BC2402 - Week 9
Business Case Discussion

After the pre-paid voucher success, ShiokFood! has stepped up with another new initiative. This time partnering with students from institute of higher learning, ShiokFood! has launched a mobile application that allows customers to buy e-vouchers from their favourite hawker stall at a discount. The more vouchers bought, the more discount the customer can get!

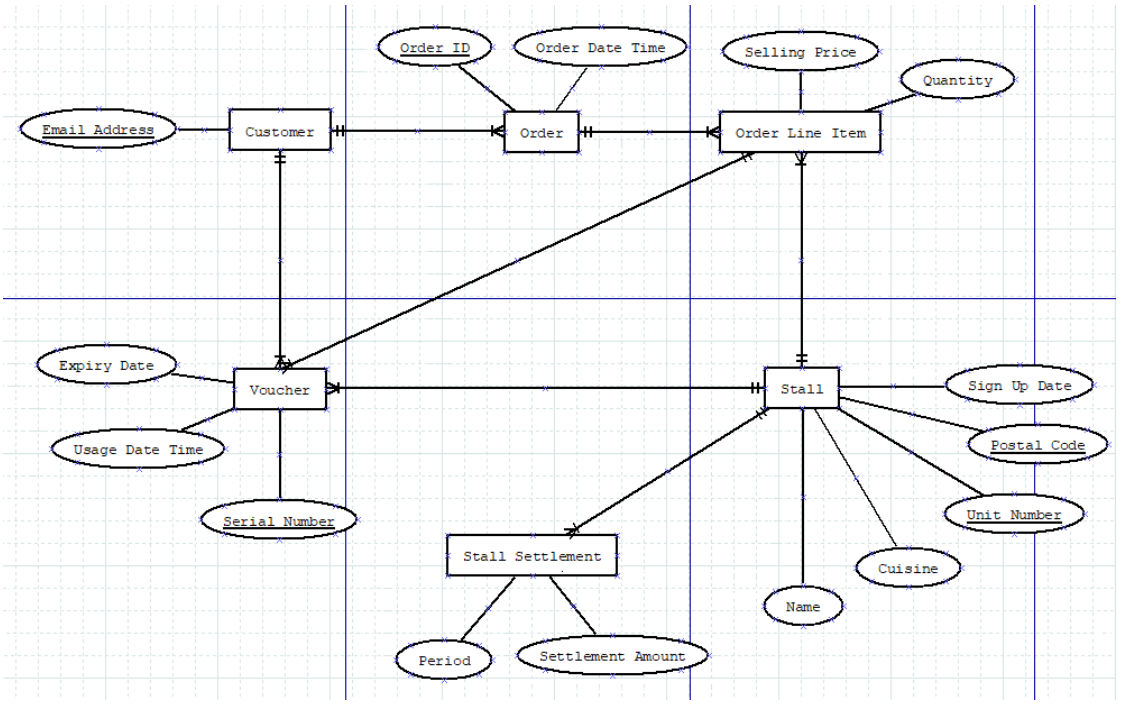
Each set of e-vouchers comes with 5 e-voucher, with each valued at $2. The basic discount is 2%. So, if a customer purchase only one set of 5 e-vouchers, the customer will need to pay $9.80. If a customer buys 3 sets from the same stall in one transaction, the customer can enjoy a 5% discount. If the customer buys 5 sets from the same stall in one transaction, the customer will enjoy a 10% discount. To encourage hawker stalls to sign up, all proceeds gained in the first month on the platform will go to the hawker stall. Thereafter, ShiokFood! charges a nominal 0.5% to upkeep the service.

To use the voucher, the customer can simply display the QR code associated with the voucher redemption. The hawker operator can then scan the QR code to validate the e-voucher. E-voucher are valid for one month from the date of purchase. E-voucher can be transferred to another user. E-voucher can only be utilized at the specified stall

Unlike the previous pre-paid voucher program, this project is opened to all hawker stalls island wide.

Consider the above business scenario and with reference to the below diagram, how would you make this into a noSQL design suitable for MongoDB? Show the collection(s) you have and illustrate how the documents will look like and explain why. You add or remove attributes to the relation below.

Entity Relation Diagram



Relation

Customer [Customer Id, Email Address]

Order [Order Id, Order Date Time, (Customer Id)]

Stall [Stall Id, Postal Code, Unit Number, Cuisine, Name, Sign Up Date]

Stall Settlement [(Stall Id), Period, Settlement Amount]

Order Line Item [(Order Id), (Stall Id), Quantity, Selling Price]

Voucher [Serial Number, Usage Date Time, Expiry Date, (Customer Id), (Stall Id), (Order Id)]

Considering the main use cases in real life

- Seeing settlements for each stall
- A customer would like to see his/her order history at a glance e.g. datetime and amount paid
- A customer would like to see all of their vouchers (regardless of whether they purchased it)

Design considerations and goals

- Minimum duplication of information
- Easy and non-computationally heavy approach in retrieving data for the main use cases

---

Collection 1 (sample document)

 # added ID to Stall for easier reference by OrderLine documents

```
{
        ID: “STORE_123”,
        PostalCode: 123456,
        UnitNo: 1234,
        Name: “Yummy Noodles”,
        Cuisine: “Chinese”,
        SignUpDate: 2020/01/01,
        StallSettlement: [
                { Period: 1, Amount: 100 }
        ]
}
```

Collection 2 (sample document)

```
# e.g. user purchased 1 sets of vouchers from STORE_123
{
        Email: “tom@gmail.com”,
        Orders: [
                OrderID: 10001,
                OrderDateTime: 2021/10/10 12:34,
                OrderLine: [
                        {
                                SellingPrice: 9.8,
                                Quantity: 1,
                                StallID: “STORE_123”,
                                VoucherSerialNos: [
                                        80000001, 80000002, 80000003, 80000004, 80000005
                                ]
                        }
                ]
        ]
}

# e.g. user purchased 3 sets of vouchers from STORE_123 and 5 sets of vouchers from STORE_456
{
        Email: “ricky@gmail.com”,
```

```
        Orders: [
                OrderID: 10002,
                OrderDateTime: 2021/10/10 12:34,
                OrderLine: [
                        {
                                SellingPrice: 28.5,
                                Quantity: 3,
                                StallID: “STORE_123”,
                                VoucherSerialNos: [
                                        ...
                                ]
                        },
                        {
                                SellingPrice: 45.0,
                                Quantity: 5,
                                StallID: “STORE_456”,
                                VoucherSerialNos: [
                                        ...
                                ]
                        }
                ]
        ]
}
```

Collection 3 (sample document)

```
# original owner
{
        SerialNo: 80000001,
        ExpiryDate: 2021/11/09,
        OwnerEmail: “tom@gmail.com”
},

# voucher transferred to new owner peter@gmail.com
{
        SerialNo: 80000001,
        ExpiryDate: 2021/11/09,
        OwnerEmail: “peter@gmail.com”
},

# voucher used
{
        SerialNo: 80000001,
        ExpiryDate: 2021/11/09,
        OwnerEmail: “peter@gmail.com”,
        UsageDateTime: 2021/10/10 12:34
}
```
