Req. Validation & Functional Decomposition

Lab Book

Document Revision History

Date	Revision No.	Author	Summary of Changes
12/8/09	1	Priya Rane	Revamp
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Lab 1. Requirement Itemization – Equipment Tracking System

Goals	• Read "Equipment Tracking system" before starting the assignment. • Understand the process of requirements itemization. • Learn to apply basic techniques of requirement itemization to understand the requirements better. • Learn to prepare requirement itemization document.
Time	90 minutes

Case Study: Equipment Tracking System

This is an Equipment tracking system for the inventory personnel, equipment auditors, service personnel, maintenance personal and equipment tracking personnel those who are involved in maintaining the inventory of equipment.

Background

1. System - Equipment tracking system.
2. Most of the functionalities are available on Fat client and some on Web.
3. Module under test – Manage Equipment

Flow of the system

1. Purchase equipment → Manage Equipment → Track financials→Retire equipment
2. Manage equipment means – Install, Update and Move equipment.
3. There are different access rights for different users – (Browse and Edit.)

Note – The actual field names on the GUI screen can be different than the listed in the requirement.

Assumptions

1. Equipment entry is already in the system as Purchase phase is over.
2. Equipment 'Use status' can be 'In Use' if it is installed and assigned to some user / Department or it can be 'In stock' if it is not put in use.

1.5 Requirements

1. Authorized users and systems must have the ability to record updates to equipment records
   1.1. The system must enforce requirements of the equipment type properties while updating.
   1.2. Only valid Locations can be assigned to an equipment record when completing an update transaction. End Date has not expired
   1.3. Only valid Users can be assigned to an equipment record when completing an update transaction. End Date has not expired

2. The system must provide the ability to restrict which users may update equipment records.

2.1. The authorized users are: Inventory personnel, equipment auditors, service personnel, maintenance personal and Equipment Tracking personnel

3. The system must provide the user with the capability to query for equipment records based on a predefined list of available data elements.
   3.1. Users must have the ability to query for an equipment by "Equipment Tag"
   3.2. The system must manipulate the barcode Equipment Tag for query and storage consistency
      3.2.1. Equipment Tag must be 10 characters
      3.2.2. Equipment Tag must be all numeric
      3.2.3. Equipment Tag will remove any blanks or dashes
      3.2.4. The text 'AD' will be removed from Equipment Tag if found in position 1 and 2 of the character string
      3.2.5. Equipment Tag will be padded with leading zeros if length is less than 10 characters
   3.3. Users must have the ability to query for equipment by "Seq Number"
      3.3.1. The system must manipulate the Seq number input for query and storage consistency
      3.3.2. The system must use the most recent rules contained within the authorized document:
   3.4. Users must have the ability to query for an equipment by "Machine Id"
   3.5. Users must have the ability to query for equipment by "User Id"
   3.6. Users must have the ability to query for equipment by "Location"
      3.6.1. Users must select a valid Location from a list.

4. System should return a list of equipment matching the query criterion
   4.1. The system must provide the ability to view the Equipment Tag for each equipment record returned in the list.
   4.2. The system must provide the ability to view the Quantity for each equipment record returned in the list..
   4.3. The system must provide the ability to view the Seq. Number for each equipment record returned in the list.
   4.4. The system must provide the ability to view the User Id for each equipment record returned in the list.
   4.5. The system must provide the ability to view the Location for each equipment record returned in the list.
   4.6. The system must provide the ability to view the Equipment type for each equipment record returned in the list.

5. The system must provide the user with the ability to manually update specified data for a single equipment record.
   5.1. Users are restricted to modifying equipment records only in within their state
   5.2. Only comments can be updated for retired equipment.
   5.3. Any Unassociated equipment identified as "Spare Part" must be ‘In Stock’

6. The system must provide the user with the ability to manually update specified data for multiple equipment records simultaneously.

7. Following is the list of updatable fields depending on the use transactions and equipment status
   7.1. Purchase Method - Required

7.2. Seq. Number - Required based on the equipment type.
7.3. User ID - If allocated to user
7.4. Department ID - If allocated to department
7.5. Use Status - Required. If stock equipment then default to In-Stock
7.6. Cost Center - Required. If Use status is In-Stock default with Stock Location's cost center ID
7.7. Install Date Required if Use Status is 'In Use'
7.8. Default to actual Receipt Date if receiving done through automatic interface.
7.9. Default to Current Date if equipment is added into system manually.
7.10. Location- Required
7.11. Audit Indicator (Yes/No)
7.12. Audit Date - Default the Audit Date to the Receipt Date
7.13. comments
7.14. Stock Location – Required if use status is In-Stock

8. The system must provide the ability to update specified data in an equipment record from external systems.

9. System should allow printing the equipment's basic information using 'Print Label' functionality.
   9.1. Label should include
      9.1.1. Equipment code
      9.1.2. User ID
      9.1.3. Location ID
   9.2. System should receive automatic updates from the 'CompTrak' system for all the computer related fields on a regular basis.('CompTrak' is the network-based system that tracks all the computers in the network and collects data physically for all the computers. So this system is the Primary data holder for the computer specific fields)
      9.2.1. Computer Name
      9.2.2. Disk Capacity
      9.2.3. Total installed memory
      9.2.4. Network Card number
      9.2.5. Network Card Manufacturer
      9.2.6. Free space on 'C' Drive
      9.2.7. Operating system
      9.2.8. OS version
   9.3. Updates are done only if the last scan date for a stored in the 'Equipment tracking system' is lesser than the 'Last Scan date' stored in the 'CompTrak' system
   9.4. Errors would be generated if
      9.4.1. The equipment tag is not found in 'Equipment tracking system
      9.4.2. Last scan date for a stored in the 'Equipment tracking system' is greater than the 'Last Scan date' stored in the 'CompTrak' system

10. System should supply the detailed information in the comma separated flat file format to the statistical department
    10.1. This should be automatic process run on last day every month
    10.2. It should include those equipment that are received in current month
    10.3. It should exclude any 'Retired' equipment even if they are purchased this month.

10.4. Following fields should be present
- 10.4.1. Use status
- 10.4.2. Type of equipment
- 10.4.3. Location
- 10.4.4. Total quantity
- 10.4.5. Purchase Date

10.5. Apart from flat file, an excel file should also be created which will contain the same data (except purchase date) but grouped by Use status.
- 10.5.1. Sorting should be by Use status, Type and Location(All Ascending)
- 10.5.2. Quantity Subtotals should be available for each change in Use status and Type of equipment.
- 10.5.3. The detailed format for this Excel report is available in the <Some logical information>(Assume that this information is available)

Lab 2. Requirement Itemization – Order Processing & Billing Software

Goals	• Read the case study before starting the assignment. • Understand the process of requirements itemization. • Learn to apply basic techniques of requirement itemization to understand the requirements better. • Learn to prepare requirement itemization document.
Time	90 minutes

2.1 Case Study: Order Processing & Billing Software

Bansi Caterers Pvt. Ltd. wants to develop the order processing and billing software.

2.2 Background & Flow of the System

Bansi Caterers presently work as under :

1. This Company collects order from different corporate customers or individual customers.
2. The customer fills up the order form describing various details like order details, customer details, menu item details and number of thalies.
3. 50% advance is collected from the customer.
4. After receiving the order, Kitchen Order Ticket (KOT), is issued to the kitchen.
5. Kitchen then issues the list of raw material (excluded from available stock) to be purchased from the suppliers.
6. Purchase order is given to the suppliers and ordered raw material is received from the fixed suppliers and forwarded further to the kitchen.
7. After completion of the delivery of the order, catering bill is issued to the customer on the basis of actual number of thalies or ordered number of thalies whichever is more.
8. Payment is accepted and receipt is given to the customer.

2.3 Users

The intended audiences include administrative staff and customers.

The system shall provide appropriate facilities to ensure that only authorised users have access to the information stored in the system.

2.4 Requirements

1. Collect order: customer fills up the order form describing various details like order(booking) details, customer details, menu item details and number of thalies.
    a. Customer details include : unique identifier, name, address, contact number and E-mail address (optional)
    b. The software should avoid redundancy : while the user is adding customer details, if the customer's name and address match an existing customer entry, the System will reject the new information and tells the user that the

customer already exists and enter only the new order details.

c. Order(Booking) details include: orderId, bookingDate, CustomerName, Qty. and type of service required.

2. Advance Payment : 50% advance is collected only from customers.
3. Issue KOT : After receiving the orders, Kitchen Order Ticket (KOT), is issued to the kitchen.
4. Check Stock Level : kitchen issues the list of Utensils and Food Items below minimum stock level. Level of food items and utensils in stock includes following details :
    a. The number of units of the food items and utensils currently in stock
    b. The number of units of the food items and utensils currently on order
    c. The price per unit of the food item and utensil
    d. The stock reorder level or minimum stock level
5. Purchase Order : Purchase order for out-of-stock items(food item raw material or utensils) is given and ordered material is received from the fixed suppliers and forwarded further to the kitchen.
    a. Supplier details include : unique identifier, name, address, contact number and E-mail address (optional)
    b. food item and utensil details include : unique identifier, Food Item and Utensil Name, suppliers who provide this food items and utensils, and per-unit price that each supplier charges for the food item and utensil.
6. Customer Service : provides service to customers as per their order. The service includes following details :
    a. A unique identifier
    b. Service Type
    c. The number of food dishes on ordered menu
    d. The number of utensils required for the service
    e. The price per service
7. Issue bill : After completion of the delivery of the order, bill is issued to the customer on the basis of actual number of thalies or ordered number of thalies whichever is more.
    a. Bill(Invoice) details include : invoiceId, invoiceDate, customerName, orderDetails and billAmount.
8. Payment : customer makes payment and gets receipt.
    a. Payment details include : paymentId, paymentDate, customerName, invoiceId against which the payment is being done, amountPaid.

9. Total Income : income gained annually
10. Report Generation : reports for all the above details should be generated (assume the fields to display in each of the reports.)

Note – The application should automatically assign and display unique identifiers (wherever required) whenever a new instance of any of the above details is being created.

2.5 System Requirements

1. Computer equipped with 133 MHZ Intel Pentium Processor, with a minimum 64 MB RAM, a CPU speed of 200 MHZ or above for good performance
2. Windows OS should be there.
3. ORACLE server should be installed.
4. PRINTER should be installed.

Lab 3. Identify Ambiguities in the Requirements

Goals	• In this lab you'll perform a requirements review for QWERTYsoft by reviewing the QWERTYsoft Requirements Document. • Identify problems with specific phrases and sections. • Try to fix those problems by rewording the phrase, changing the sentence, adding new sentences, or even whole new paragraphs.
Time	60 Minutes

3.1 Scope QWERTYsoft - Requirements Document

This document specifies the requirements for a family of Internet kiosks called QWERTYsoft. These kiosks shall provide cash, credit card, and debit card customers with simple, fast, reliable Internet access in public places for reasonable prices per minute of usage.

3.2 Terms, Acronyms, and Abbreviations

For the purposes of this project, the following abbreviations apply:

AS	Application Server
Cable	Cable high-speed Internet connection at least 128Kbps
CC	Credit card (for payment): American Express, Visa, or MasterCard
CS	Communication Server
DBMS	Database Management System (server)
DC	Debit card (for payment): PLUS or Cirrus networks.
DSL	Digital Subscriber Line high-speed Internet connection (either asymmetric or symmetric) at least 128Kbps
IE	The Internet Explorer Internet browser
Kbps	Kilobits per second
Kiosk	The free-standing QWERTYsoft Internet access point
Linux	Red Hat Linux Release 8.0 operating system
Opera	The Opera freeware Internet browser
PIN	Personal Identification Number (for debit card)
PSTN	Public Switched Telephone Network Internet connection (ordinary dial-up connectivity) at least 50 KBPS
URL	Universal resource locator
WS	Web Server
WXP	Windows XP Professional operating system

Required release date

The first set of 1,000 QWERTYsoft kiosks shall be live, accepting payment and accessing the Internet, as of the financial third quarter.

3.3 Description of requirements

1. General technical requirements

QWERTYsoft shall give customers in airports, malls, theaters, and other public places access to the Internet. QWERTYsoft shall provide call center agents with access to information about current and past kiosk sessions as well as the ability to control current sessions.

2. Welcome

Between sessions, each QWERTYsoft kiosk shall display an inviting welcome message (see screen prototype K.1).

3. Payment

Once a user navigates past the Welcome screen, the kiosk shall give the user the option to purchase a block of browser time in the Payment screen (see screen prototype K.2). The kiosk shall sell blocks of time in five (5) minute increments, up to one (1) hour.

The system accepts the following forms of payment:

a) Cash (bills only) (see screen prototype K.3)
b) Credit card (American Express, Visa, or MasterCard only) (see screen prototype K.4 and K.7)
c) Debit card (PLUS or Cirrus networks only) (see screen prototype K.5 and K.7)

Once the current block of time is within sixty (60) seconds of expiration, the kiosk shall pop up a message asking if the user wants to purchase more time (see screen prototype K.9).

1. Internet Browser

At the Welcome screen, each QWERTYsoft kiosk shall provide the user with a choice of the latest version of Netscape, Opera, or Internet Explorer (available on Windows kiosks only).

2. Performance

On kiosks operating with a PSTN connection, users shall have greater than 50Kbps connection speed.
On kiosks operating with DSL or cable connections, users shall have greater than 128Kbps connection speed.

3. Localization

Each QWERTYsoft kiosk shall be configured to operate in the primary local language for its installed locale.
In locales where multiple languages are commonly used, the Welcome screen shall present the user with the option to select the language for the session.

Each QWERTYsoft kiosk browser shall be configured to support all languages supported by the operating system and browser.

4. Content Control

Because QWERTYsoft users will access the Internet in public places, QWERTYsoft shall implement site blocking that prevents the display of pornographic, objectionable, lewd, obscene, or violent material.
QWERTYsoft shall protect each kiosk against sending or receiving a virus, worm, or other malicious code.

5. Session Termination

Users may terminate sessions in one of two ways:

a) Logging out (no refund is given for unused time)
b) Allowing time to expire.

6. Confidentiality

To protect user confidentiality — e.g., URLs visited — once a session terminates, each kiosk shall clear all cookies and other downloaded files, clear the URL history, exit the browser, and restart the browser at the Welcome screen.

7. Administration

a) Software Updates

Under ordinary circumstances, software updates will take place automatically. At 2:00 A.M. local time, each kiosk shall connect to the server farm and ask for updates. Those updates include:

- Operating system or browser patches
- New network, modem, or graphics drivers
- New logos
- Updated per-minute payment rate tables
- Virus, worm, malicious code, or other firewall definitions
- Blocked websites.
- If there are no updates available, the kiosk shall disconnect.

If the update application on the application server tells the kiosk that it is overloaded, the kiosk shall disconnect, then retry at a later time. The delay for retry is a random period between ten (10) and sixty (60) minutes.
Call center agents may also push software updates to kiosks.

8. View Kiosks

Call center agents shall be able to browse a list of kiosks. For each kiosk, call center agents shall be able to see:

- Current operating system version
- Current browser version
- Total uptime since installation
- Total uptime since last software update
- Number of crashes, reboots, or other hard failures since last software update.

Kiosks shall connect to the server farm once per hour to report status. If a kiosk is not connected to the server farm, the call center agent may force a connection to check status.

If a kiosk is down, that kiosk shall show up at the top of the list of kiosks, highlighted in red.

9. View Users

For those kiosks that have active users, call center agents shall have access to the following information:

- Current and past URLs.
- Credit or debit card number (if applicable)
- Name (if available from credit card validation)
- Amount paid for this session
- Blocks of time purchased
- Previous session (if available from credit card number and name)
- Paid time remaining

10. Modify User

Call center agents shall be able to modify a user's session by adding blocks of time. Supervisory override is required for an agent to add more than sixty (60) minutes of time per day.

11. Terminate User

If a call center agent believes that a user is engaged in illegal, inappropriate, or fraudulent use of a session, the agent may terminate that session.

The user shall receive a refund for any unused time at the point of termination. The user shall receive a message that the session was terminated for inappropriate activity. The message shall specify the amount of the refund.

Note – Use the following Template to complete this lab.

SECTION #	PROBLEMATIC PHRASE OR SECTION	REWORDED PHRASE OR SECTION

Continued

