datetime] NOT NULL,  
    [是否可叠加] [int] NULL,  
    CONSTRAINT [PK_优惠券] PRIMARY KEY CLUSTERED  
(  
    [优惠券ID] ASC  
)WITH (PAD_INDEX = OFF, STATISTICS_NORECOMPUTE = OFF, IGNORE_DUP_KEY = OFF,  
ALLOW_ROW_LOCKS = ON, ALLOW_PAGE_LOCKS = ON) ON [PRIMARY]  
) ON [PRIMARY]  
GO
```