SALES TRACKING AND AUTOMATION SYSTEM [STA]

PROJECT WORK DONE AT
Online Consultancy Services Pvt.Ltd,
COIMBATORE

PROJECT REPORT

P-1133

SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE AWARD OF THE DEGREE OF

M.Sc [APPLIED SCIENCE] SOFTWARE ENGINEERING
OF BHARATHIAR UNIVERSITY, COIMBATORE.

SUBMITTED BY
KARTIK VAIDYANATHAN
Reg No. **9937S0079**

UNDER THE GUIDANCE OF

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

KUMARAGURU COLLEGE OF TECHNOLOGY

COIMBATORE – 641 006

OCT 2003 – MARCH 2004

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
KUMARAGURU COLLEGE OF TECHNOLOGY
(Affiliated to Bharathiar University)
COIMBATORE – 641 006
OCT 2003 – MARCH 2004

CERTIFICATE

This is to certify that the project entitled

SALES TRACKING AND AUTOMATION SYSTEM [STA]

DONE BY

KARTIK VAIDYANATHAN
Reg No. **9937S0079**

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE OF

M.Sc [Applied Science] SOFTWARE ENGINEERING
OF BHARATHIAR UNIVERSITY

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Submitted to University Examination held on 29-03-04

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External Examiner

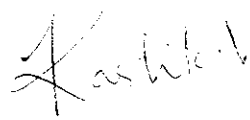
Declaration

DECLARATION

I hereby declare that the project entitled "**Sales Tracking and Automation system [STA]**" submitted to **Bharathiar University**, Coimbatore as the project work of **Master of Science Degree in Software Engineering**, is a record of original work done by me under the supervision and guidance to **Mr.Sunil Mathew [Project Lead],** Online Consultancy Services Pvt Ltd , **Prof.K.R.Baskaran– Asst.Professor & Course Coordinator [Software Engineering]** and **Mr.P.Gopalakrishnan M.C.A - Lecturer, Kumaraguru College of Technology**, Coimbatore and this project work has not found the basis of the award of any Degree/Diploma/Associate ship /Fellowship or similar title to any candidate of any university.

Place : COIMBATORE

Date : 21-02-2004



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February 21st, 2004

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.KARTIK VAIDYANATHAN** (9937S0079) has completed his project work titled "**Sales Tracking and Automation System [STA]**" as part of his **Master of Science [Software Engineering]** curriculum from Bharatiyar University in our organization, from October 3rd 2003 to February 21st 2004 under my guidance.

During his association with the company he was found to be industrious, conscientious and a good team player.

We wish him all success in his future endeavors.

Mr. Sunil Mathew [Project Lead]
Online Consultancy Services

Online Consultancy Services

Acknowledgement

Acknowledgement

At the outset I would like to thank my Principal **Dr.K.K.Padmanaban** Kumaraguru College of Technology, Coimbatore, **Dr.S.Thangasamy** – Head of the Department – Computer Science & Engineering for giving me an opportunity to do this project as a part of my course.

I express my sincere gratitude to **Prof.K.R.Baskaran– Asst.Professor & Course Coordinator [Software Engineering]** and **Mr.P.Gopalakrishnan M.C.A Lecturer** who have personally been my mentor and guide for the successful completion of the project.

A project of this size requires a guide who takes pains to spend time and hands out invaluable advice from time to time. Here, I am greatly indebted to **Mr. Sunil Mathew [Project Lead]** for his invaluable guidance from start to finish.

I would like to thank **Mr. R.Haridas [Delivery Head]** for his endless support in guiding me through the various stages in the development of the Project and for also allowing me to be present during the various client interactions.

I thank my **parents** who have extended endless support to all my endeavors.

Synopsis

Synopsis

*The Objective of **Sales Tracking and Automation System [STA]** is to enable the clients to automate order tracking and sales support tasks. The system aims to integrate the Sales Office Head [SOH], Sales Person, Buyers activities.*

As we know sales are an important activity to be pursued by any company for its growth and sustenance, our clients have also incorporated a system to conduct sales and its allied activities.

The system provides SOH, Sales Person and Buyer to maintain contacts and utilize the same console to establish contact with external parties. The SOH and Sales Person can use the system to generate order reports and track the status of orders and in-turn each quality [product] that comprises to form the order. Also the client can generate monthly and period wise sales report.

The system is marked by one unique provision called "Special Reporting" [Discussion Forum] that allows the SOH, Sales Person and the Buyer to discuss queries and seek clarifications. This feature curtails the cost in communication that occurs while seeking clarification on trivial matters. This system is also used to track various expenditure accounts of the Sales Person and approve their expenses statement.

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Introduction

1.1 Project Overview

The project titled **Sales Tracking and Automation System (STA)** is being developed for **J.G.HOSIERY Pvt.Ltd.,** Tirupur whose flagship brand has been **AMUL** garments & innerwears.

This is an internet based application that facilitates the company to track order status, manage quality profiles, perform sales analysis, automate communication between the sales force & SOH and track expenditure of Sales Personnel. The application has been modeled with the principles of Sales Force Automation, a design concept, in mind.

The company has its manufacturing hub in Tirupur with marketing offices situated throughout India and at Export centers namely Canada, USA, Australia and Middle East. This model aids the head office [SOH] at Tirupur in controlling the workings of the sales offices around the globe and also facilitate "touch-base" with sales personnel.

The system is marked by the following features

- Keeping track of direct buyers with the organization.
- Tracking sales personnel and their associated buyers.
- Maintaining Quality (Products) details.
- Recording various underlying Expenditure Heads
- Creating Special Reporting features for each sales personnel and Buyer. (Interaction Console).The head office can track both buyers and sales personnel.
- Tracking various expenditures to their Expenditure Heads and their analysis.

- Performing a detailed Sales Analysis and generating monthly and period wise reports.
- Recording Login Statistics pertaining to STA to record usage of the system.
- Providing features to maintain an address book.
- Creating a private messaging system for the company interlinked with the address Book.
- Facilitating the buyer to keep track of order status.
- Providing the Buyers with special reporting features that aid them in interacting with the Head Office (Interaction Console).
- Facilitating the Sales Person to keep track of Sales Analysis made by him.
- Providing the Seller with special reporting features that aids them in interacting with the Head Office (Interaction Console).
- Aiding the head office to keep track of Sales Personnel activities by creating schedules and modifying schedules created by sales personnel.

1.2 Organizational Profile

Online Consultancy Services (OCS) is a customer-oriented, innovation-driven organization, specializing in information services and business solutions. OCS was established in 1994 at Coimbatore, TamilNadu and has been actively involved in Applications Development and Web based Solutions.

Vision: Our vision is **"TAKE YOUR BUSINESS PLACES"** .We are here to provide you solutions that enable you to stay upfront in the virtual market place and become pioneers of new business practices.

The company over the years since its startup has developed the skill sets and the infrastructure to provide a level of service clients come to expect from them. With highly skilled and motivated people on hand and top-of-the-line facilities OCS is positioned to be a name to be reckoned with in Web and Business Solutions based Development.

OCS is constantly in touch with changing trends and upgrades to work on cutting-edge technology. With regular training programs to constantly update developer's skills, resources and thereby always stay relevant and contemporary in the field of Business Solutions through Information Technology. We focus in helping our clients exploit the potential that the web offers as a strategic business tool.

We are also **direct associates** with INTERNIC and also help clients with domain management, content management, and design and server management facilities. We are also competent Software Developers mainly focusing in developing Enterprise applications **[ERP]**, providing customized solutions to garment industries.

If you are looking to take your business places, establish your product/service on a global scale and build web presence representing business strategies we will do it for you professionally and cost effectively.

Business Model:

Our main focus is to provide to the needs of our customers and also reduce the implementation time and cost. To aid in this process we follow a very intrinsic mode of "ready to deliver-to be tailored solutions" that will be able to cater to any business process and increase our delivery time by 25% on an average. We boast of a client base that is 100% referenceable and are much obliged for their continued support.

About the Client: **J.G.Hosiery Pvt.Ltd**

STA has been designed to be implemented at J.Hosiery Pvt.Ltd, a pioneer in the field of garments manufacturing. Established in the year 1979, J.G.Hosiery has been steadily growing over the years and has become global players in the manufacturing of cotton hosiery products.

Quality Measures

The sturdy and systematic growth of the company can be attributed to the strict quality procedures, which has been addressed at all levels and a fully owned and managed group where no compromise on quality is made, apart from which quality is tested by Intertek Testing Services and SGS India Ltd.

The quality standards followed by the company

- OEKO - TEX standard 100 by BTTG, Manchester
- ISO 9001:2000 Certificate from TUV - Germany

Product Line

J.G.Hosiery's product line includes innerwears for Ladies, Men and Children, Boxer shorts, Night wears/Tops, Men's T-shirts. They have a production capacity of 7.5 million pieces of innerwear per month and 2.5 million pieces of export garments per month. Their products are being exported to countries like UK, France, Spain, Italy, Canada, The United States of America, Dubai, Doha, Bahrain and other parts of Middle East.

System Study And Analysis

2. System Study and Analysis

2.1 Existing System – Limitations

Prior to the induction of STA the sales processing was done manually. The option to conduct order tracking was not available to the organization and communication between the various parties was not tightly bound. Certain feature of STA were automated such as sales reports or expenses analysis for which the company was using separate software's such as SalePoint™ and Tally™ respectively. Such systems were not integrated and thereby existing as mere self sufficient data rather than integrate to form a knowledge bank. The SOH felt the need to have more control on the activities on the Sales offices across the globe.

2.2 Proposed System

The Proposed System is designed to behave as a fully automated and integrated console with the organization. It is a web based application that can be accessed anywhere. Buyers and Sales Personnel can access the system where ever they are. The system requires a server that supports IIS5.0, so that it can interact with the database and house the active server pages. The database is safe and can handle multiple clients. The system is provided with authentication mechanisms to differentiate between the SOH, salesperson and Buyers

The requirements have been analyzed by understanding the client requirements, existing work flow, system feasibility. The SOH has the been provided with exclusive provision for Category Management, Profiles Management, approval of expenses, locking of special reports, and modifying the order status. The login statistics of the Sales Personnel are also kept track off. Every section in the system is provided with the option to

add, modify, and delete records, which can be visualized to be synonymous to an e-mail system.

The most important activity that the system helps perform is to track the status of the order as a whole and also every quality status that constitute the order. It is necessary for the Sales Person to revert back to the buyers about the order status. The Sales person also states his expenses made which is approved by the SOH.

Enough verification is provided while login and in the case the client forgets his password, then he will be mailed the login details, the mail is sent to the email id which is given while registration of the buyer or SP. There is also a discussion forum "Special reporting" that allows the SP and buyer to conduct online discussion and clarifications thereby reducing cost of communication and serves as a record of communication.

Programming Environment

3. Programming Environment

3.1 Hardware Configuration

- **Server Configuration**

  Processor Type: Pentium III XEON Dual Processor
  RAM: 512 MB RAM
  Speed: 1000MHz
  Backbone: T3 backbone from AOL

- **Client Configuration**

  Processor Type: Intel 486 and above
  RAM: 16MB
  Speed: 350 MHz

3.2 Description of Software's and Tools Used

- **Server Software**

3.2.1 Server Operating System: *Windows 2000 Server*

The Windows® 2000 Server operating system integrates Internet technologies across all services, from File and Print to advanced line-of-business application services. This helps ensure organizations can more effectively exchange information with customers, partners, and employees worldwide.

Windows 2000 Server meets the needs of a broad spectrum of users, from corporate intranets to Internet Service Providers hosting Web sites receiving millions of hits per day. Because Internet Information Server 5.0 (IIS) is fully integrated at the operating system level, Windows 2000 Server lets organizations add Internet capabilities that weave directly into the rest of their computing infrastructure. Some of the features of Window 2000 Server is as follows

- **Share information more efficiently using the Web**

In the past, performing standard file operations on a network file share was much easier than performing similar operations on a remote Web site. Now, Windows 2000 Server technologies such as Web Distributed Authoring and Versioning (WebDAV) make it as easy to carry out standard file operations on a Web share.

- **Create Web-based business applications**

Creating Web-based applications that integrate well into traditional business applications can be difficult. Windows 2000 Server overcomes this burden by sharing internet-aware application development tools with IIS, an efficiency that extends applications to the Web and eliminates awkward bridges between internal and external processes.

- **Bring server operating system functionality to the Web**

In addition to allowing organizations to extend basic file and print services to the Web, Windows 2000 Server supports applications, media, and communications and networking services from a common server platform. This convergence means that everything a company can do with Windows 2000 Server is automatically supported in a fully integrated Web environment.

- **Secure Web Services**

The Windows 2000 Server Web services are fully integrated with the Kerberos security infrastructure. The Kerberos Version 5 authentication protocol, which provides fast, single logon to Windows 2000 Server. Secure Sockets Layer (SSL) 3.0 and Transport Layer Security (TLS) provide a secure way to exchange information between clients and

servers. Digest Authentication enables secure authentication of users across proxy servers and firewalls. Administrators can grant or deny Web access to individual computers, groups of computers, or entire domains.

3.2.2 **Web Server:** *Internet Information Server 5.0*

Internet Information Services 5.1 has many features to help Web administrators to create scalable, flexible Web applications. IIS **features** are as follows

- **Administration**
  - **Remote Administration:** IIS 5.1 has Web-based administration tools that allow remote management of your server from almost any browser on any platform. With IIS 5.1, you can set up administration accounts called Operators with limited administration privileges on Web sites, to help distribute administrative tasks.
  - **Centralized Administration:** Administration tools for IIS use the Microsoft® Management Console (MMC). MMC hosts the programs, called snap-ins that administrators use to manage their servers. You can use the IIS snap-in from a computer running Windows XP Professional to administer a computer on your intranet running Internet Information Services on Windows 2000 Server.
- **Programmability**
  - **Active Server Pages:** You can create dynamic content by using server-side scripting and components to create browser

independent dynamic content. Active Server Pages (ASP) provides an easy-to-use alternative to CGI and ISAPI by allowing content developers to embed any scripting language or server component into their HTML pages. ASP provides access to all of the HTTP request and response streams, as well as standards-based database connectivity and the ability to customize content for different browsers

- **Internet Standards**
  - **Standards Based:** Microsoft Internet Information Services 5.0 and 5.1 comply with the HTTP 1.1 standard, including features such as PUT and DELETE, the ability to customize HTTP error messages, and support for custom HTTP headers.
  - **HTTP Compression:** Provides faster transmission of pages between the Web server and compression-enabled clients. Compresses and caches static files, and performs on-demand compression of dynamically generated files.
  - **PICS Ratings:** You can apply Platform for Internet Content Selection (PICS) ratings to sites that contain content for mature audiences.

- **Security**
  - **Advanced Digest Authentication:** Advanced Digest Authentication is lightweight, allows secure and robust authentication of users across proxy servers and firewalls, requires no additional client software, and avoids passing username and password in clear text over the Internet. In addition, Digest Authentication, Anonymous, HTTP Basic, and

Integrated Windows authentication (formerly known as Windows NT Challenge/Response authentication and NTLM authentication) are still available.

- **Secure Communications:** Secure Socket Layer (SSL) 3.0 and Transport Layer Security (TLS) provide a secure way to exchange information between clients and servers. In addition, SSL 3.0 and TLS provide a way for the server to verify who the client is *before* the user logs on to the server. In IIS 5.1, client certificates are exposed to both ISAPI and Active Server Pages, so that programmers can track users through their sites. Also, IIS 5.1 can map the client certificate to a Windows user account, so that administrators can control access to system resources based on the client certificate.
- **IP and Internet Domain Restrictions:** You can grant or deny Web access to individual computers, groups of computers, or entire domains.
- **Certificate Storage:** IIS certificate storage is now integrated with the Windows CryptoAPI storage. The Windows Certificate Manager provides a single point of entry that allows you to store, back up, and configure server certificates.

3.2.3 Server Side Programming: Active Server Pages 3.0

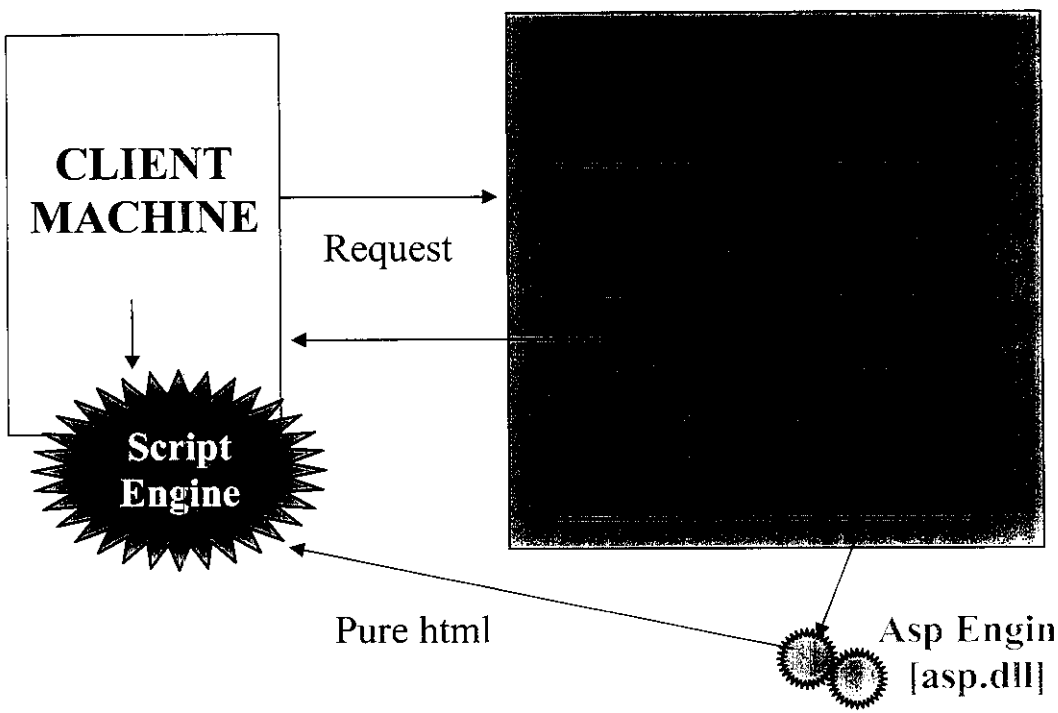
Microsoft® Active Server Pages (ASP) is a server-side scripting environment that you can use to create interactive Web pages and build powerful Web applications. When the server receives a request for an ASP file, it processes server-side scripts contained in the file to build the Web page that is sent to the browser. In addition to server-side scripts, ASP files can contain HTML (including related client-side scripts) as well as calls to

COM components that perform a variety of tasks, such as connecting to a database or processing business logic. Active Server Pages (ASP) makes it easy to generate dynamic content for the Web and to build powerful Web applications.

The Active Server Pages Model

A server-side script begins to run when a browser requests an .asp file from your Web server. Your Web server then calls ASP, which processes the requested file from top to bottom, executes any script commands, and sends a Web page to the browser. Because your scripts run on the server rather than on the client, your Web server does all the work involved in generating the HTML pages sent to browsers. Server-side scripts cannot be readily copied because only the result of the script is returned to the browser. Users cannot view the script commands that created the page they are viewing.

Working of ASP Model



3.2.4 Back End (Database): *Microsoft SQL Server 2000*

Microsoft SQL Server 2000 comprises of components that work together to meet the data storage and analysis needs of the largest web sites and enterprise data processing systems, yet at the same time can provide easy to use data storage services to an individual or small business. SQL Server 2000 opens the door to the rapid development of a new generation of enterprise-class business applications that can give your company a critical competitive advantage.

Features Include:

- **Easy access to data through the Web** - With SQL Server 2000, you can use HTTP to send queries to the database, perform full-text search on documents stored in database, and run queries over the Web with natural language.
- **Powerful, flexible Web-based analysis** - SQL Server 2000 Analysis Services capabilities are extended to the Internet. You can access and manipulate cube data by means of a Web browser.
- **Scale up** - SQL Server 2000 takes advantage of symmetrical multiprocessor (SMP) systems. SQL Server Enterprise Edition can use up to 32 processors and 64 GB of RAM.
- **Scale out** - Scale out distributes the database and data load across servers.
- **Availability** - SQL Server 2000 achieves maximum availability through enhanced failover clustering, log shipping, and new backup strategies.
- **Integrated and extensible analysis services** - With SQL Server 2000, you can build end-to-end analysis solutions with integrated tools to create value from data. Additionally, you can automatically drive business processes based on analysis results and flexibly retrieve custom result sets from the most complex calculations.

- **Quick development, debugging, and data transformation** - SQL Server 2000 features the ability to interactively tune and debug queries, quickly move and transform data from any source, and define and use functions as if they were built in to Transact-SQL. You can visually design and code database applications from any Visual Studio tool.
- **Simplified management and tuning** - With SQL Server 2000, it is easy to manage databases centrally alongside all enterprise resources. Stay online while easily moving and copying databases across computers or between instances.

➢ **Client Software**

Web Browser (IE5.0 and above or Netscape Navigator 6.0 and above)

System Design

4. System Design

4.1 Input Design

Designing the input is a significant part while developing the system, because the input design may affect the feasibility of the system. The following areas are considered while designing the Input

- *Ease of Understanding*

  The system is to be used by naïve users who will be able to understand only simple English they must understand the menus, button selections and process that take place thereafter.

- *Minimum number of input screens*

  Since this is an internet application it represents mostly real time transaction and the number of screens bears a semblance to the performance of the system, the input screens should be designed such that we are able to obtain all the necessary details within a single form space so that unnecessary client-server communication is avoided.

- *Minimum number of keying*

  Wherever possible users should be provided the option to select their specific choices so that they are saved time from unnecessary typing. For e.g.: When requesting "*date of registration(dor)*" it is more easier to select the date/month/year rather than typing and more appreciable if the date presents today's date as default which in most cases is the likely hood of it being the date of registration.

- *Ease of Navigation*

  Every web page that presents data must be provided with the option to navigate to the previous screen, to the main section, to the sub-section to which it belongs to and also option to logout from the very screen.

- *User friendly GUI*

  The GUI should be very approachable and less bombastic for the users. The GUI for this system has been designed in parlance to a mailing system with all the features synonymous to the same. For e.g. In order to delete records , check boxes have been provided at the sides , rather than buttons and modifying records can be done by just clicking the records.

- *Validations on Submit.*

  Every field that requires user input is validated by using JavaScript at the client side. The validation process represents generic validation wherein the scripts are applicable to all the input fields.

- *User Authentication*

  Since most functionality rests with the SOH, adequate provision is provided to safeguard SOH specific information. Login details are validated and are redirected to specific web spaces. In the case of forgetting login details, a hint question is asked and upon answering it correctly, the login details are sent to the user - to his mail id that was mentioned during registration.

4.2 Output Design

Since this system is to be used by clients who are naïve computer users. The design has been made keeping them in mind. Most users are familiar with how to handle email sites, which is why we have chosen a model of output that replicates similar features.

In sections where report generating facilities are provided, the clients are provided with a wide area of scope for searching. The design is such that for any record that has the option to be further scrutinized, a link is provided through which we can navigate to obtain the details.

The client has features to sort details under any section in ascending or descending order and the current sorted section is explicitly mentioned using identifiers.

4.3 Database Design

TABLE NAME: **ADMIN**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINT	DESCRIPTION
1	A_Code	Int	10	NOT NULL	Primary Key	Store the admin Code
2	A_Name	Int	20	NOT NULL	Unique Key	Store the name of the administrator
3	A_Pswd	Varchar	20	NOT NULL		Store the password for login
4	A_Email	Float	30	NOT NULL	Unique Key	Stores the email id of the admin

TABLE NAME: **BUYER**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINT	DESCRIPTION
1	B_Code	Int	10	NOT NULL	Primary Key	Store the code of the Buyer
2	B_UsID	Varchar	20	NOT NULL	Unique Key	Store the login id of the Buyer
3	B_Pswd	Varchar	20	NOT NULL		Stores the password for login
4	B_Email	Varchar	30	NOT NULL	Unique Key	Store the contact email information
5	B_Name	Varchar	40	NOT NULL		Stores the name of the Buyer
6	B_Comp	Varchar	30	NOT NULL		Stores the company name
7	B_Addr	Varchar	60			Stores the address of the buyer
8	B_State	Varchar	20			Stores the state
9	B_City	Varchar	20			Stores city name
10	B_Ctry	Varchar	20			Store country representing
11	B_Zip	Int	10			Stores ZIP code
12	B_Ph1	Int	15	NOT NULL		Stores preferred contact number
13	B_Ph2	Int	15			Stores backup contact number
14	B_Mbl	Int	20			Stores Mobile number
15	B_Fax	Int	15			Stores buyer Fax No
16	B_Dor	DateTime	10	NOT NULL		Date of Registration by the admin

TABLE NAME: **SP**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINT	DESCRIPTION
1	SP_Code	Int	10	NOT NULL	Primary Key	Store the code of the Sales Person
2	SP_UsID	Varchar	20	NOT NULL	Unique Key	Store the password for login
3.	B_Pswd	Varchar	20	NOT NULL		Stores the email id of the SP
4	SP_Email	Varchar	30	NOT NULL	Unique Key	Store the contact email information
5	SP_Name	Varchar	40	NOT NULL		Stores the name of the SP
6	SP_Addr	Varchar	60			Stores the address of the SP
7	SP_City	Varchar	20			Stores the name of the city
8	SP_State	Varchar	20			Stores the state
9	SP_Ctry	Varchar	20			Store country representing
10	SP_Zip	Varchar	10			Stores ZIP code
11	SP_Ph1	Int	15	NOT NULL		Stores preferred contact number
12	SP_Ph2	Int	15			Stores backup contact number
13	SP_Mbl	Int	20			Stores Mobile number
14	SP_Fax	Int	15			Stores buyer Fax No
15	SP_Dor	Int	10			Date of Registration by the admin

TABLE NAME: **CITYSP**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINT	DESCRIPTION
1	City_Code	Int	20	NOT NULL	Primary Key	Stores the city code
2	City_Name	Varchar	20	NOT NULL		Stores the city name
3.	SP_Code	Int	10	NOT NULL	Foreign Key – (SPCode)	Stores the SP code
4	SP_UserID	Varchar	20	NOT NULL		Stores the SP user id (sorting purpose)

TABLE NAME: **CATEGORY**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINT	DESCRIPTION
1	Cat_Code	Int	10	NOT NULL	Primary Key	Stores the category code
2	Cat_Name	Varchar	20	NOT NULL	Unique Key	Stores the category name

TABLE NAME: **SHAPESIZE**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINT	DESCRIPTION
1	S_Code	Int	10	NOT NULL	Primary Key	Stores the ShapeSize code
2	S_Name	Varchar	20	NOT NULL	Unique Key	Stores the ShapeSize name

TABLE NAME: **PROD_REMARK**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINT	DESCRIPTION
1	Rem_Code	Int	10	NOT NULL	Primary Key	Stores the Remark code
2	Rem_Name	Varchar	20	NOT NULL	Unique Key	Stores the Remark name

TABLE NAME: **QUALITY**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINT	DESCRIPTION
1	Q_Code	Int	10	NOT NULL	Primary Key	Stores the Quality Code
2	Q_Name	Varchar	20	NOT NULL	Unique Key	Stores the Quality name
3	Cat_Code	Int	10	NOT NULL	Foreign Key – (Cat Code)	Specify the Category Code
4	Rem_Code	Int	10	NOT NULL	Foreign Key – (Rem Code)	Specify the Product Remark
5	Q_Price	Float	10,2	NOT NULL		Store the price of the quality
6	S_Code	Int	10	NOT NULL	Foreign Key – (Shape Size Code)	Specify the Shape Size Code

TABLE NAME: **EXP_HEADS**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINT	DESCRIPTION
1	Expn_Code	Int	10	NOT NULL	Primary Key	Stores the Exp_Head Code
2	Expn_Name	Varchar	20	NOT NULL	Unique Key	Stores the Exp_Head name

TABLE NAME: **EXPENSES**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINT	DESCRIPTION
1	E_Code	Int	20	NOT NULL	Primary Key	Stores Expense Transaction code
2	E_Head	Int	10	NOT NULL	Foreign Key – (Exp Code)	Stores the Exp_Head Code
3	U_Code	Int	10	NOT NULL	Foreign Key – (SP Code)	Stores the SP Code
4	E_Date	DateTime	12			Stores the date –Expenses made
5	E_Amount	Float	10,2			Stores the amount spent
6	E_Remark	Varchar	100			Store the details for the expenses(SP)
7	E_Status	Int	1	NOT NULL		Admin approved-1/Not approved-2
8	E_Remarks	Varchar	100			Stores the Admin Remarks on approval

TABLE NAME: **BUYERSP**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINT	DESCRIPTION
1	BSP_Code	Int	20	NOT NULL	Primary Key	Store the name of the BuyerSP Code
2	BSP_Email	Varchar	30	NOT NULL	Unique Key	Store the contact email information
3.	BSP_Name	Varchar	40	NOT NULL		Stores the name of the BuyerSP
4	BSP_Comp	Varchar	30	NOT NULL		Store the BuyerSP company
5	BSP_Addr	Varchar	30			Stores the address of the BuyerSP
6	BSP_City	Varchar	20			Stores the name of the city
7	BSP_State	Varchar	20			Stores the state
8	BSP_Ctry	Varchar	20			Store country representing
9	BSP_Zip	Int	10			Stores ZIP code
10	BSP_Ph1	Int	15	NOT NULL		Stores preferred contact number
11	BSP_Ph2	Int	15			Stores backup contact number
12	BSP_Mbl	Int	20			Stores Mobile number
13	BSP_Fax	Int	15			Stores buyer Fax No
14	BSP_Dor	Date	10			Date of Registration by the admin
15	SP_Code	Int	10	NOT NULL	Foreign Key-(SP Code)	Specify the SP code to whom the Buyer comes under.

TABLE NAME: **SREP_A_SP**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINT	DESCRIPTION
1	R_Code	Int	10	NOT NULL	Primary Key	Stores the query code
2	R_Date1	DateTime	10			Question Date
3	R_Date2	DateTime	10			Last Comment Date
4	R_AnsDate	DateTime	10			Answer Date
5	Admin-Code	Int	10		Foreign Key-Admin Code	Store the admin code
6	R_Subject	Varchar	10			Stores the file name
7	R_status	Int	1	NOT NULL		0 Query Posted, 1 Query Read, 2 Answered but not Read, 3 Answer read, 4 Answer Commented, 5 Comment Answered but not read, 6 Comment answer Read, 7 Locked

TABLE NAME: **COM_A_SP**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINTS	DESCRIPTION
1	C_Code	Int	10	NOT NULL	Primary Key	Stores the comment code
2	R_Code	Int	10		Foreign Key-Rcode	Store the query code to which this comment thread is linked
3	C_Date	DateTime	10			Store the comment date
4	C_AnsDate	DateTime	10			Store the comment ans date

TABLE NAME: **SREP_A_B**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINTS	DESCRIPTION
1	R_Code	Int	10	NOT NULL	Primary Key	Stores the query code
2	R_Date1	DateTime	10			Question Date
3	R_Date2	DateTime	10			Last Comment Date
4	R_AnsDate	DateTime	10			Answer Date
5	Admin-Code	Int	10		Foreign Key-Admin Code	Store the admin code
6	R_Subject	Varchar	10			Stores the file name of the query
7	R_status	Int	1	NOT NULL		0 Query Posted, 1 Query Read, 2 Answered but not Read, 3 Answer read, 4 Answer Commented, 5 Comment Answered but not read, 6 Comment answer Read, 7 Locked

TABLE NAME: **COM_A_B**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINTS	DESCRIPTION
1	C_Code	Int	10	NOT NULL	Primary Key	Stores the comment code
2	R_Code	Int	10		Foreign Key-Rcode	Store the query code to which this comment thread is linked
3	C_Date	DateTime	10			Store the comment date
4	C_AnsDate	DateTime	10			Store the comment ans date

TABLE NAME: **SREP_B_A**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINTS	DESCRIPTION
1	R_Code	Int	20	NOT NULL	Primary Key	Stores the query code
2	R_Date1	DateTime	10			Question Date
3	R_Date2	DateTime	10			Last Comment Date
4	R_AnsDate	DateTime	10			Answer Date
5	B-Code	Int	10		ForeignKey-Buyer Key	Store the buyer code
6	R_Subject	Varchar	10			Stores the file name
7	R_status	Int	1	NOT NULL		0 Query Posted, 1 Query Read, 2 Answered but not Read. 3 Answer read, 4 Answer Commented. 5 Comment Answered but not read, 6 Comment answer Read. 7 Locked

TABLE NAME: **COM_B_A**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINTS	DESCRIPTION
1	C_Code	Int	10	NOT NULL	Primary Key	Stores the comment code
2	R_Code	Int	10		Foreign Key-Rcode	Store the query code to which this comment thread is linked
3	C_Date	DateTime	10			Store the comment date
4	C_AnsDate	DateTime	10			Store the comment ans date

TABLE NAME: **SREP_SP_A**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINTS	DESCRIPTION
1	R_Code	Int	10	NOT NULL	Primary Key	Stores the query code
2	R_Date1	DateTime	10			Question Date
3	R_Date2	DateTime	10			Last Comment Date
4	R_AnsDate	DateTime	10			Answer Date
5	SP_Code	Int	10		ForeignKey-SP Code	Store the SP code
6	R_Subject	Varchar	10			Stores the file name
7	R_status	Int	1	NOT NULL		0 Query Posted, 1 Query Read, 2 Answered but not Read, 3 Answer read, 4 Answer Commented, 5 Comment Answered but not read, 6 Comment Answer Read, 7 Locked

TABLE NAME: **COM_SP_A**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINTS	DESCRIPTION
1	C_Code	Int	10	NOT NULL	Primary Key	Stores the comment code
2	R_Code	Int	10		Foreign Key-Rcode	Store the query code to which this comment thread is linked
3	C_Date	DateTime	10			Store the comment date
4	C_AnsDate	DateTime	10			Store the comment ans date

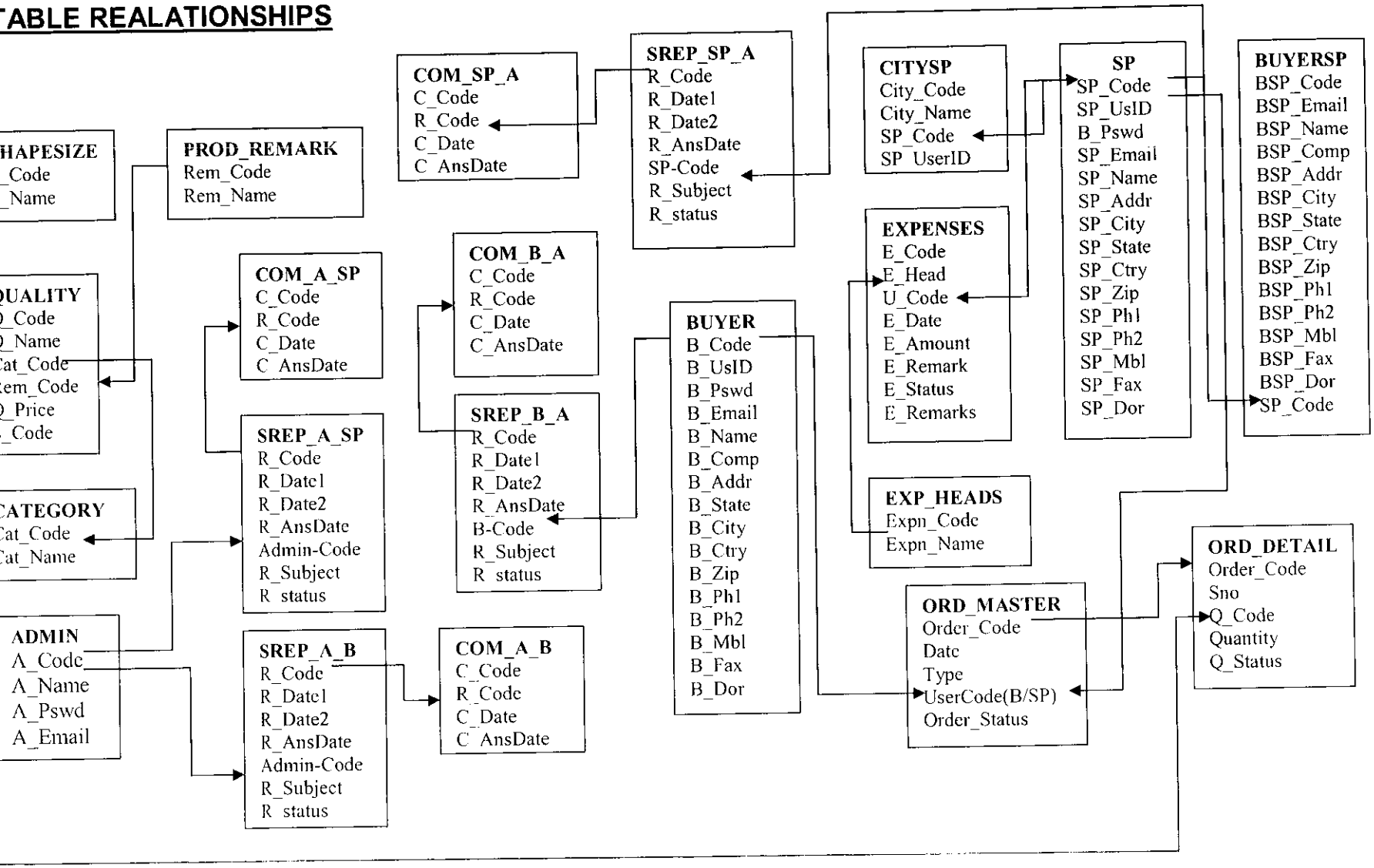
TABLE NAME: **ORD_MASTER**

Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINTS	DESCRIPTION
1	Order_Code	Int	10	NOT NULL	Primary Key	Stores the order code
2	Date	DateTime	10			Store the date of order
3	Type	Int	1			Specify 1-Buyer 2-SP
4	User_Code	Int	10			Specify buyer or SP code
5	Order_Status	Int	1		ForeignKey-Buyer Key	Store order status

TABLE NAME: **ORD_DETAIL**

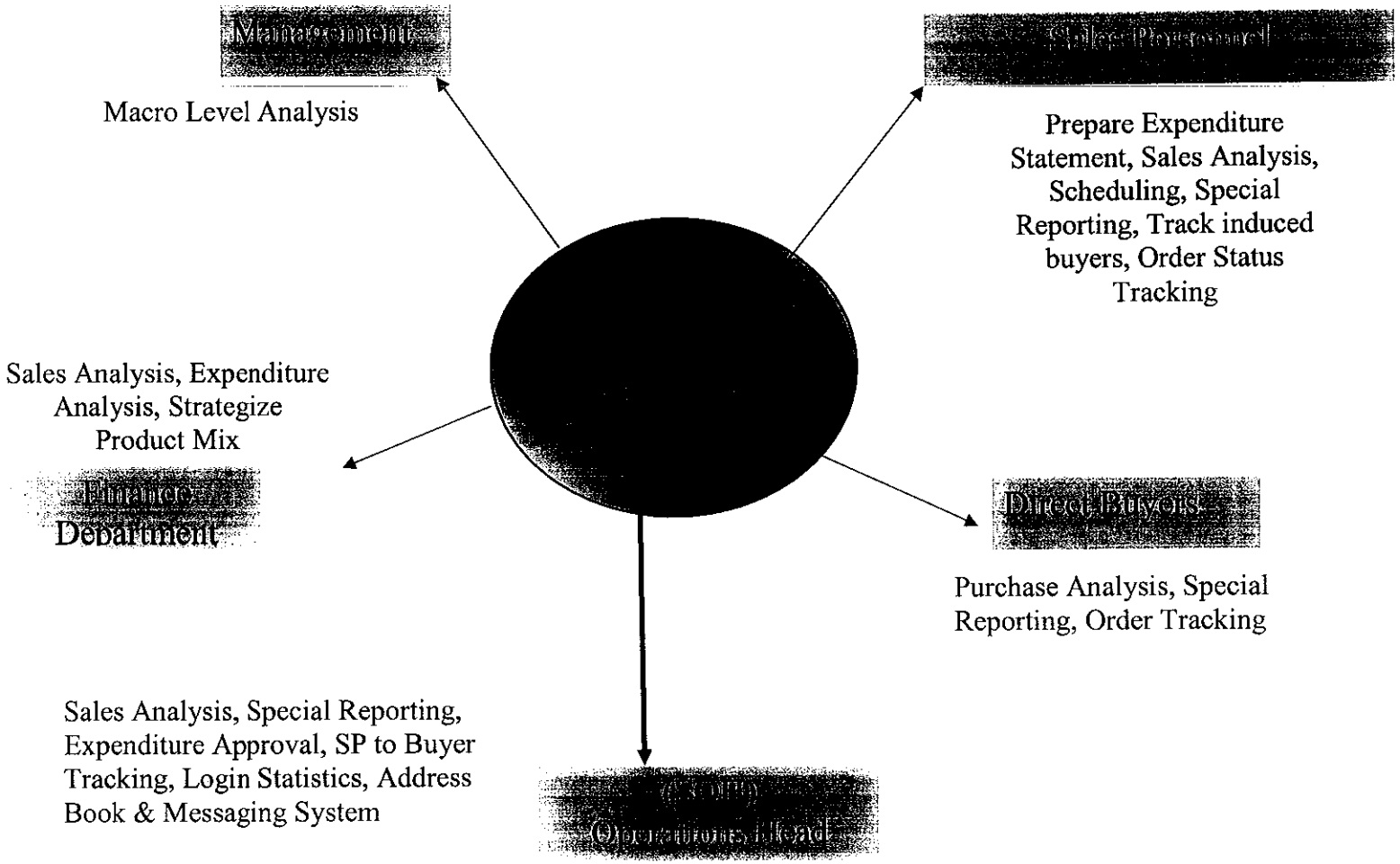
Sno	FIELDNAME	TYPE	SIZE	NULL / NOT NULL	CONSTRAINTS	DESCRIPTION
1	Order_Code	Int	10	NOT NULL	Primary Key	Stores the category code
2	Sno	Int	10			Specify the order S.No
3	Qu_Code	Int	10		Foreign Key - (SP/Buyer Code)	Stores the Quality Code
4	Quantity	Int	10			Store the quantity ordered
5	Qu_Status	Varchar	15			Specify the Quality Status

TABLE REALATIONSHIPS

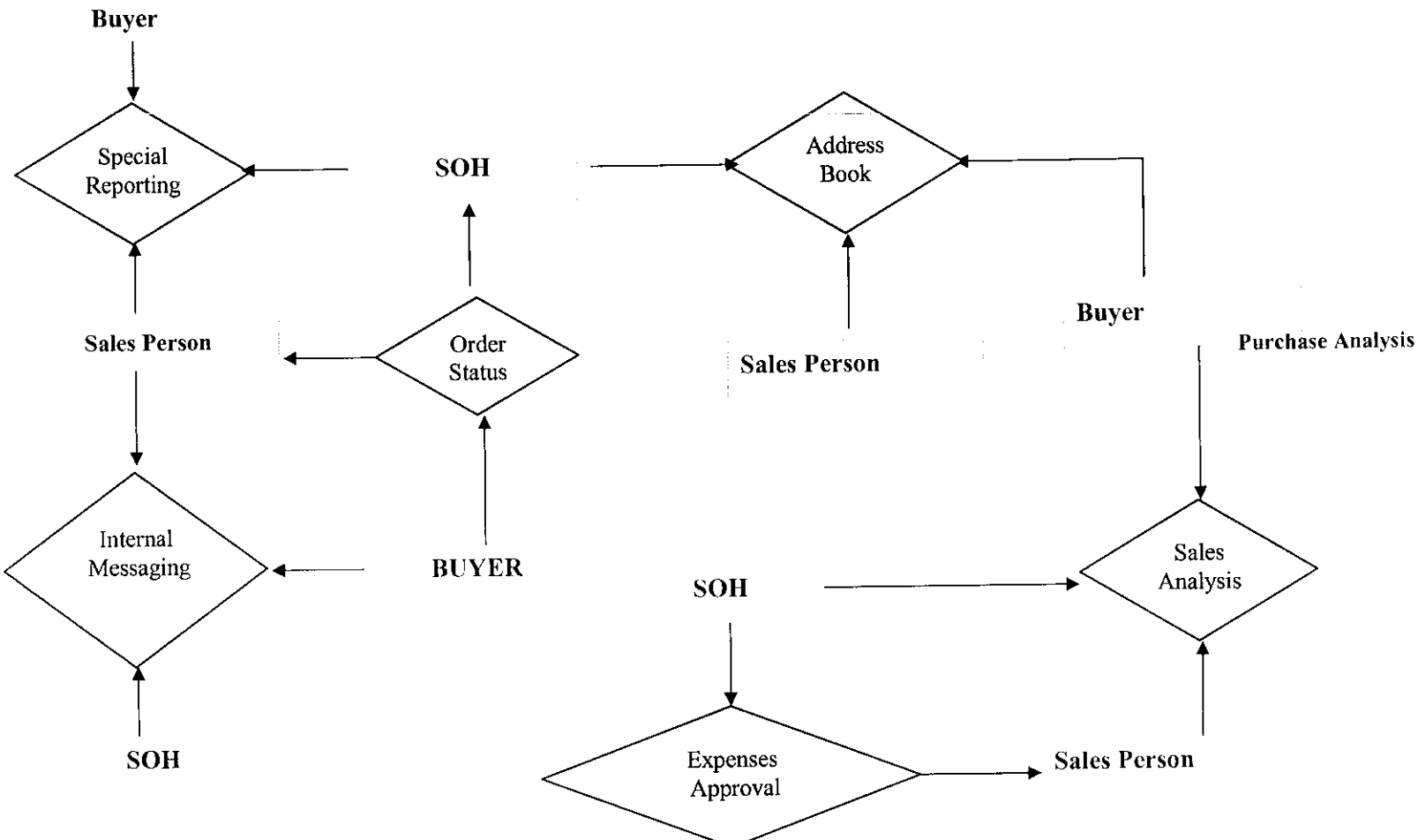


4.4 Process Design

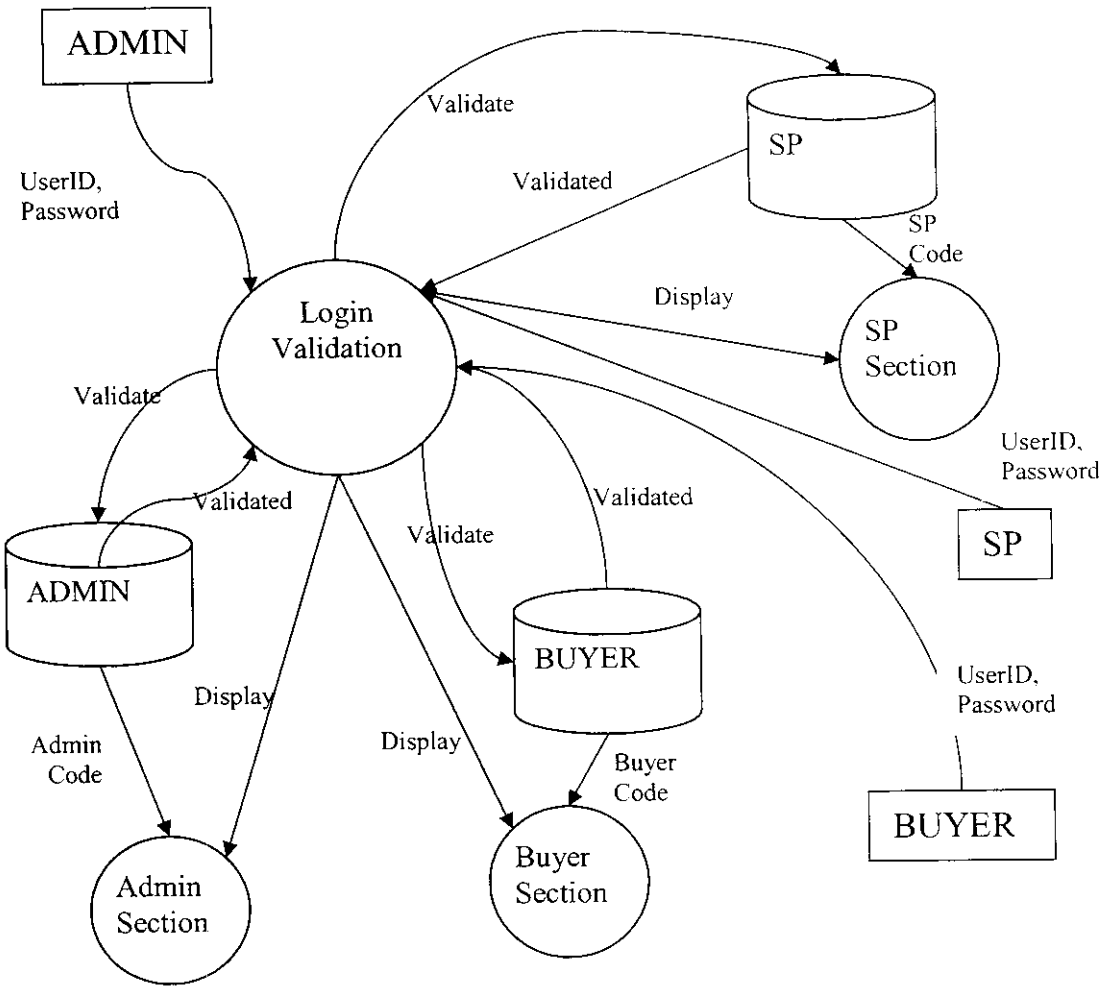
4.4.1 Context Diagram for STA



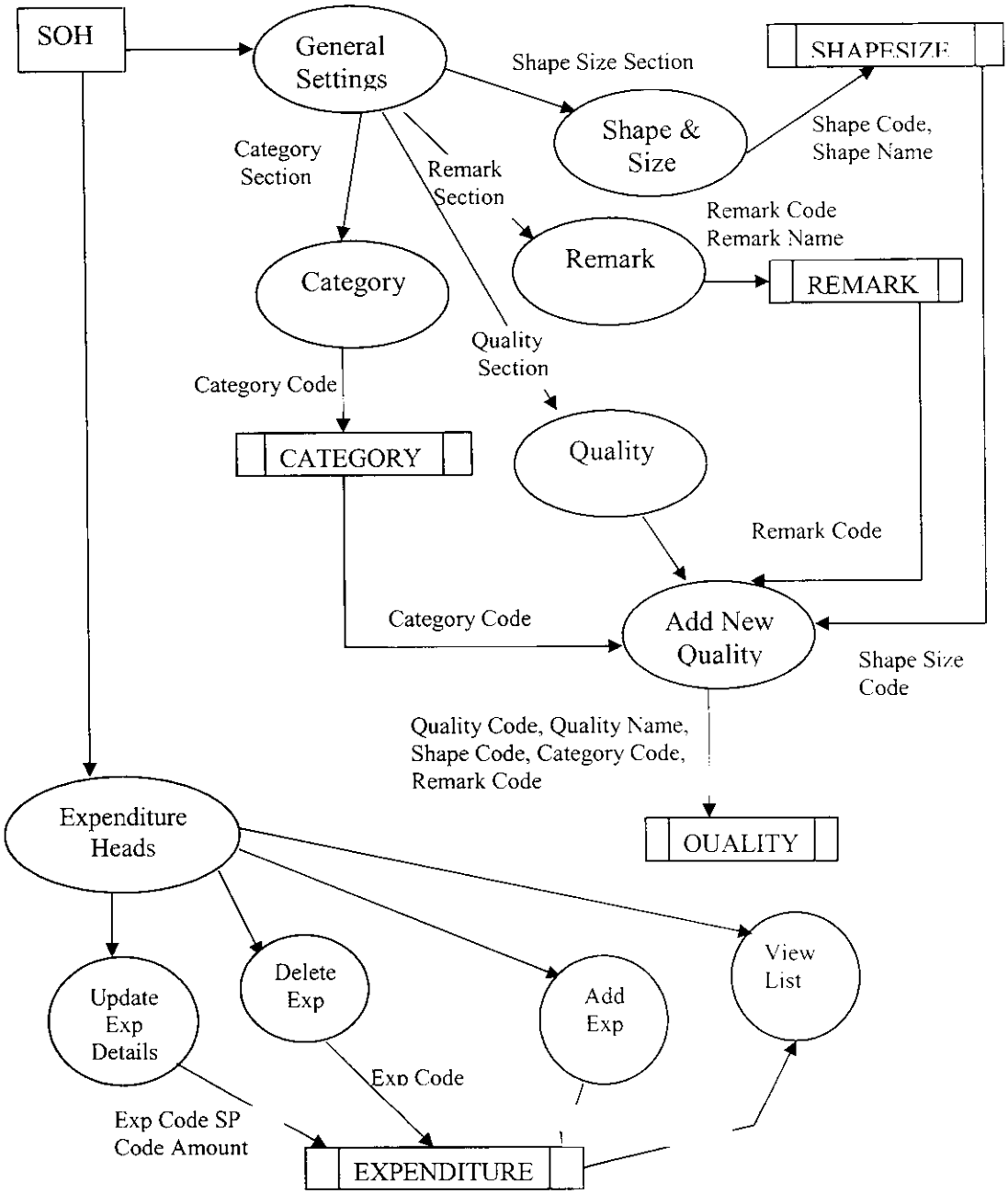
4.4.2 Entity Relationship Diagram [ERD]



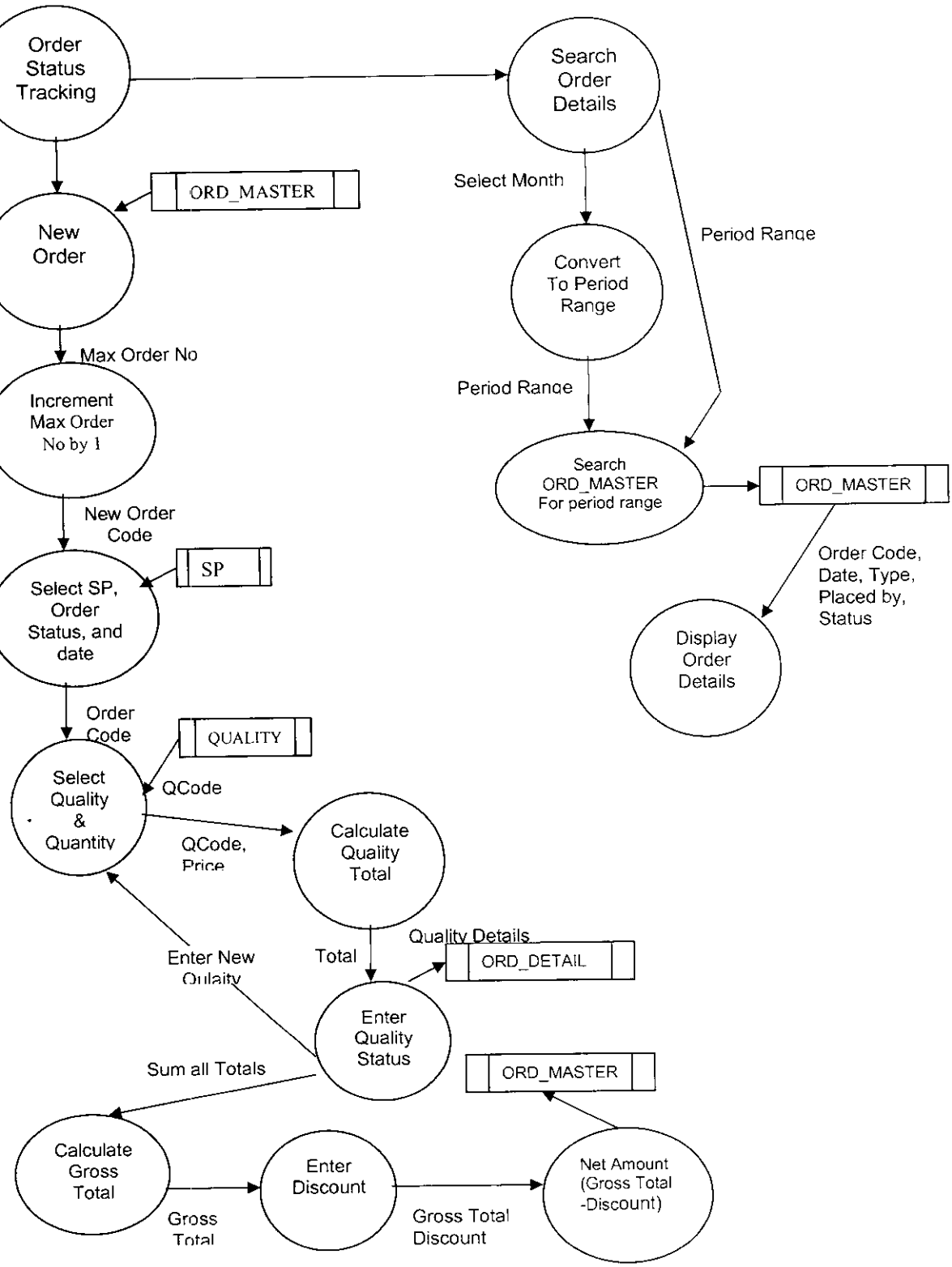
4.4.3 DFD for Login Process



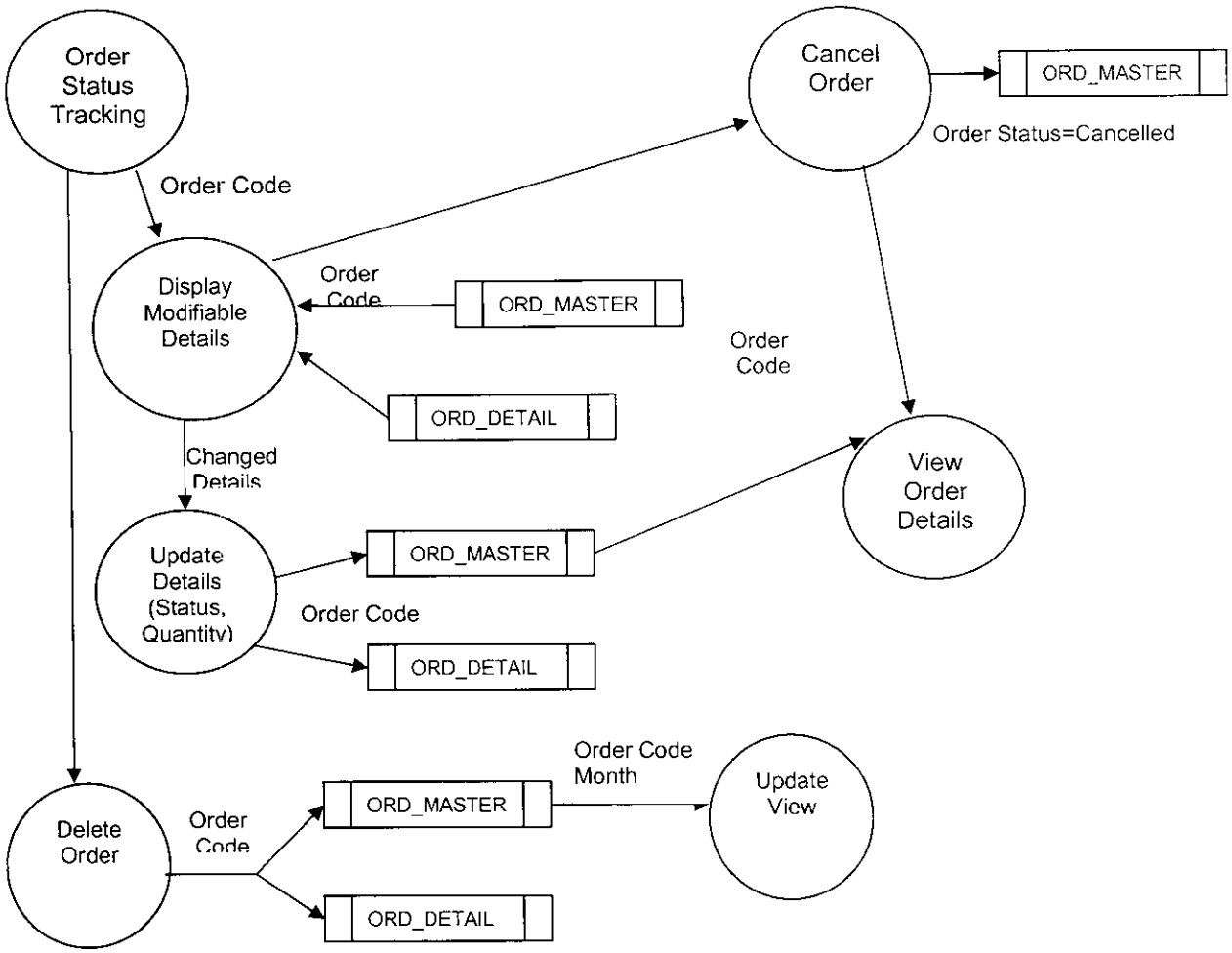
4.4.4 DFD for Category Management



4.4.5 DFD for Order Status Tracking

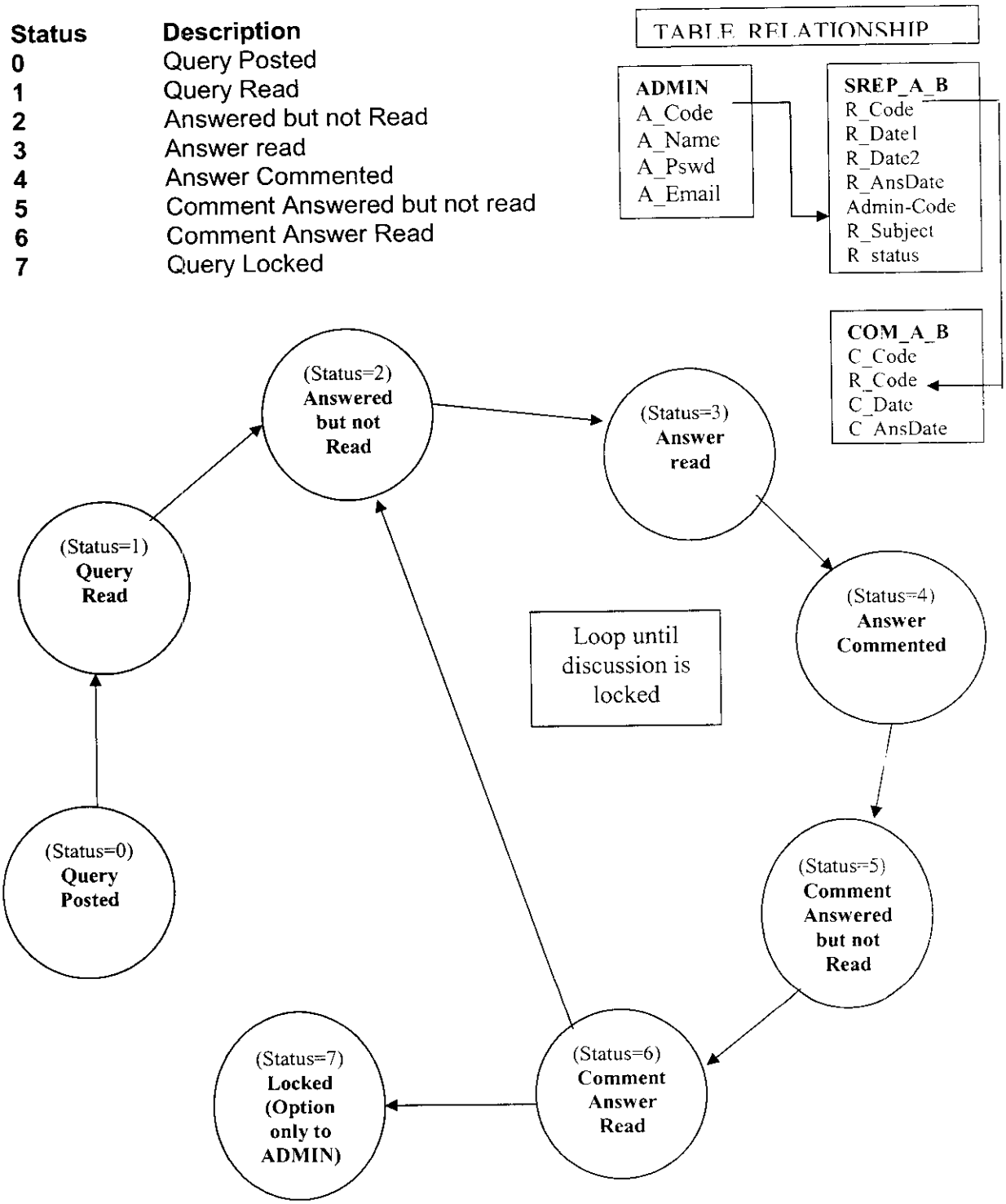


4.4.6 DFD for Order Status Tracking



4.4.7 Process flow of the *"Report Status"* during Special Reporting

Status	Description
0	Query Posted
1	Query Read
2	Answered but not Read
3	Answer read
4	Answer Commented
5	Comment Answered but not read
6	Comment Answer Read
7	Query Locked



4.5 Module Design

4.5.1 Category Management

The software is required to maintain various Categories, their underlying qualities (products) details, product parameters such as shape, size, color etc. Facility must be provided to add new Categories, new product parameters. This section is under the SOH who are facilitated to add, delete or modify any of the above details.

This module covers the following:-

- Add/Delete/Modify **Categories**
- Add/Delete/Modify **Shape & Size**
- Add/Delete/Modify **Remarks**
- Add/Delete/Modify **Quality**
- Add/Delete/Modify **Expenditure Heads**

4.5.2 Buyer/SP Detail Management

Buyers are categorized as direct buyers and induced buyers through Sales Person. The software must be capable of managing Buyers as a whole and Buyer to SP selectively. Provision must be provided add, modify or delete Buyers (Direct/Induced) or SP.

This module covers the following:-

- Add/Delete/Modify **Buyers**
- Add/Delete/Modify **Sales Person**
- Add/Delete/Modify **Buyer for SP [Induced Buyer]**
- Add/Delete/Modify **Cities for SP**

4.5.3 Sales Analysis

This module enables the SOH to draw sales analysis on a generic scale and also according to quality categories. It also facilitates the SP to perform his target reach and also specifically to a induced buyer. The analysis can be performed for a particular month or for a particular period

This module covers the following:-

- Conduct Sales Analysis for a **particular month** (SOH & SP)
- Conduct Sales Analysis for a **particular period** (SOH & SP)
- Conduct Sales Analysis on a **particular Quality** (SOH & SP)
- Conduct Sales Analysis for a **particular City – Sales** (Only SOH)

4.5.4 Special Reporting

Special Reporting can be considered to be a communication console for the direct buyers /SP to interact with the SOH. The console can be used by the buyers/SP to have a single layered communication directly with the SOH. The console enables cost effectiveness in the sales processing of the system by providing a cheap and easy solution for establishing communication. This thus makes transaction processing transparent and placeholder for recording communication.

This module covers the following:-

- **SOH** can Add/Delete/Modify/Lock discussions with **Buyers & Sales Person's.**
- **Sales Person** can Add/Delete/Modify discussions with **SOH**
- **Buyer** can Add/Delete/Modify discussions with **SOH**

4.5.5 Address Book & Internal E-mailing System

The software is provided with an Internal Address Book and Emailing System. The address Book can be used to verify buyer addresses and maintain contact information. It can also be used to send mail-merged messages to buyers and company –general instructions to Sales Personnel.

This module covers the following:-

- SOH, Sales Person and Buyer can **store contact information**
- The address book is **integrated** with the messaging system
- Upload images such as **textile drawings** through the system

4.5.6 Order Status Tracking

The buyer and the SP can keep track of the various orders placed through this software. They can obtain detailed reports on the status of their orders, order progress, comment on the order. Facility is provided to conduct monthly or periodic searches on the order placed. Orders can be marked as cancelled, completed and not completed.

This module covers the following:-

- View orders status for a **particular month** (SOH & SP)
- View orders status for a **particular period** (SOH & SP)
- View orders status for a **particular Sales Person or Buyer** (SOH)
- View order status for a particular **dispatch destination**(SOH)

4.5.7 Expenses Statement

This module details the various expenditures incurred by the Sales Person while conducting his activity. The process is as follows, upon incurring expenses the SP enters an expenses statement that is sent to the SOH. The SOH in turn verifies the expenditure and approves the expense. The approval may sometimes even be lesser than that stated which is remarked by the SOH. The SP immediately comes to know the amount he will be credited for.

This module covers the following:-

- Maintain various **Expenditure Heads**
- Generate reports for each **Sales Person Expenses Statement**
- View Expenses Statement for a **particular Expenditure Head**

System Implementation & Testing

5.1 System Implementation

A crucial phase in the software development life cycle is the successful implementation of the new system. Implementation takes place once unit testing and integration testing of modules are complete. The system need to be deployed at the onsite server and will have to be tested from the client end.

During Implementation careful attention must be paid while deploying the files in the server. It is business practice to replicate the same directory structure while working in developing environment. The WEB-STRUCTURE is as follows

Amul.net (Root Directory)
|--**DB** Folder (SQL Database)
|--**HTTPDOCS** Folder– [*HTML & Script Files* **(.asp, .js, .css)**]
|---**Images** (Store Images)
|---**Admin** (Stores Admin related pages)
|---**SP** (Stores SP related pages)
|---**Buyer** (Stores Buyer related pages)

Issues Faced while Implementing

1. The code needs to be checked for connection compatibility issues. The server must support the specified drivers used.

2. Any object that is used while coding should compulsorily be closed and set to null. This enables the stability of the asp engine as well as the server on which the script is being executed.

3. The database use DSN mode of connectivity, this is done to ensure user connection issues such as tying down the number of connections in the connection pool and maintaining only one database. This is done by the server administrator with the necessary parameters regarding connectivity provided by the clients.

5.2 System Testing

System Testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. It is noteworthy to mention my **Project Leader's** stress on the fact that a **minimum of 40%** of total project effort was expended on testing which proved right.

The process of testing is done with the intent of **finding an error** in the system or an **undiscovered bug** in the system. Testing demonstrates that software functions appear to be working according to specification and that performance requirements appear to have been met. Additionally the data collected for testing provides a good indication of **software reliability** and some indication of **software quality**.

A lot of importance was given to the Testing and Maintenance Phase. I was educated on the fact that all tests should be traceable to the **Customer Requirements** and this formed the basis of testing the software. Both Black Box testing and White Box testing was performed.

5.2.1 White Box Testing

White Box testing, sometimes called glass-box testing is a test design method that uses the control structure of the procedural design to derive test cases. White Box testing mainly included **Control Structure Testing,** which is simple and highly effective.

- **Condition Testing:** Condition testing is a test case design method that exercises the logical conditions contained in a program module. It focuses on testing each condition in the program

- **Data Flow Testing:** Data flow testing method selects paths of a program according to the locations of definitions and uses of variables in the program

- **Loop Testing:** Loops play a major role in the construct of Program Code. Loop Testing technique focuses exclusively on the validity of loop constructs. Three types of loops were accounted for namely simple loops, concatenated loops and nested loops.

5.2.2 Black Box Testing

Black Box testing, focuses on the module in its entirety, as a "black-box", with no interest shown as to how it has been developed. **This testing was carried out by the testing department.** The intention here is to 'break' the system by testing it to possible conditions wherein the software throws up 'errors' in its execution. The type of testing chosen in black-box testing was "Functional Testing" of the software. Here the test conditions / test cases are based on the functional requirements/ specifications of the application. Though White Box testing has been performed it does not guarantee to test all the functional requirements. Black Box testing is not an alternative but is likely to uncover different types of errors. The duration for performing Black Box Testing on STA was 2 man days.

Categorization of Errors using Black Box testing

1. Incorrect or missing functions
2. Interface errors
3. External Database errors
4. Performance Errors
5. Initialization and Termination Errors

5.2.3 Testing Strategy

- **Verification and Validation**
  - **Verification** refers to the set of activities that ensure that software correctly implements a specific function. "Are we building the product rightly?"
  - **Validation** ensures that the software has been traceable to the Customer Requirements. "Have we built the right product?"

- **Unit Testing:** The developer did Unit testing in order to focus even on the smallest unit of software design. With adequate guidance from the Project Leader and Project Guide insights into this testing methodology was obtained and were classified as follows

  1. Boundary Condition Testing
  2. Interface Testing
  3. Validation Testing
  4. User Help Testing
  5. Module Level Data Testing

- **Integration Testing:** Unit Test was performed in order to test for proper working of an each module individually. Integration Test was performed to test for inadvertent loss of data. This test uncovers errors associated with interfacing. The whole software is tested as a one unit. This test was done by the testing department.

- **Performance Testing:** The testing department for the viability of the products real time usage did Performance Testing. This test is done to ascertain the software's runtime performance. Various test cases were prepared to conduct performance test.

Conclusion

6. Conclusion

The Sales Tracking and Automation [STA] system was implemented as a first phase "dry run test" for the clients to test whether the system has satisfied all their requirements. The system was found to be satisfactory and catered to all their specification such as flexibility, performance, understandability, security etc.

Ample provision has been made so that the system can be extended and flexibly updated to incorporate business changes. The system has been tested by OCS - SQA team and noteworthy to mention that the second phase namely integration testing is going on. The testing process was mainly carried out in order of Unit testing, Integration testing and Performance testing.

Developing the system gave me an insight into developing solutions for real world requirements. I would like to thank OCS for giving me an opportunity for allowing me to be present with the project leader during all interactions with the client and also made be realize how articulate requirements must be and also the need to freeze requirements for development purpose.

Documents were framed in order of Customer Requirements Document-> System Requirement Specification-> High Level Design ->Low Level Design -> Test documents->User Manual. The process of documentation helped me understand the niche aspect of "traceability" where changes to the system were traceable until the Customer Requirements Document and vice versa.

The system will also go into further enhancement within the next 6-12 month period to integrate further business activities namely financial activities and a more enhanced reporting system using Crystal Reports.

Scope for Future Development

7. Scope for Future Development

Though the Sales Tracking and Automation system is well integrated and satisfies the client requirements, it can be further enhanced to be more informative. The system can be enhanced with **more facilities to search** and **generate more complex reports.**

The system features expenses statement which can be extended to incorporate a more full fledged financial analysis module that integrates Expenses with **fund flow** and **cash flow statements**.

The sales analysis section can be further modified to generate graphs and procure statistics that help the sales person understand his performance and Key Process areas (KPA) that need to be given attention. The order tracking system can give more details such as the **time taken to completion**, **daily quality produce plan**. The order tracking system can be integrated with inventory control system and **estimates reorder level, production capacity** etc.

The system can be integrated with a **sales forecasting** and analysis module to generate a sales forecast, market targets, and economic order quantity .These reports will aid the top level management and Sales Person to complement each other's activities ensuring the organization meets its periodic goals.

Though this is just a suggestion without a perspective on feasibility taken into account, the system could have a **WAP** enabled feature that could integrate the special reporting feature to the sales person on mobile.

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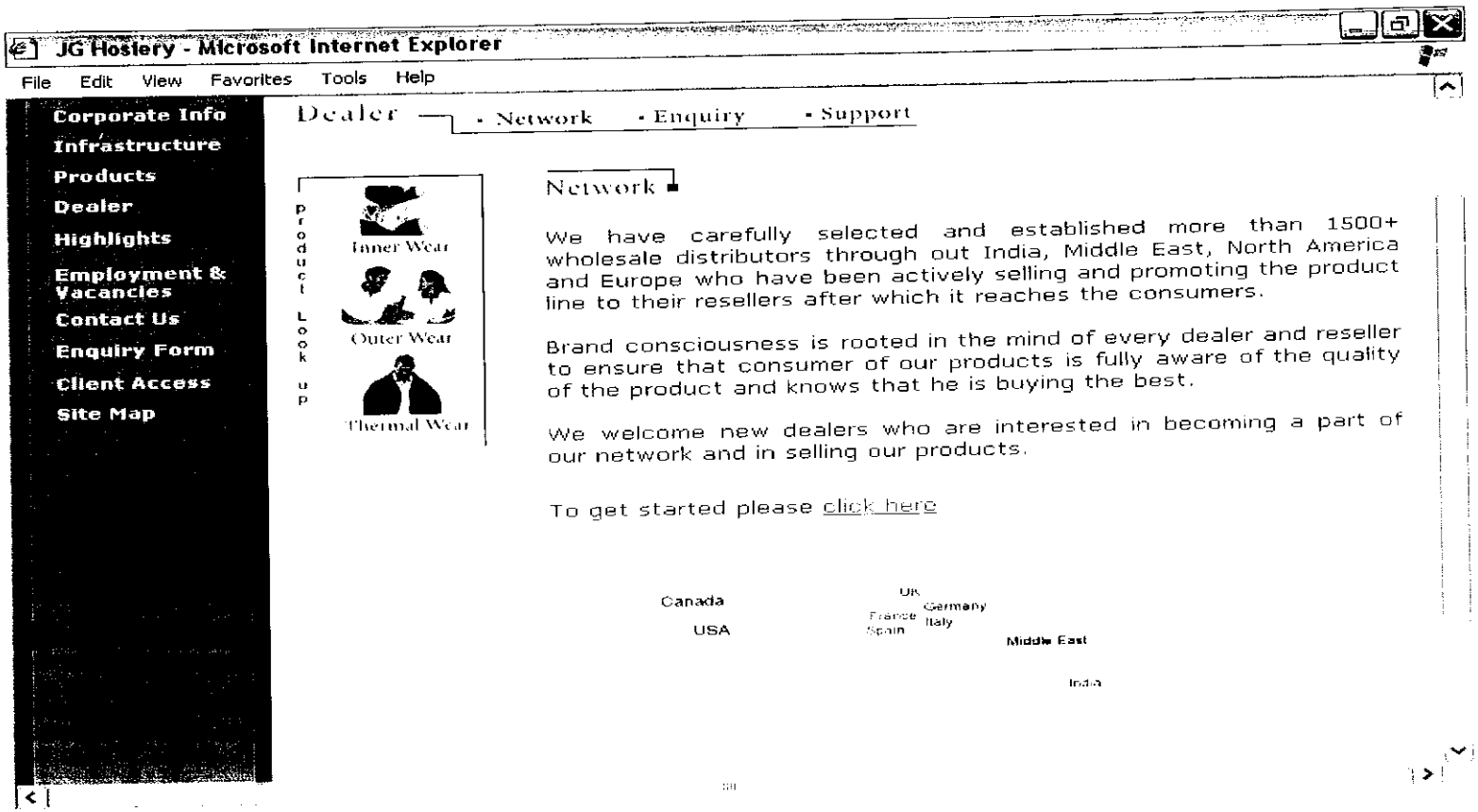
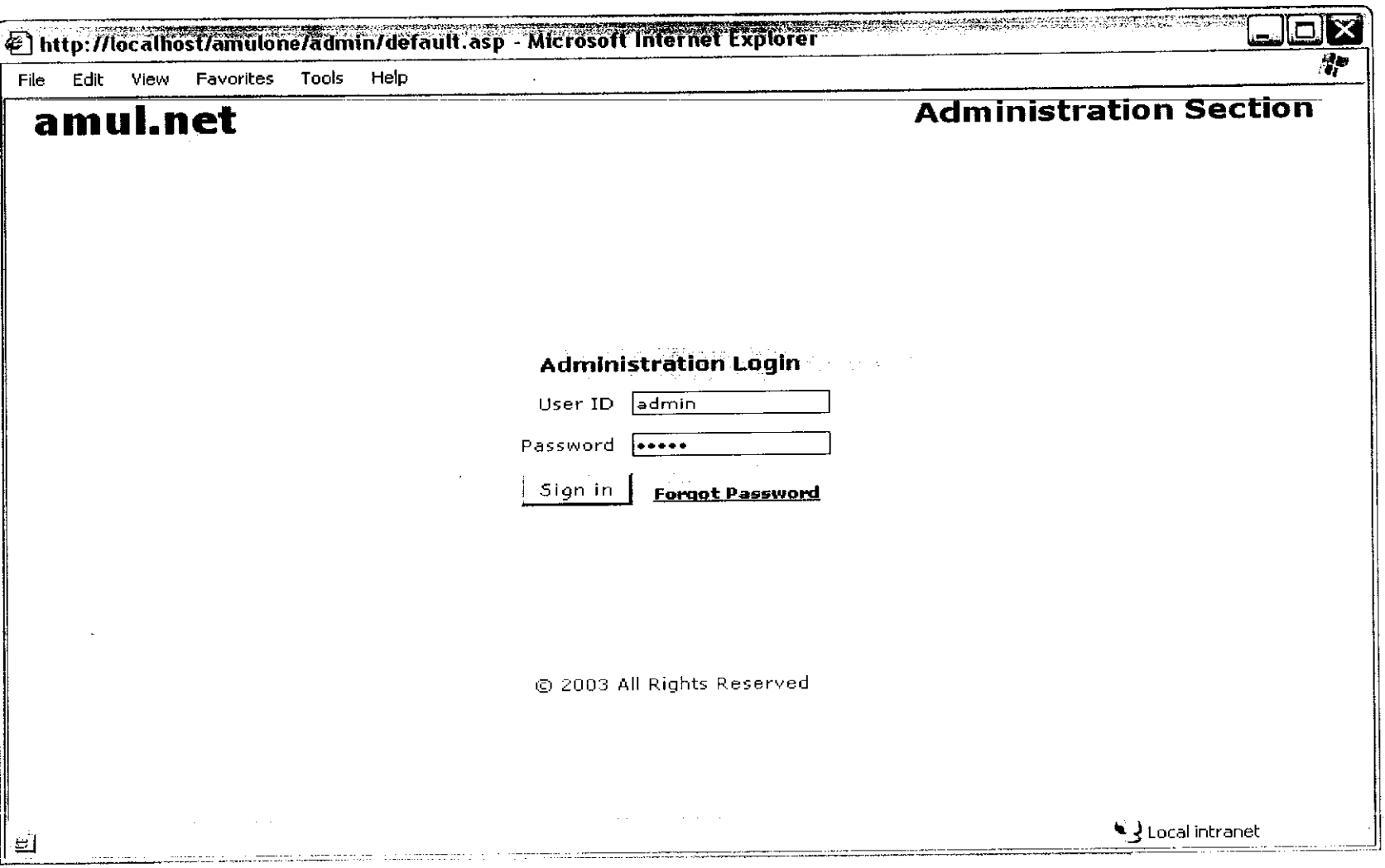
Appendix

Sample Screens

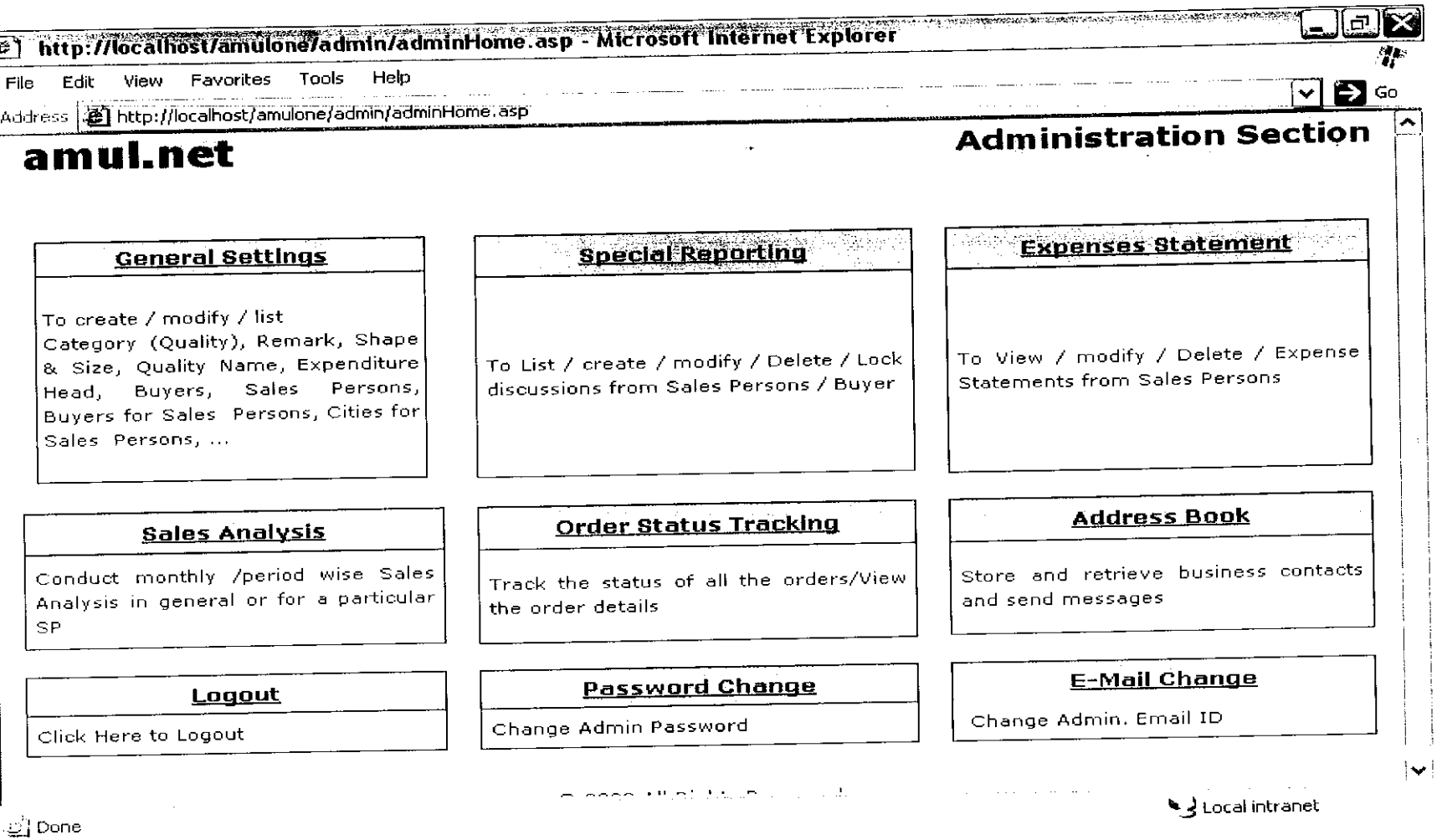
Screen 1: **Client Access** Page to access **amul.net**



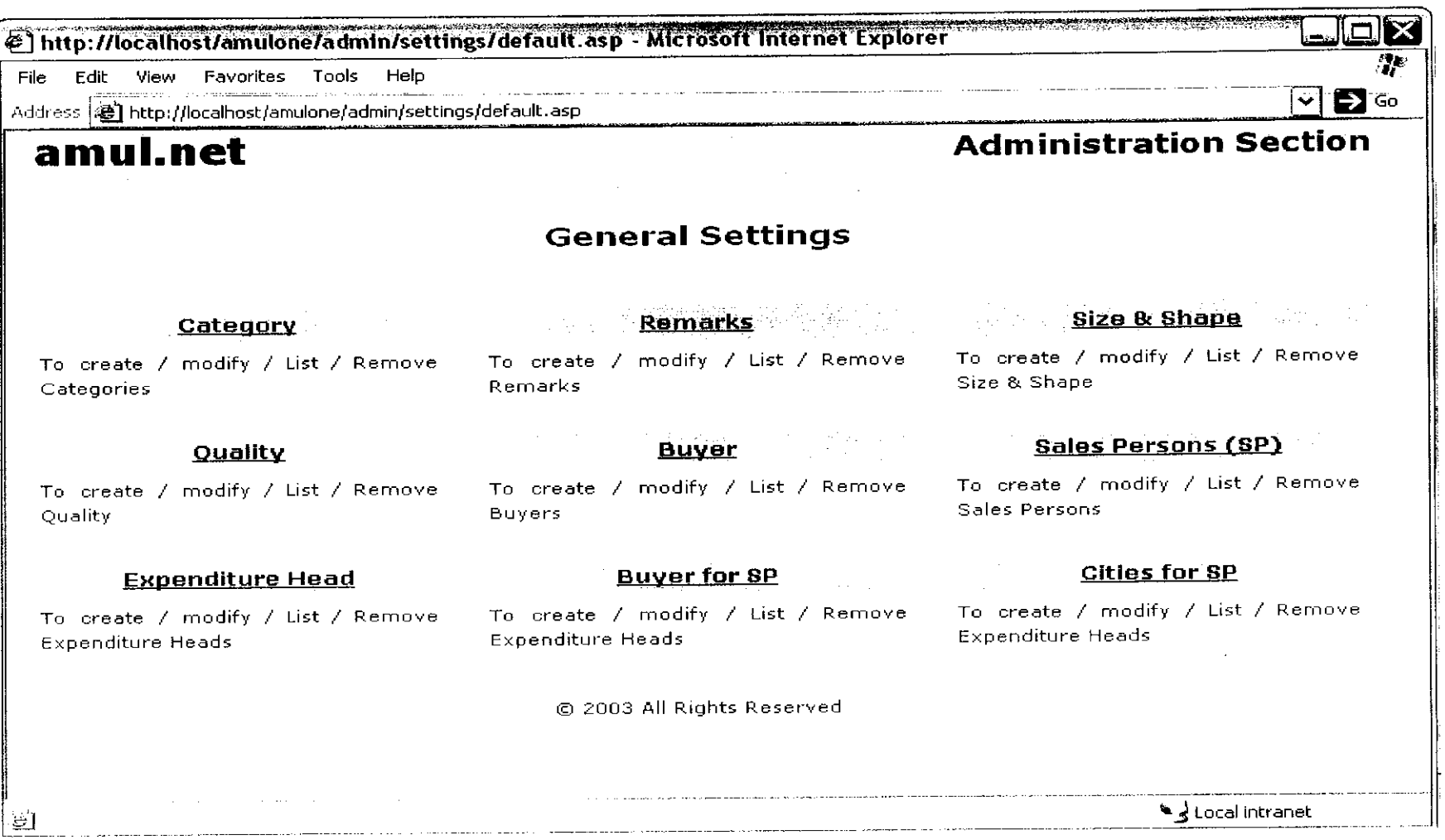
Screen 2: Administration Section – **Login Screen**



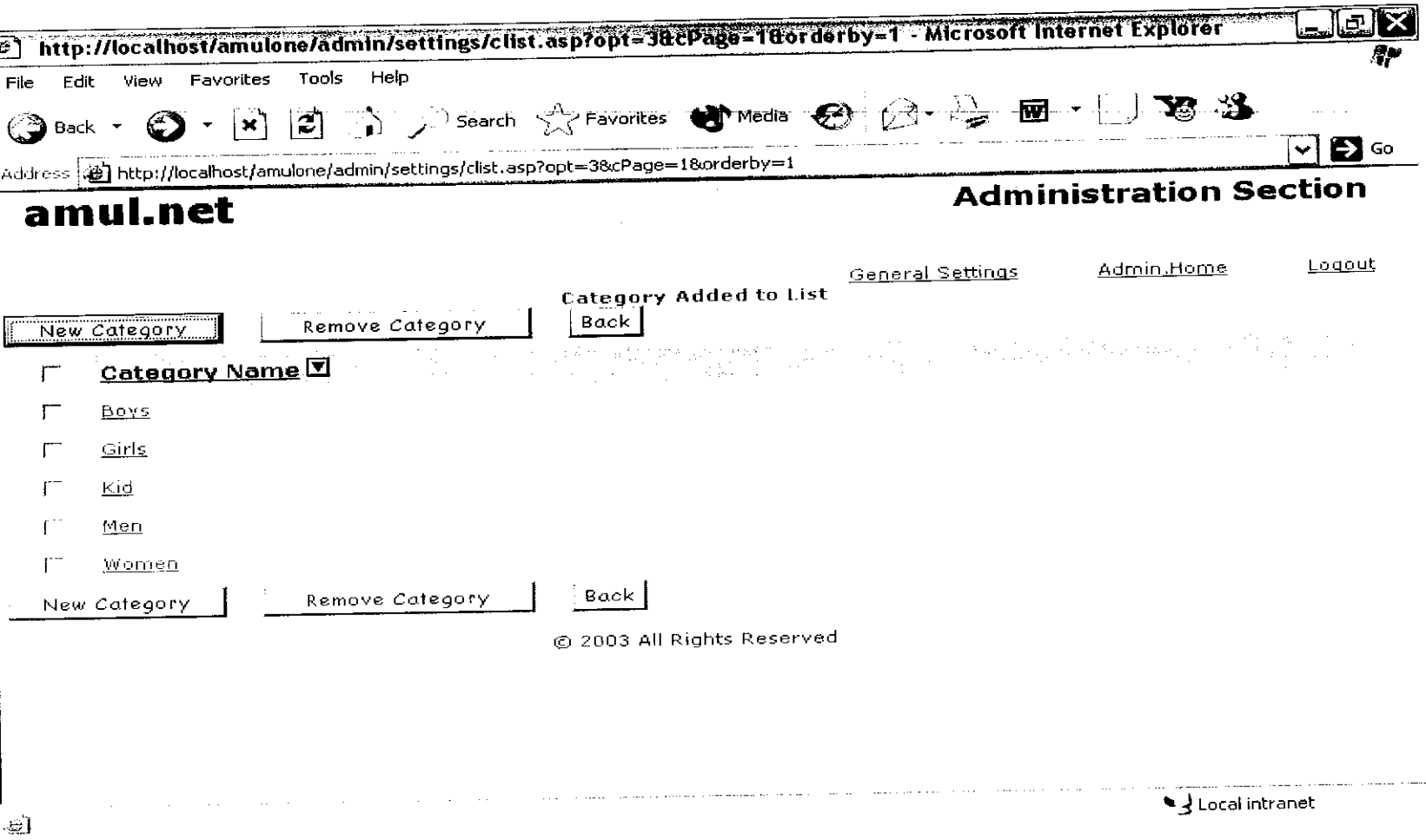
Screen 3: Administration Section – **Admin Home**



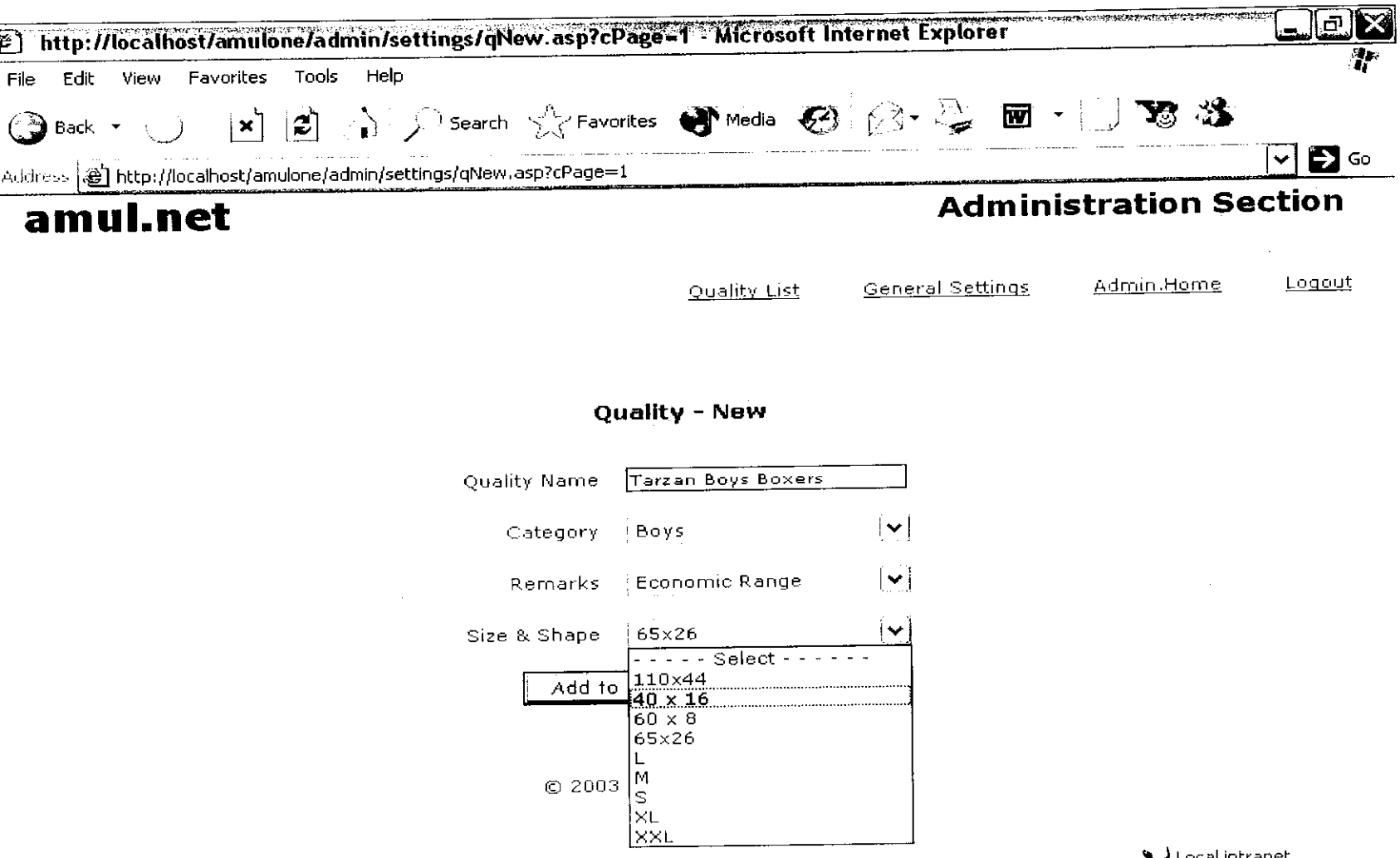
Screen 4: Administration Section – **General Settings**



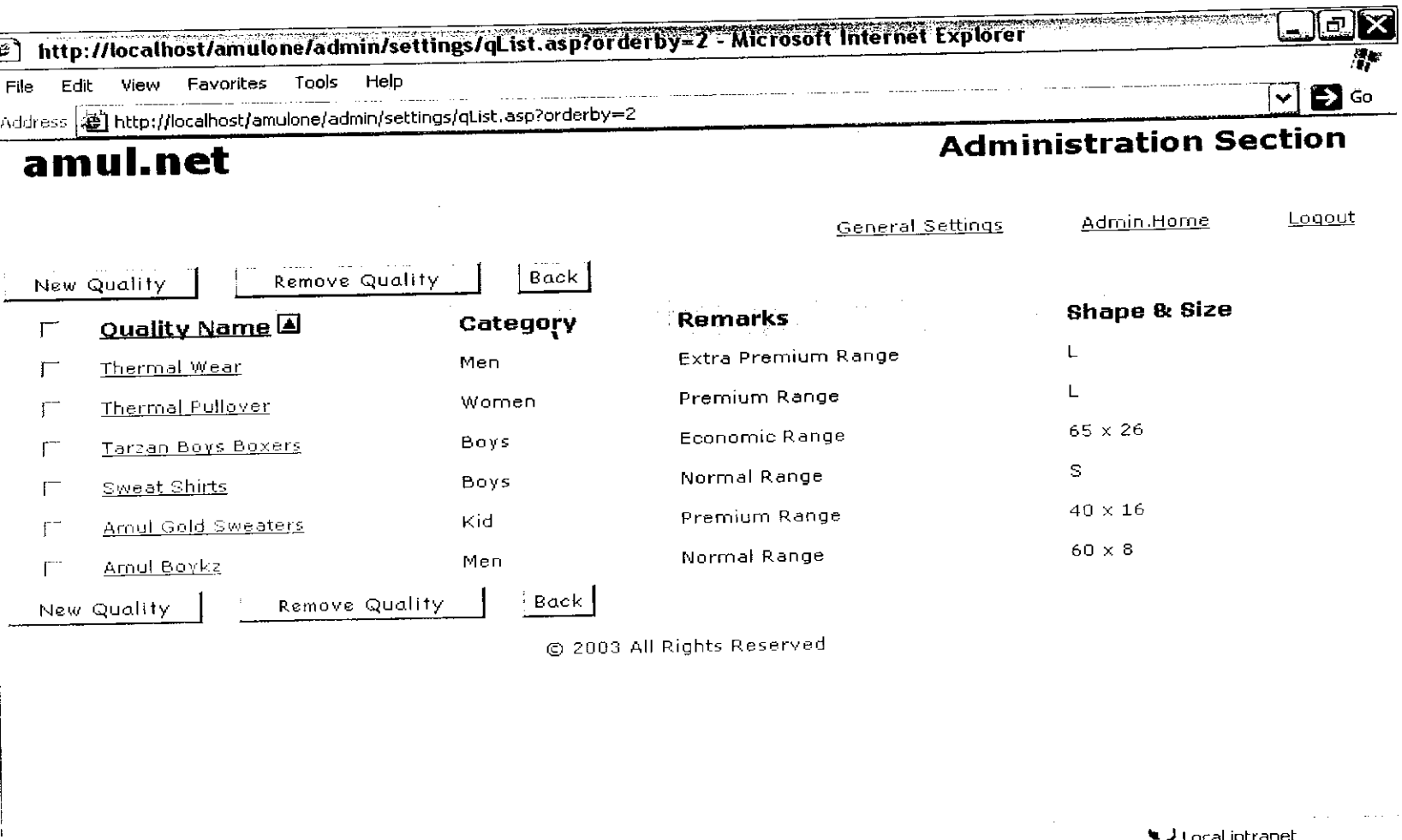
Screen 5: Administration Section – **Category Listing**



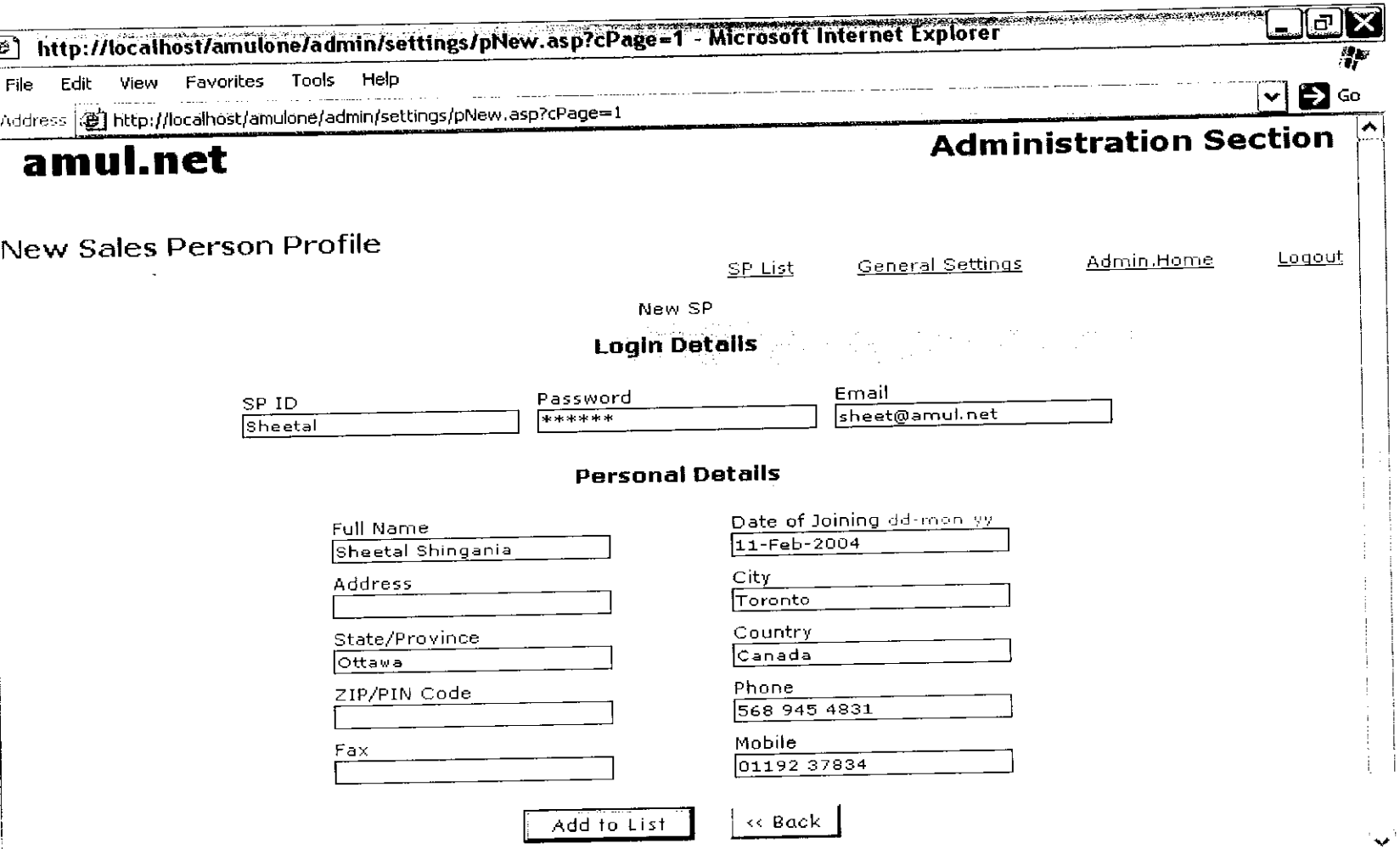
Screen 6: Administration Section – **Add New Quality**



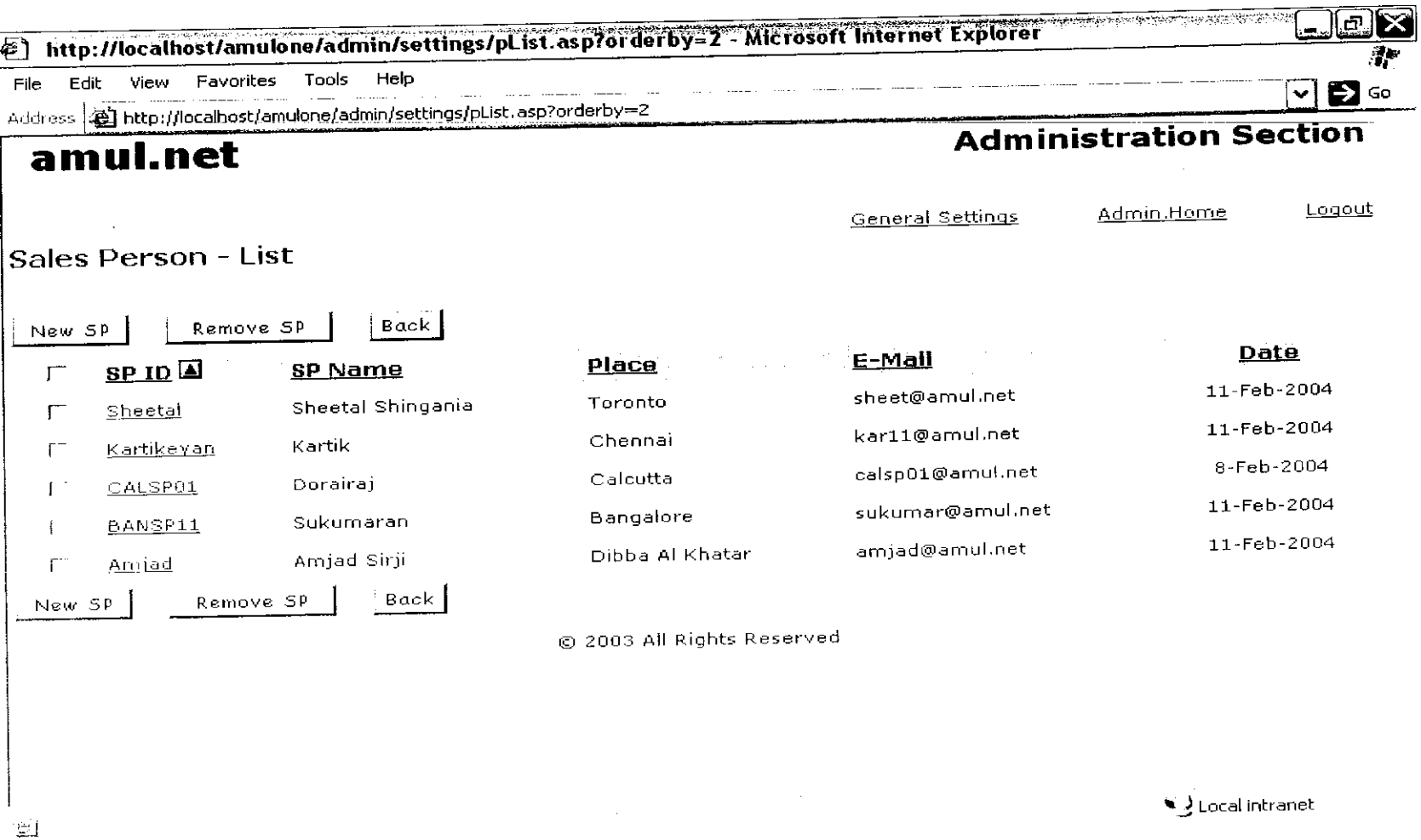
Screen 7: Administration Section – **Quality List**



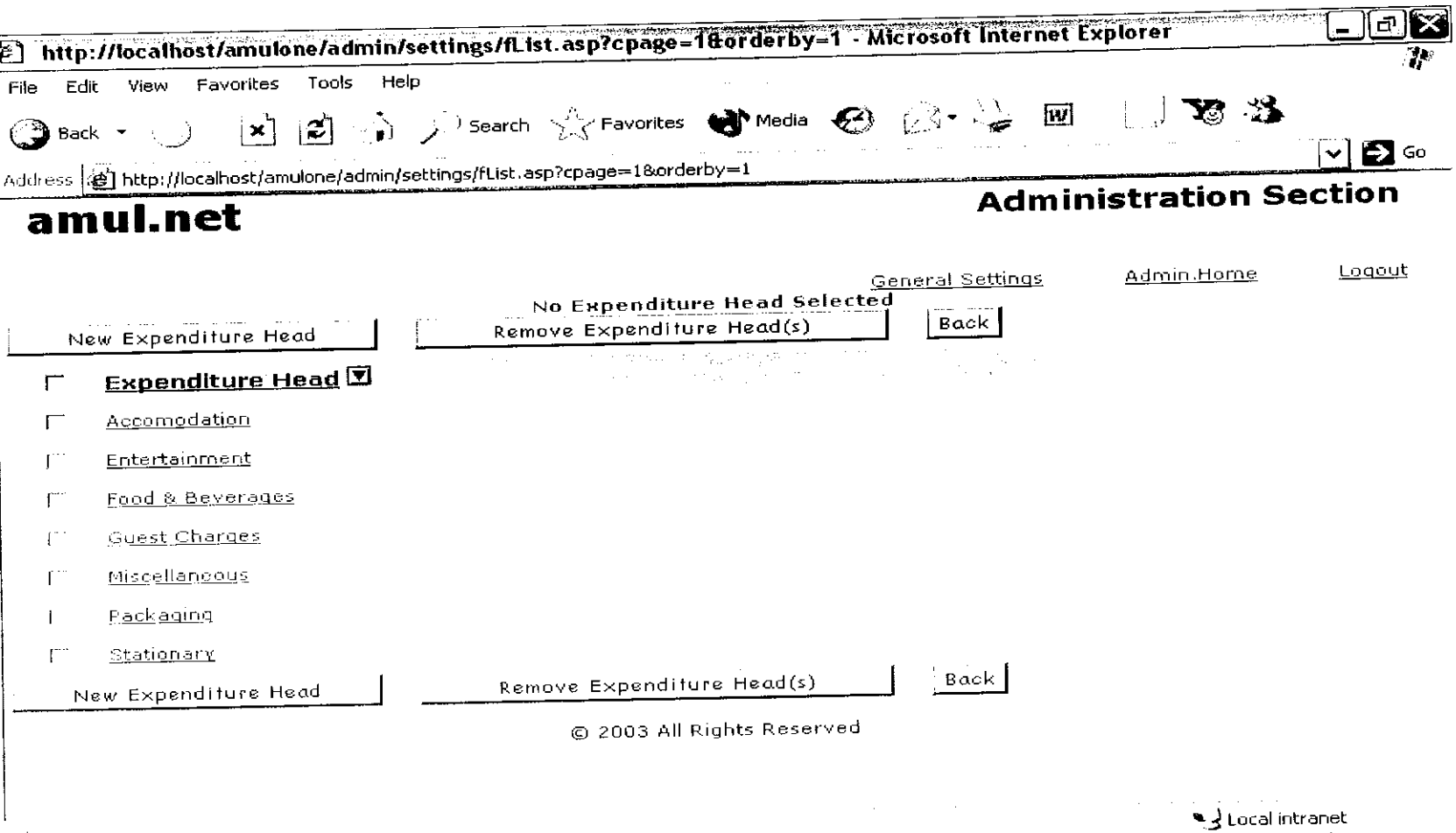
Screen 8: Administration Section – **Add New Sales Person Profile**



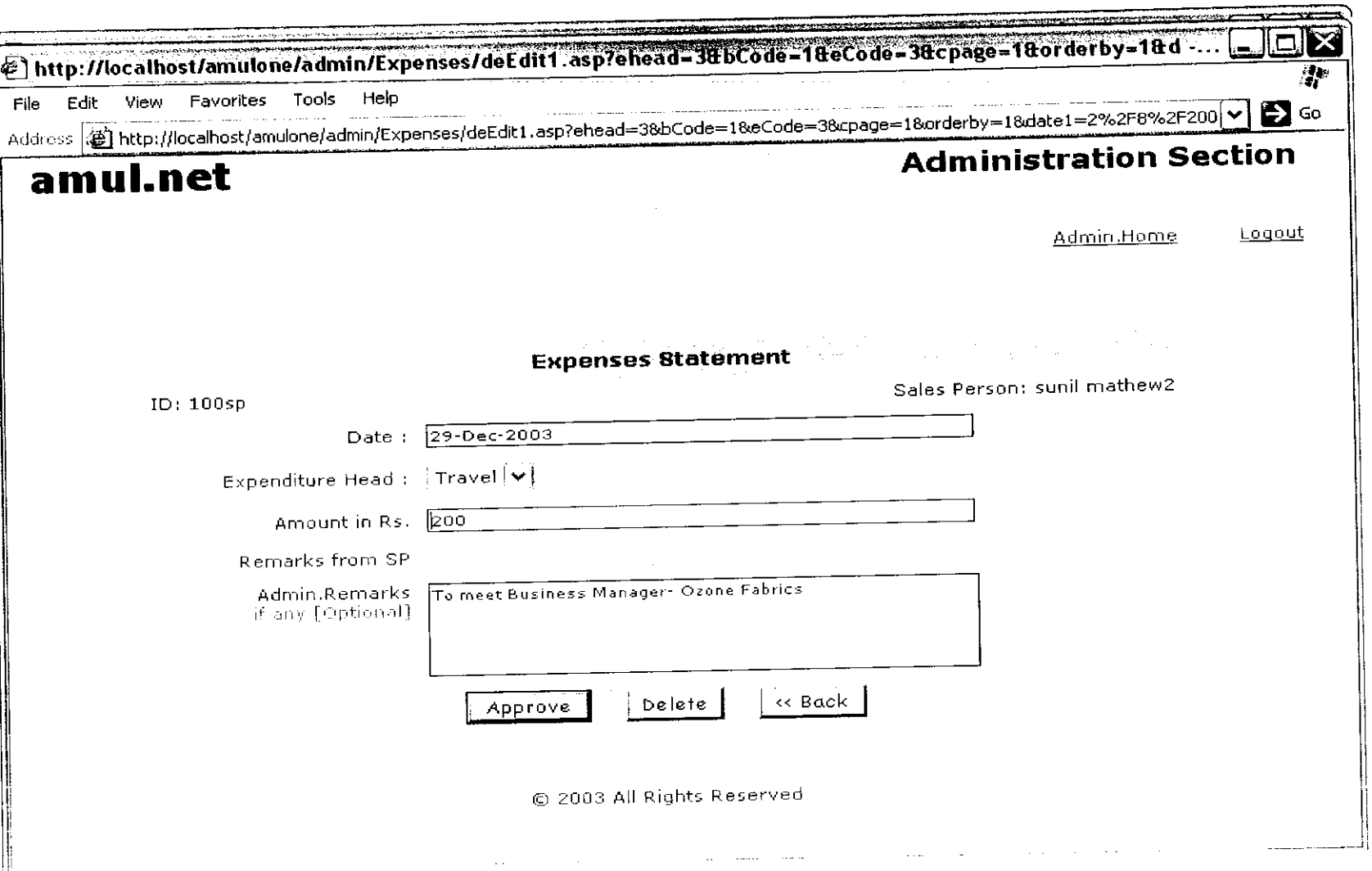
Screen 9: Administration Section –**Sales Person List**



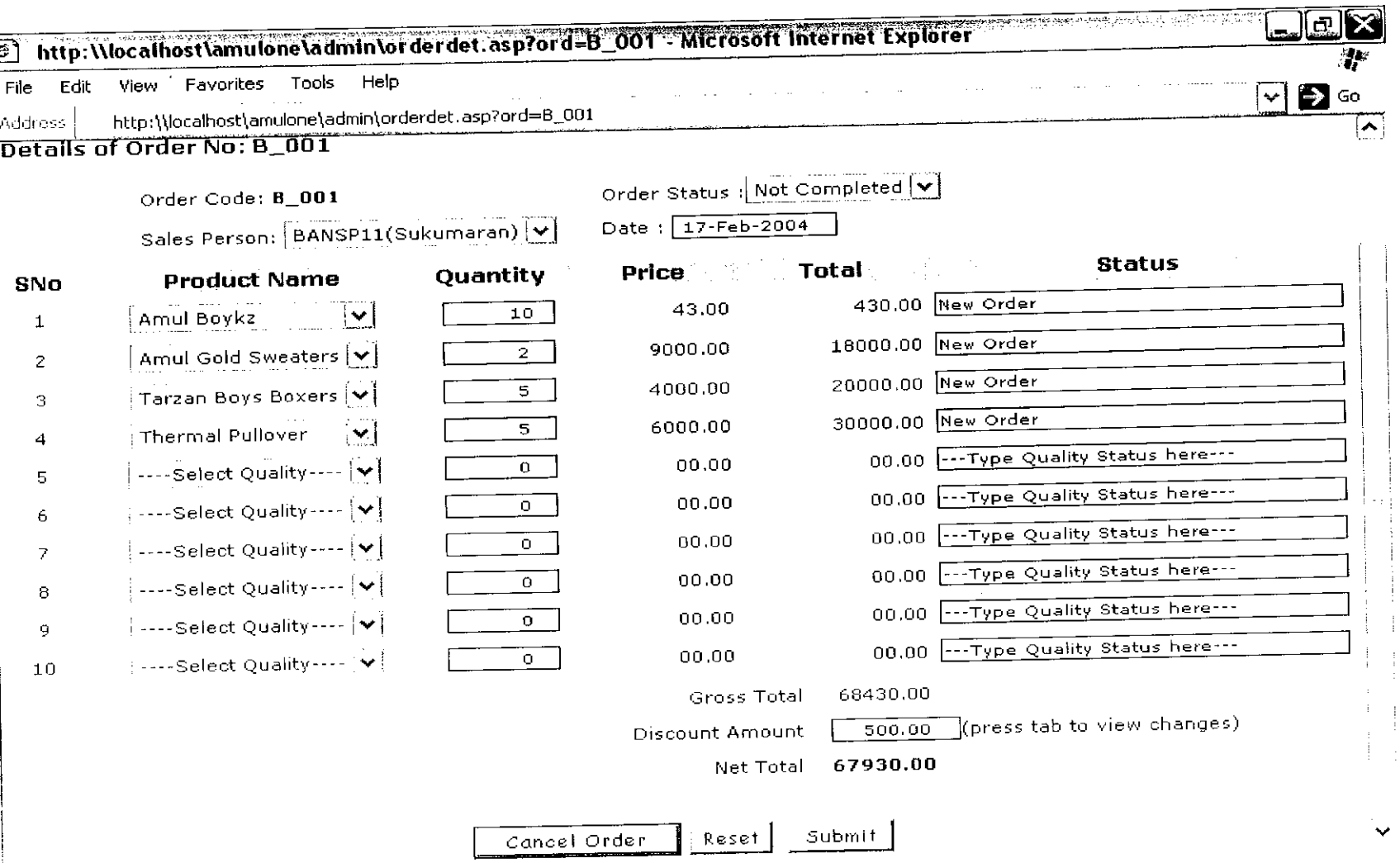
Screen 10: Administration Section –**Expenditure Heads**



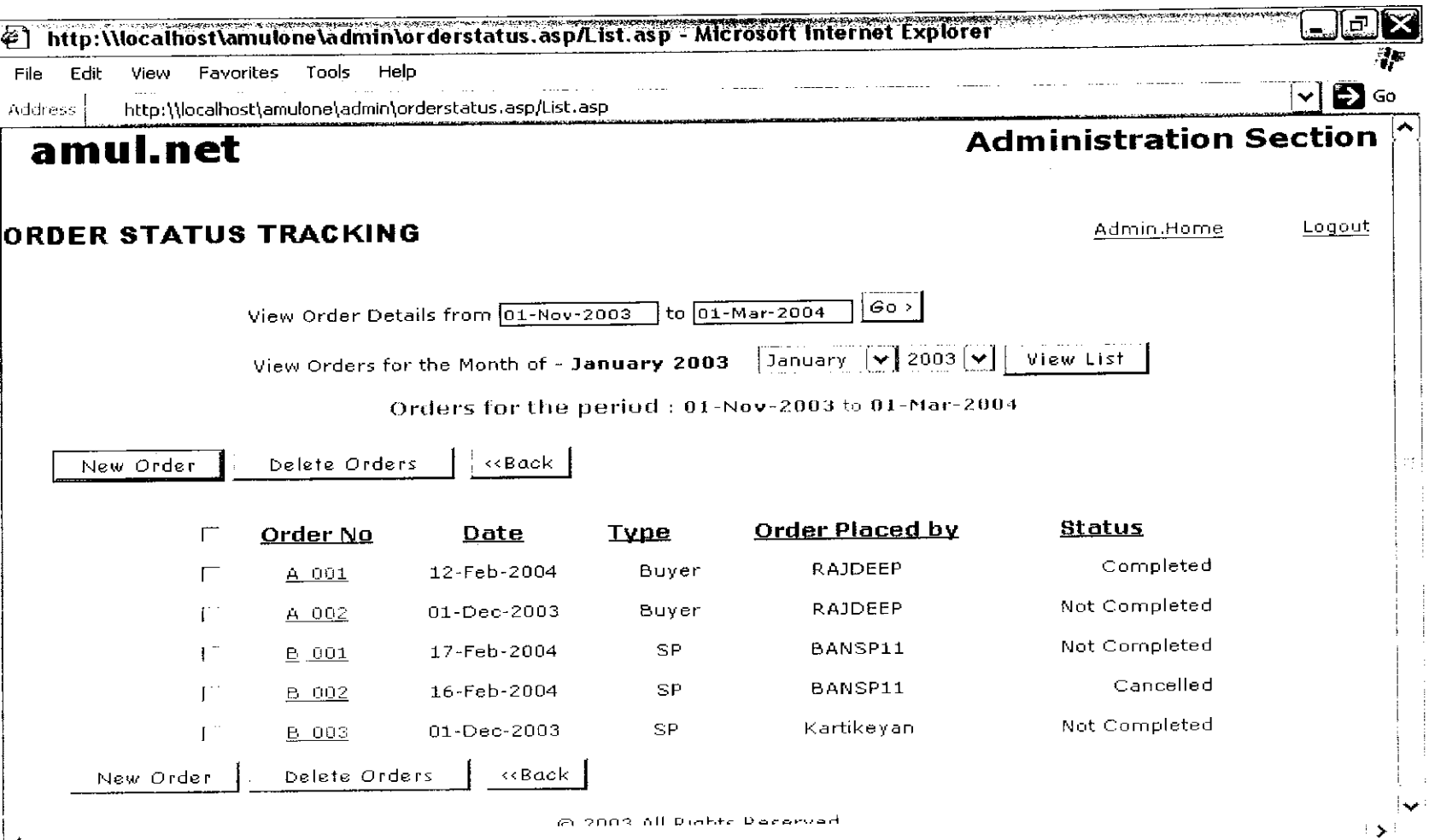
Screen 11: Administration Section –**Expenses Statement of SP being approved**



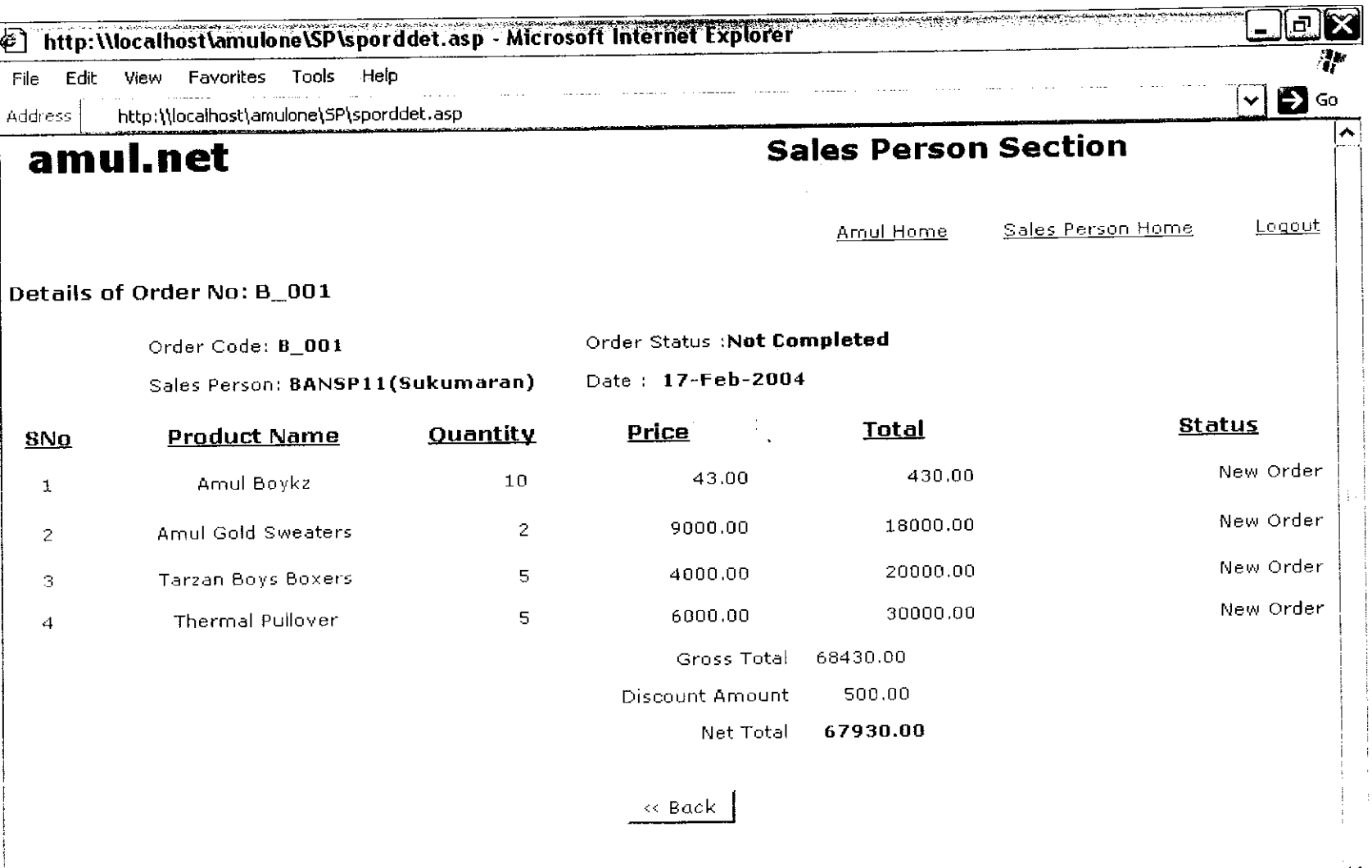
Screen 12: Administration Section –**New Order Placement**



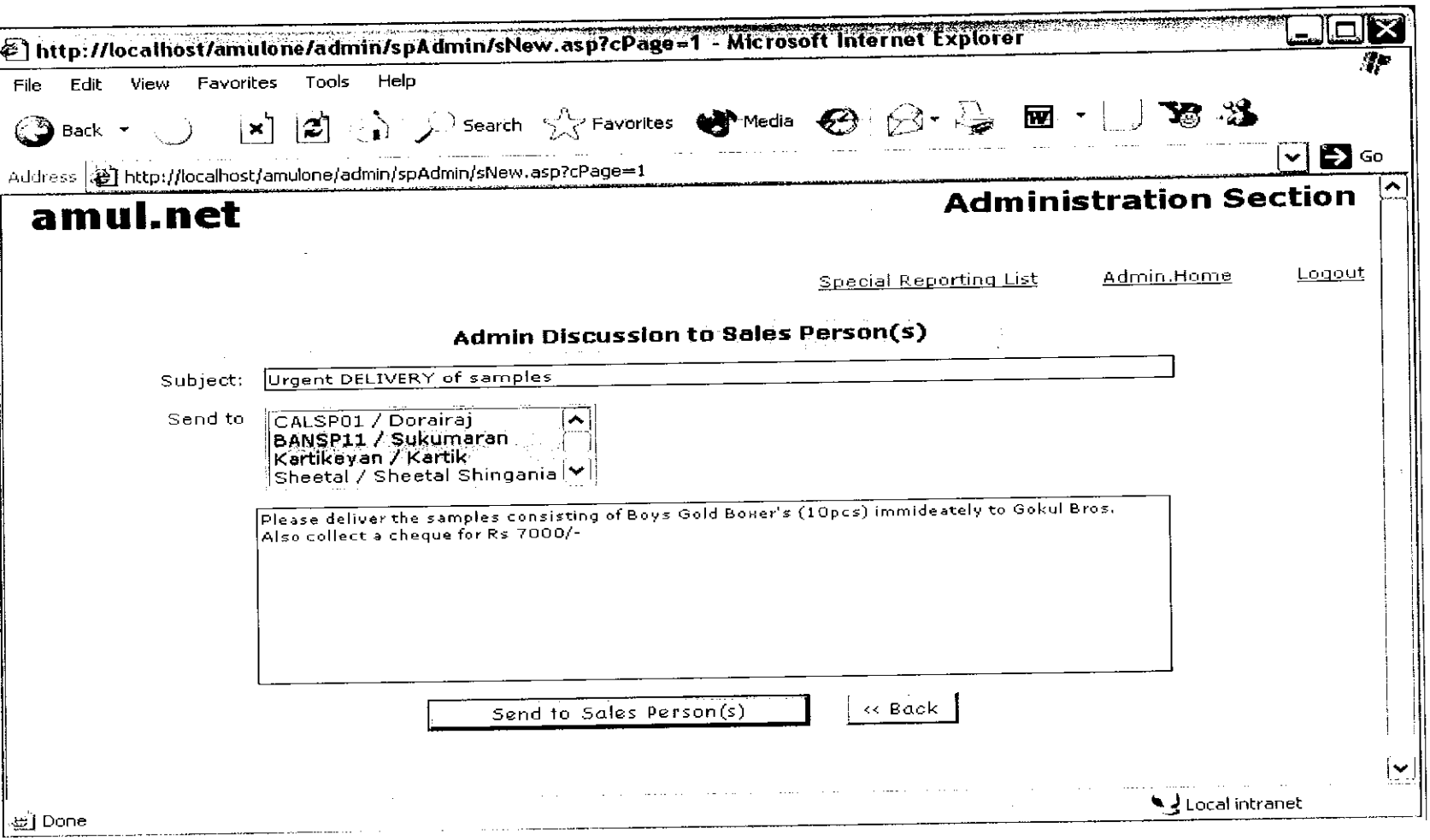
Screen 13: Administration Section –**View Orders placed for a Period**



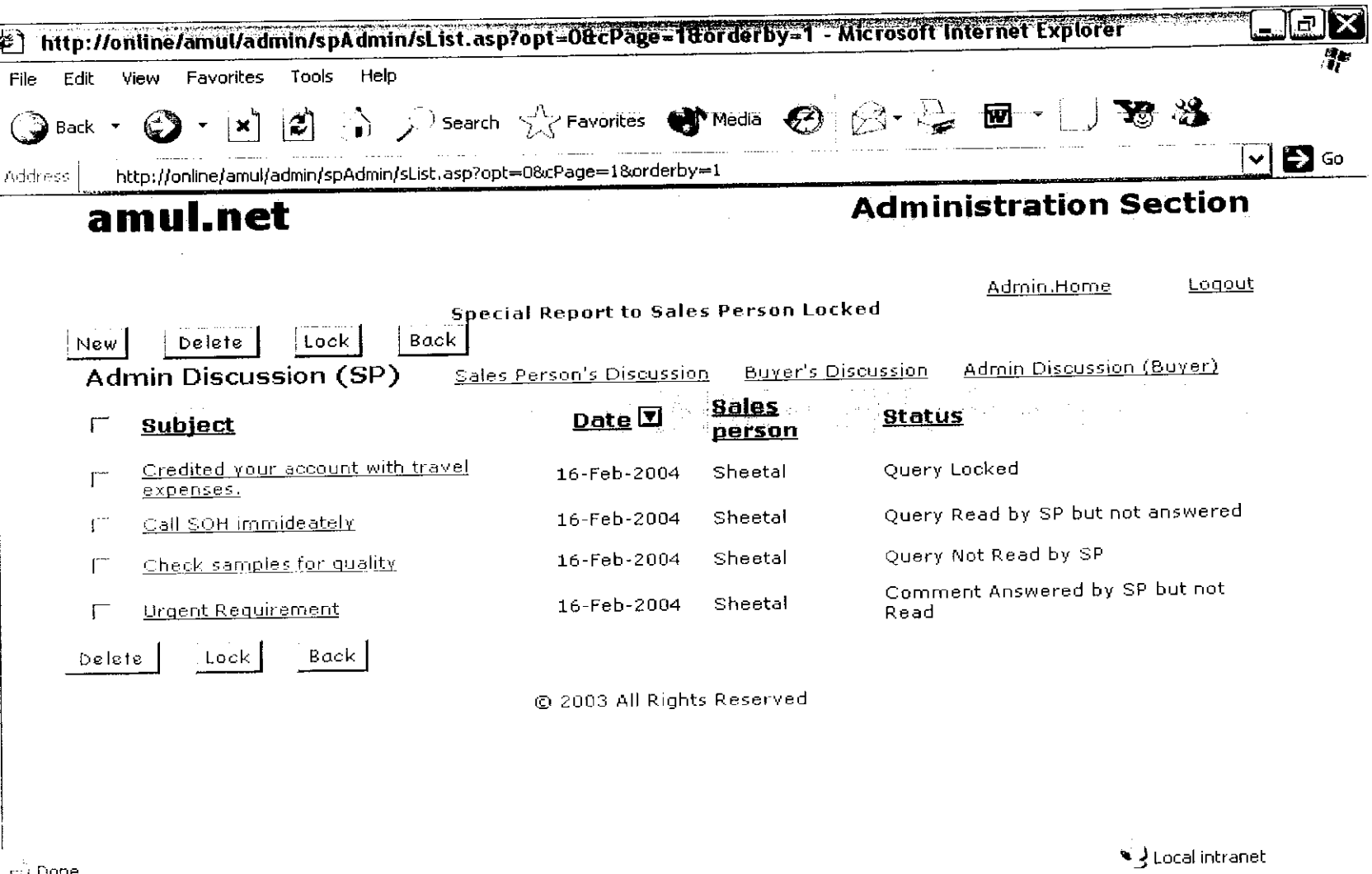
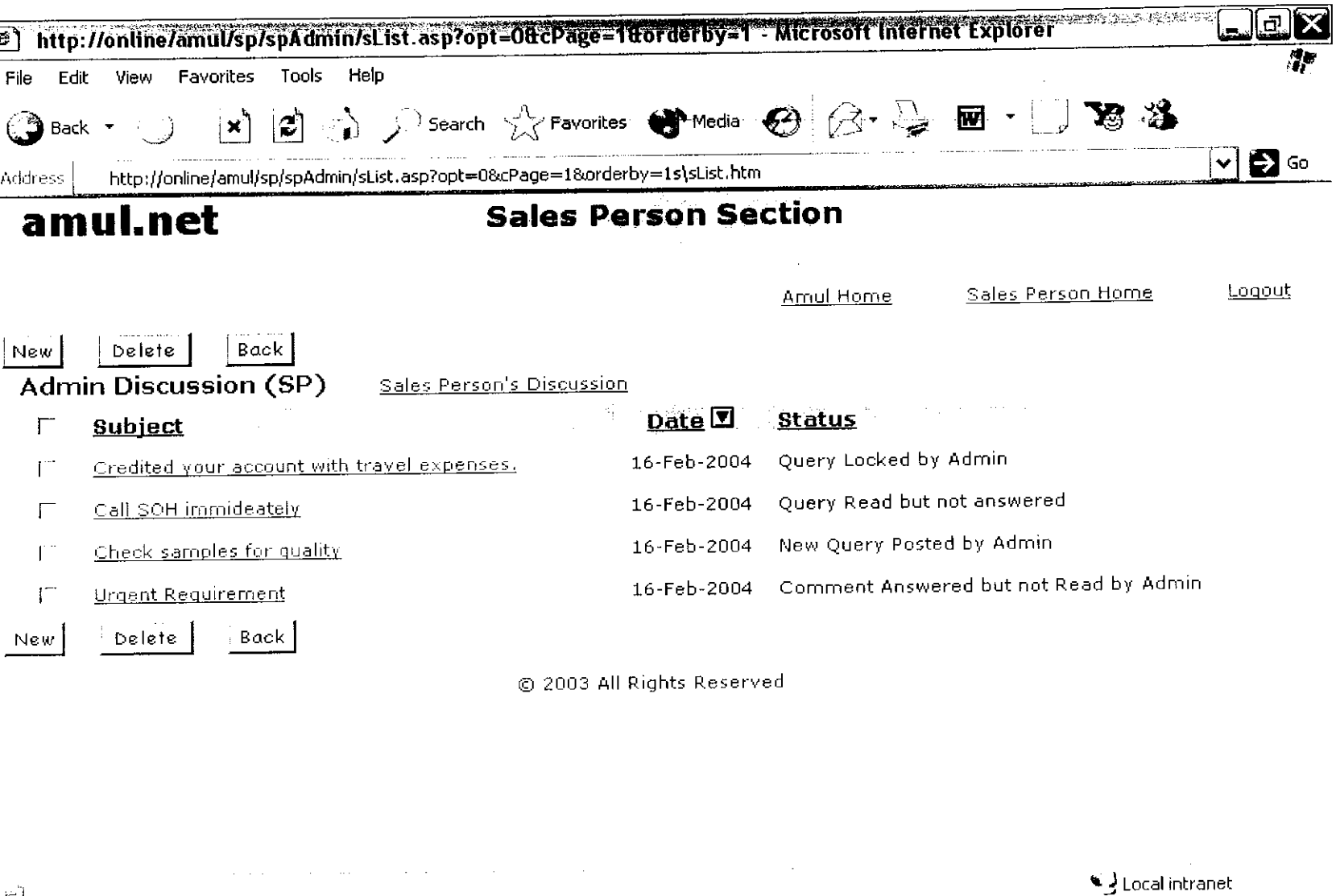
Screen 14: Sales Person Section –**View Order Details**



Screen 15: Administration Section –**New Admin to SP(s) discussion**



Screen 16: Administration Section – **View Admin Discussion**



Screen 17: Sales Person Section - **View Admin Discussion by SP**