## Team assignment 2

Version 0.5

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1. **System overview.**

## System Context

Based on Team assignment document - provided information about POS-System, the implemented Smart Market POS system will provide a numbers of function that help head manager control, monitor and report status of store system efficiently.

The following table will describes roles and responsibility of system.

|  |  |
| --- | --- |
| **Role** | **Responsibility** |
| Head administrator (manager) | 1. Has full permission in system. 2. Manage head office, build policies about system items and prices. 3. Synthesis and report business information. 4. Manage store administrators and branches. |
| Store administrator | 1. Manage store office, build policies about local price. 2. Collect sales data to analyze and report to head office. 3. Manage cashier accounts. 4. Manage customer information. |
| Cashier | 1. Sales. |

List of quality attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **Quality** | **Quality ID** | **Concern** | **Attribute** |
| Performance | QA.01 | Update customer’s score immediately | When the score are used, the number of score used is immediately subtracted from the number of score accrued by the member. |
| The synchronization between the branches and center. | Moreover, in addition to the sales operation, the system is also capable of performing the statistical analysis on the sales records of all stores in near real-time manner. |
| Availability | QA.02 | No down time | No down time when connection with head server have been cut. |
| No down time | No down time when connection of POS terminal with store server have been cut or one database has been broken. Switch to use second database to ensure transactions will be continued. |

Solution for problem.

1. Use VPN technology to improve performance of transmission, improve system security and availability. Ensure connection for system to operate continuously. Database is always synchronized by replication service, support by Microsoft SQL server 2008 through VPN line .
2. Use two database in a database server, one for operation one for backup, increase the availability for system, ensure when crack network or one of two database is broken, transaction activities will be continued.
3. Customer information, include score and profile, product is manage in local database at store and at head office help terminal access data faster than store data in head office only. Increase transaction performance.
4. Analyze and statistic in store system device and then, send to head office to increase performance for system. Head office do not need to processing too much.

*For more information about how to system architect can improve quality attribute, please read following articles.*

## Purpose

This document is intended for:

Project Manager and Architect to manage and evaluate if Smart Market POS system meets function requirements and quality requirements or not.

## Overview

This document will provide a big picture of Smart Market POS system (SMPs) structures in architect. It will be present by using three different views.

1. Allocation view, describe a big picture of SMPs architect and physical device location.
2. C&C view, describe how to SMPs operate and data flow through each function.
3. Module view, describe structure of system.

Glossary and References will be listed in the end of document

# Allocation view

## Allocation View (Deployment views)

### Primary Presentation



### Element catalogue

#### Elements and their properties

|  |  |
| --- | --- |
| **Element** | **Responsibility** |
| Admin computer | Help store admin control store activities. Contain function to manage user in store, price and customer. |
| Manager computer | Help store admin control system activities. Contain function to manage admin account, manage product, customer and analysis and report |
| POS terminal | Provide functions help cashiers make transaction. |
| Store database, database server SQL server 2008 | Contain 2 different database, main and backup.  Use replication service to sync with head database. |
| Head database, database server SQL server 2008 | Store and manage data of all system. |

#### Relationships and their properties

|  |  |
| --- | --- |
| **Element** | **Responsibility** |
| VPN | Connection between store and head office, use VPN protocols to transfer data.  Use VPN technology help improve security and performance of transmission. |
| Local network | Connection between POS terminals with their store server. Connect between database server with head application server. Protocol TCP/IT |



### Context diagram





# C&C view.

* 1. ***System C&C view.***
     1. **Primary presentation.**



* + 1. **Element catalogue.**
       1. **Elements and their properties**

|  |  |
| --- | --- |
| **Element** | **Responsibility** |
| UI | Communicate with end user |
| Software component | Processing, control and manage data. |
| Database | Store data. |
| Device boundary | Show where is component deployed. |

* + - 1. **Relationship and their properties**

|  |  |
| --- | --- |
| **Element** | **Responsibility** |
| Call return | Call function and wait for return result |
| Request reply | Queries data from database and store data into database |
| Synchronization | Synchronization between 2 database server. |

* + 1. **Detail presentation.**
       - 1. **User management** .



* + - * 1. **Product management**.



* + - * 1. **Customer management.**



* + - * 1. **Store management**.



* + - * 1. **Sale**.



* + - * 1. **Analysis and report.**



* + - * 1. **Local price management.**



* + 1. **Element catalogue.**
       1. **Relationships and their properties.**

|  |  |  |
| --- | --- | --- |
| **Element** | **Type** | **Description** |
| View product | Screen | Display product information. User can view. |
| Search product | Screen | Allow user search product in system by keyword. |
| Add product | Screen | Allow manager can add an exist product from center database to sale list in local store. |
| Remove product | Screen | Allow manager to remove product in sale list. Apply in local store only. |
| Create product | Screen | Allow manager to create new product. |
| Edit product | Screen | Allow manager edit information of product. |
| Create category | Screen | Allow manager to create new categories of product. |
| Edit category | Screen | Allow manager to edit information of categories of product. |
| Add price | Screen | Allow user to add an local price for product in this store, not apply in all stores. Add price is applied in local store only. |
| Create customer | Screen | Allow user to create new customer information. |
| Edit customer | Screen | Allow user to can edit customer information |
| View customer | Screen | Display customer information. User can view. |
| Search customer | Screen | Allow user to search customer info in database. |
| Sale | Screen | Help cashier make an transaction. |
| View user | Screen | Display user information. User can view |
| Create user | Screen | Allow admin or manager to create user for system in following rules.   * + 1. Manager can create new admin account for a store only.     2. Admin of a store can create new cashier account only. |
| Edit user | Screen | Allow admin or manager edit user for system in following rules.   * + 1. Manager can edit admin account for a store only.     2. Admin of a store can edit cashier account only. |
| Edit price | Screen | Allow manager can edit price of product and apply on all stores. |
| Sale | Component | The component has responsibility to.   * 1. Read data from data object and business layer of product, customer to present on Sale UI.   2. Calculate sale data, save in a log and store in database. |
| Sale entity | Component | Manage data object of sale, database control class. |
| Product management | Component | Help manager or admin manage product in system. Product management component provide the functions include show product info, search product, create new product, edit product, create new category, edit a category (only with manager account).  With admin account, user only have permission to add product from center to local store, view and search product. |
| Product entity | Component | Manage data object of product, database control class. |
| Local price management | Component | Help admin set local price of product in store. |
| Price entity | Component | Manage data object of price, database control class. (only in local store) |
| User management | Component | Help manager or admin manage users in system. User management component provide the functions include view user info, search account, create new user, edit a user.  With manager account, user have permission to view, search, create and edit a admin account |
| User entity |  | Manage data object of user , database control class. |
| Customer management | Component | Customer management component provide functions to help cashier, admin or manager can manage customers of system. Include functions, view, customer, create and edit customer info.  Customer management component manage customer score, customer detail information. |
| Customer entity | Component | Manage data object of customer , database control class. |
| Store management | Component | Store management component provide function to help manager can manage stores of system, include functions: view, create, edit store. |
| Store entity | Component | Manage data object of store , database control class. |
| Analyze data execute | Component | In local store, analyze data execute help user analyze data and then, prepare a report.  Preparation report can help head office update data in nearly real time. |
| Statistic and report | Component | In head office, statistic and report component with collect and statistic all analyzed data from all stores. |
| Sale report | Screen | Provide sale information of a cashier. |
| Store statistic and report | Screen | Provide sale information of a store for this store’s admin. |
| Head office report view | screen | Provide sale information of all of store for manager. |
| Analysis and report management | Component | Provide process and method help system calculate sale in system. |
| Analysis and report entity | Component | Manage data object of store , database control class. |
| Store database | Database | Main database |
| Head database | Database | Main database |

* + - 1. **Relationship and properties.**

|  |  |
| --- | --- |
| **Element** | **Responsibility** |
| Call return |  |
| Request reply | Request to query data from database. |
| Synchronization | Auto sync data between head office and store server. |

* + - 1. **Element behavior.**

1. User management.

View user.



Create new user.



Edit user.



1. Product management.

Search product.



View product.



Create new product.



Edit product.



Create new category.



Edit category.



Add product.



Remove product.



1. Customer management.

Search customer.



View customer.



Create new customer.



Edit customer.



1. Store management.

Search store.



View store.



Create new store.



Edit store.



1. Sale management.

Sale.



1. Analysis and report.

Sale report.



Store statistic and report.



Head statistic and report.



1. Local price management.

Create new local price.



1. **Module view.**
   1. ***Module view (Layer style).***
      1. **Primary presentation.**



* + 1. **Elements catalogue.**
       1. **Elements and their properties.**

|  |  |
| --- | --- |
| **Layer** | **Description** |
| **User interface** | Communicate with user |
| **Business** | Data processing, transfer data between database access and UI. |
| **Database access** | Contain entity classes. Transfer data between database and the higher layer. |

* 1. ***Data model.***
     1. **Primary presentation.**
        1. **Head office.**



* + - 1. **Store.**



End of document.