LSAP

Requirements Specification

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Fredrick Norton Associated Technologies™

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Date of Presentation:

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Section 1:
Product Overview & Summary

The current tracking system being used by the Castleton Volunteer EMS Station for retirement benefits utilizes Microsoft Excel and has proven itself to be inefficient. It makes the viewing and editing of member information, activities, tours of duty and reports difficult to manage. Further, the current method for calculating retirement points for each EMS member is based simply on the use of Excels' ability to implement formulas. The formulas are then applied to make calculations based on data within the spreadsheet. This application of Excel creates limitations for the user due to the small frames of data that can be viewed at a time. To summarize, this system simply makes the handling of data much more difficult than needed.

Through the employment of a software package that works in conjunction with a Microsoft Access database, information will be easily accessible, data entry will be performed more efficiently, and point calculations will be an automated task provided by the system.

Section 2:
Development, Operating, and Maintenance Environments

This system will be developed in cooperation with our client Dr. Timoth Lederman. The Length of Service Awards Program (LSAP) database program will be implemented through the implementation of C++ coding combined with a Microsoft Access database.

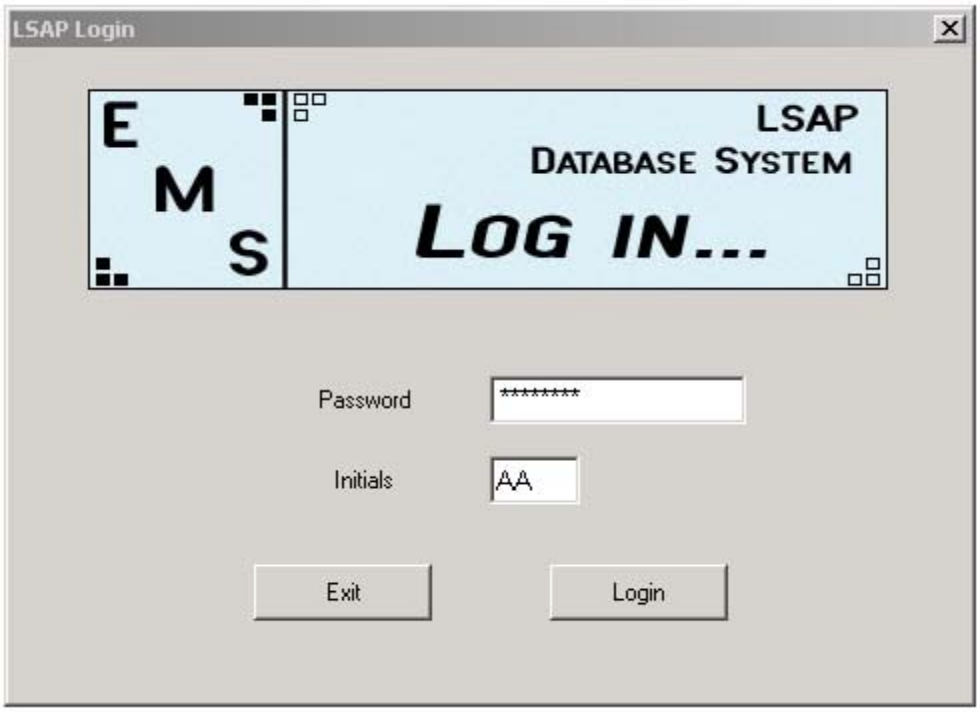
Operators of the LSAP system will interface with menus, forms and reports. These attributes of the system will be developed through the use of Microsoft Visual C++, the Microsoft Foundation Class (MFC) Library, and Microsoft Access.

FNA Technologies' highly trained software engineering staff and system maintenance personnel will perform maintenance of this database system. Maintenance will be conducted either onsite or within the FNA Technologies' labs, depending upon the nature of the problem.

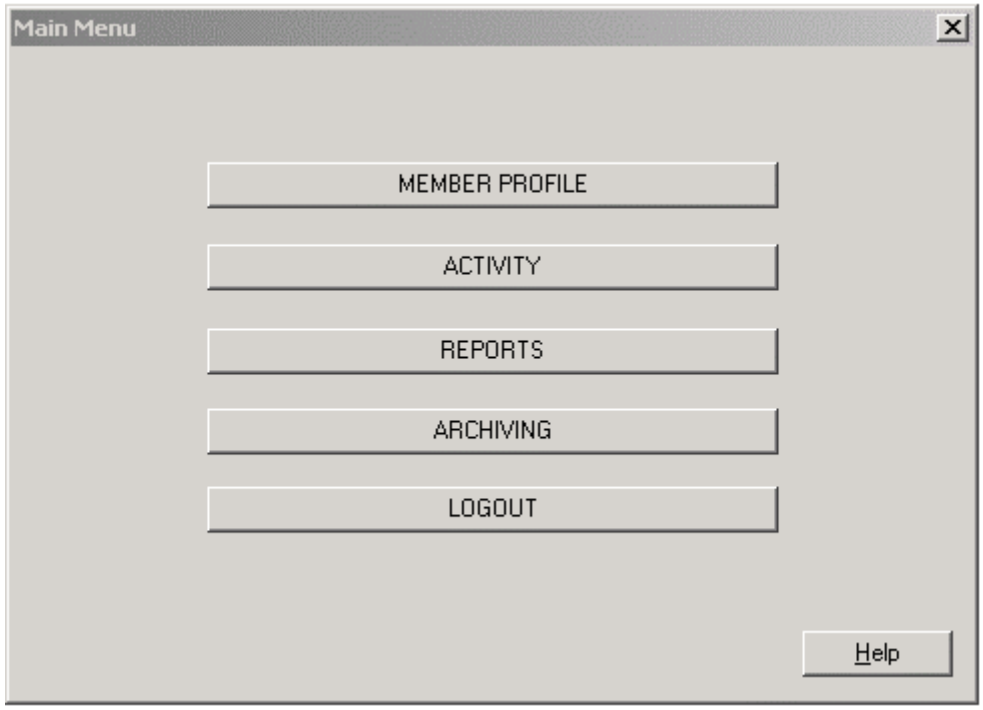
Section 3:
External Interfaces and Data Flows

Sample Screens

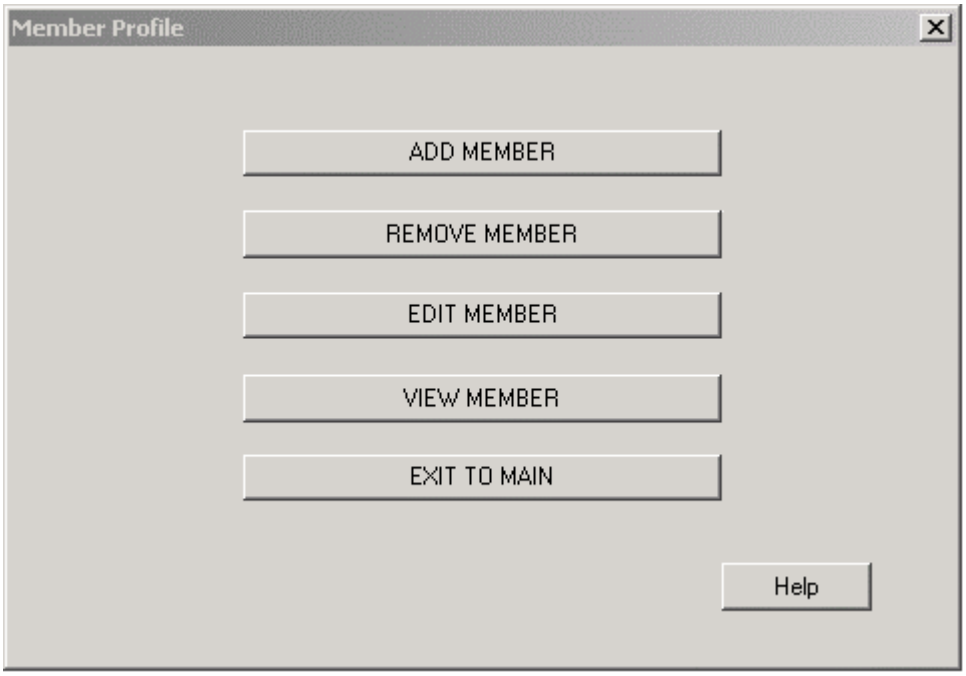
Login Screen:



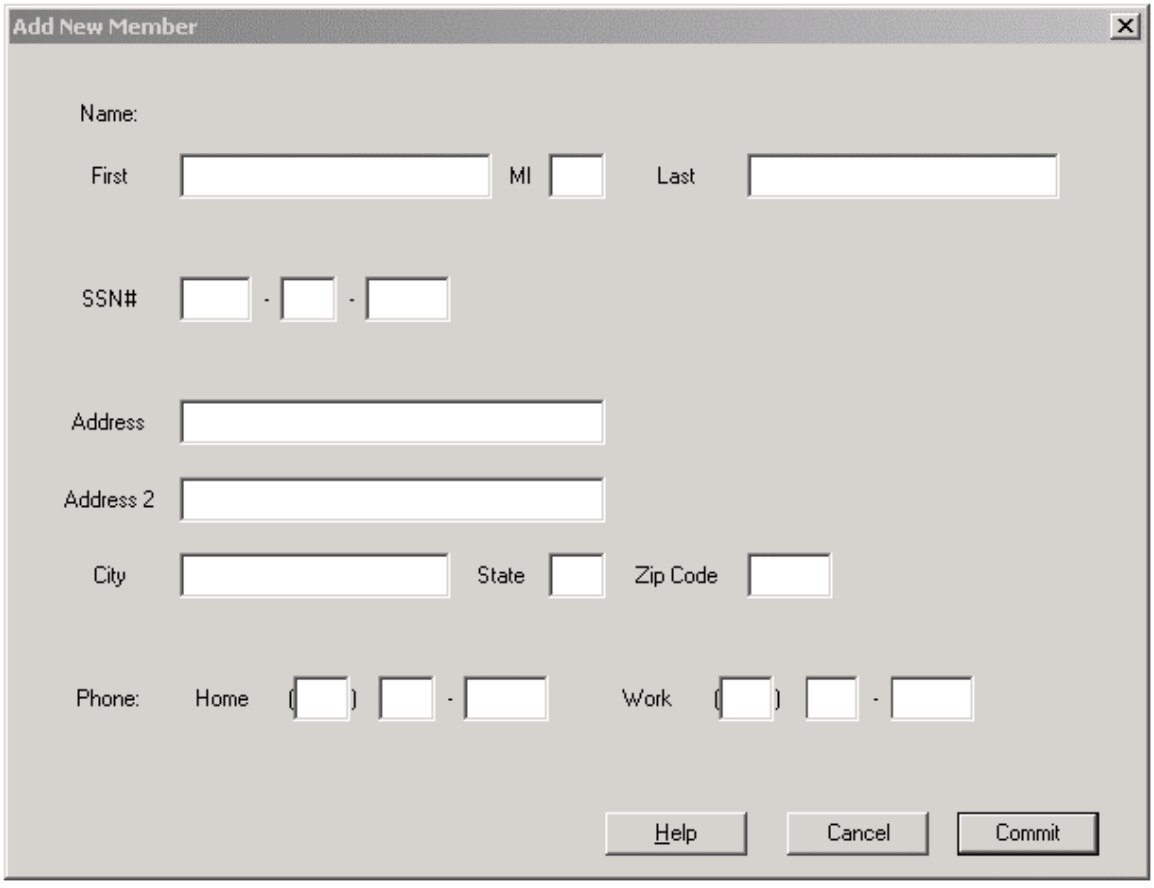
Main Menu:


Main Menu
MEMBER PROFILE
ACTIVITY
REPORTS
ARCHIVING
LOGOUT
Help

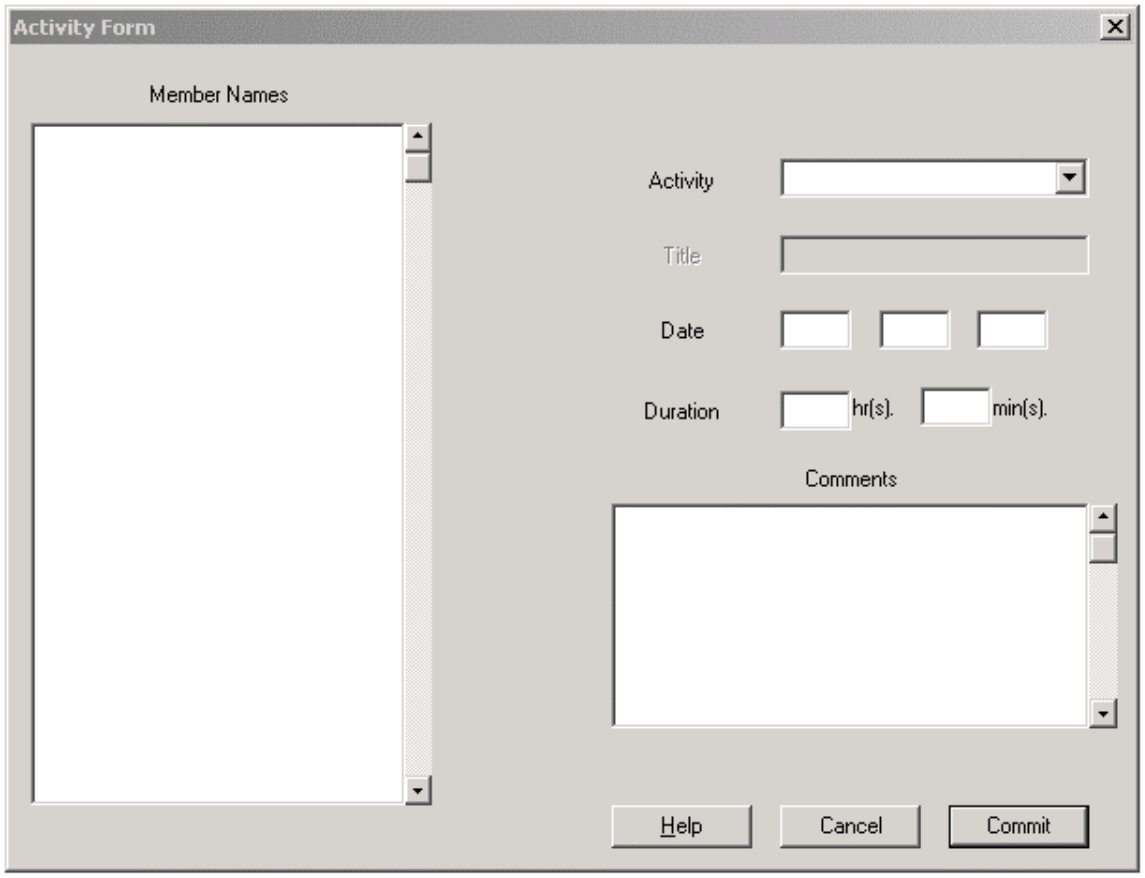
Member Profiles



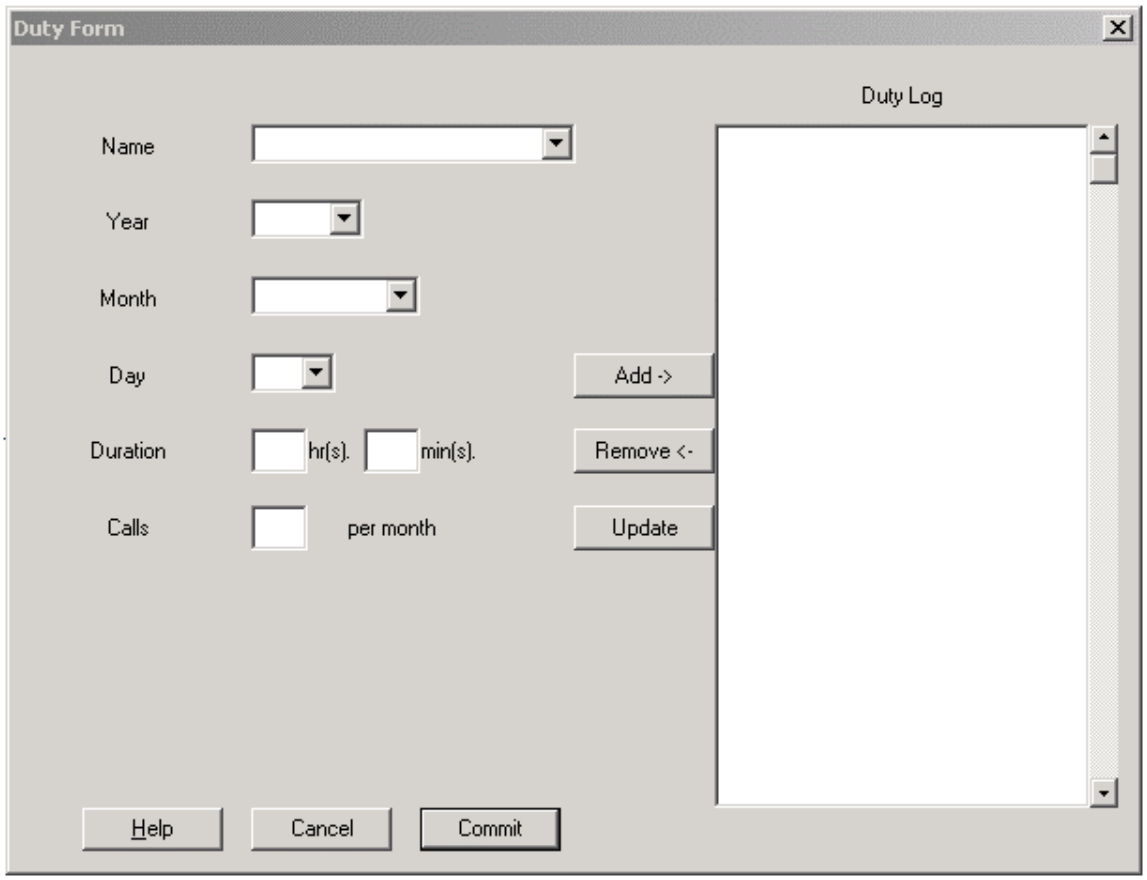
Add New Member:



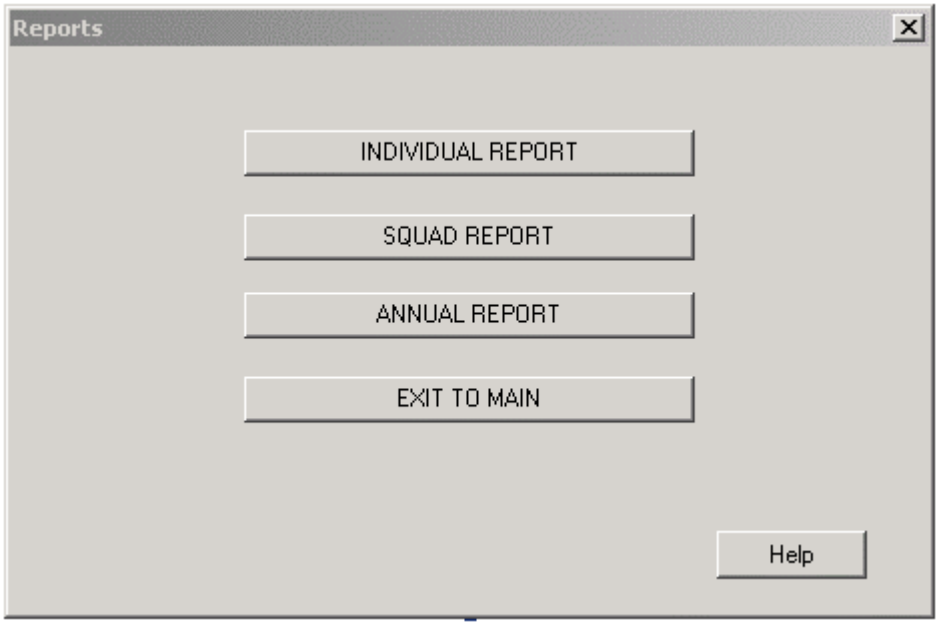
Activity Form:



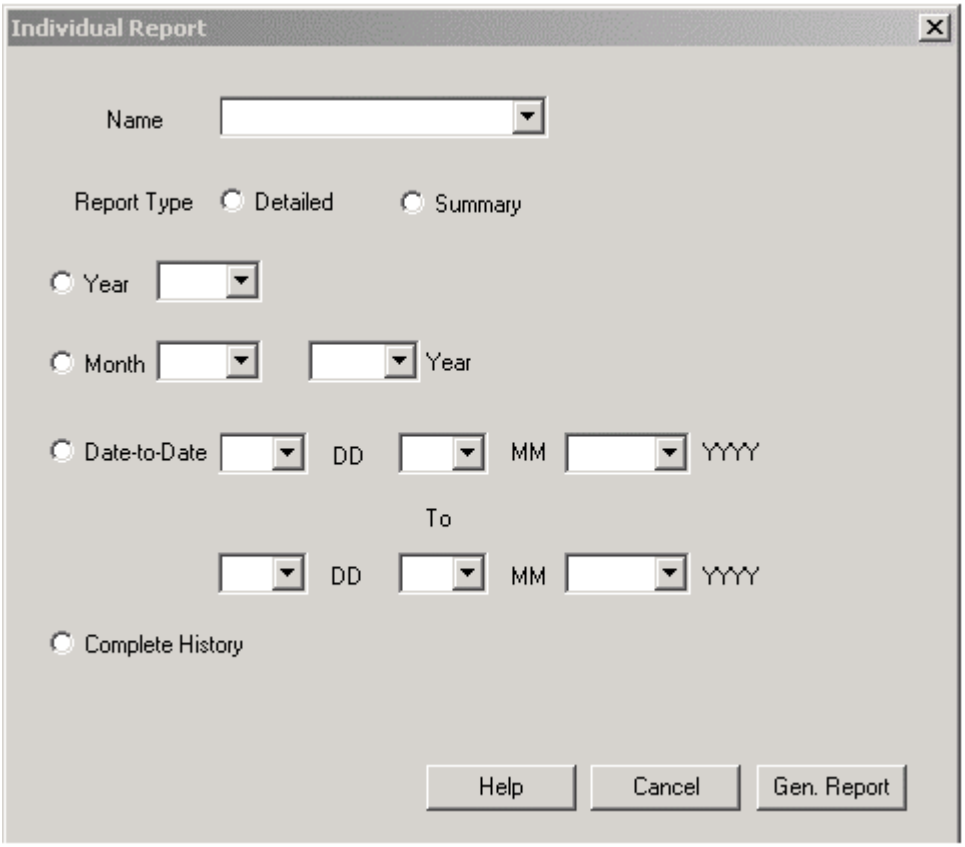
Duty Form:


Duty Form
Duty Log
Name
Year
Month
Day
Duration
hr(s).
min(s).
Calls
per month
Add ->
Remove <-
Update
Help
Cancel
Commit

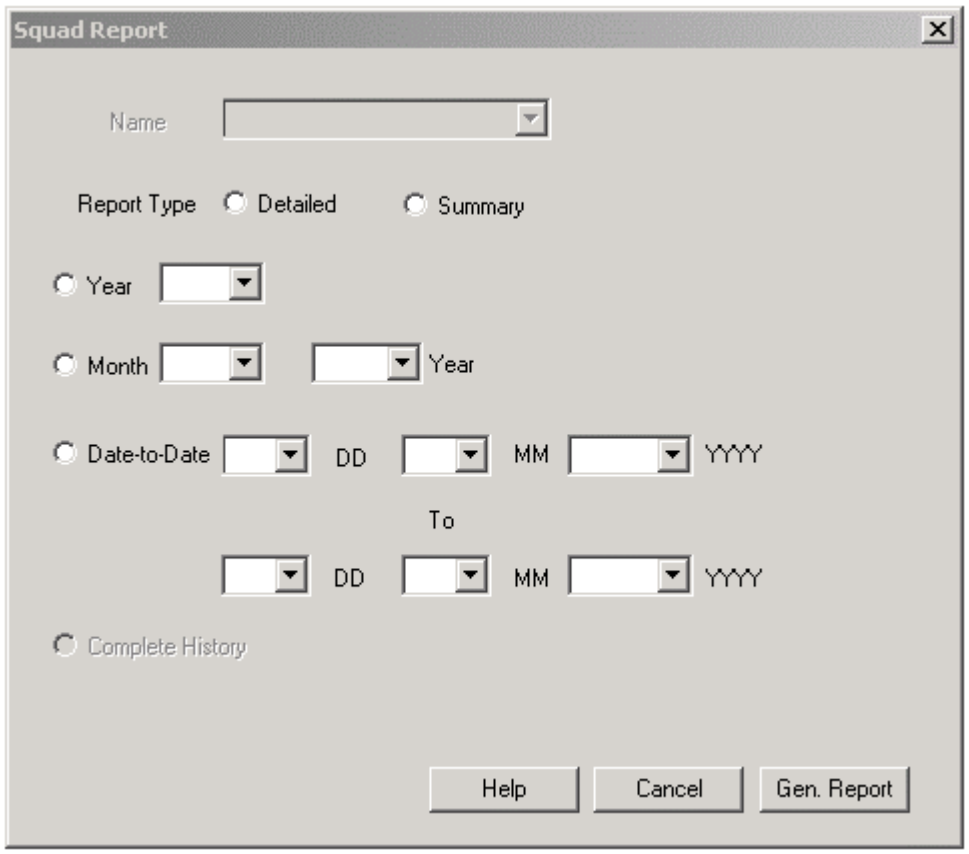
Reports:


Reports
INDIVIDUAL REPORT
SQUAD REPORT
ANNUAL REPORT
EXIT TO MAIN
Help

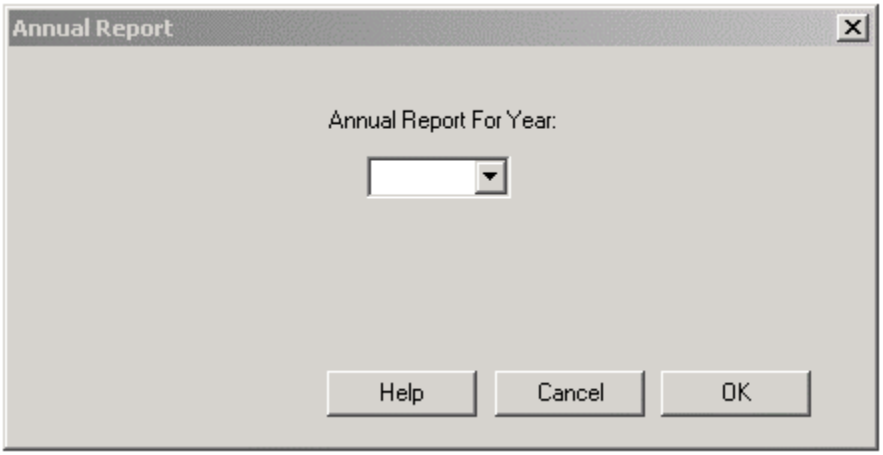
Individual Report:



Squad Report:

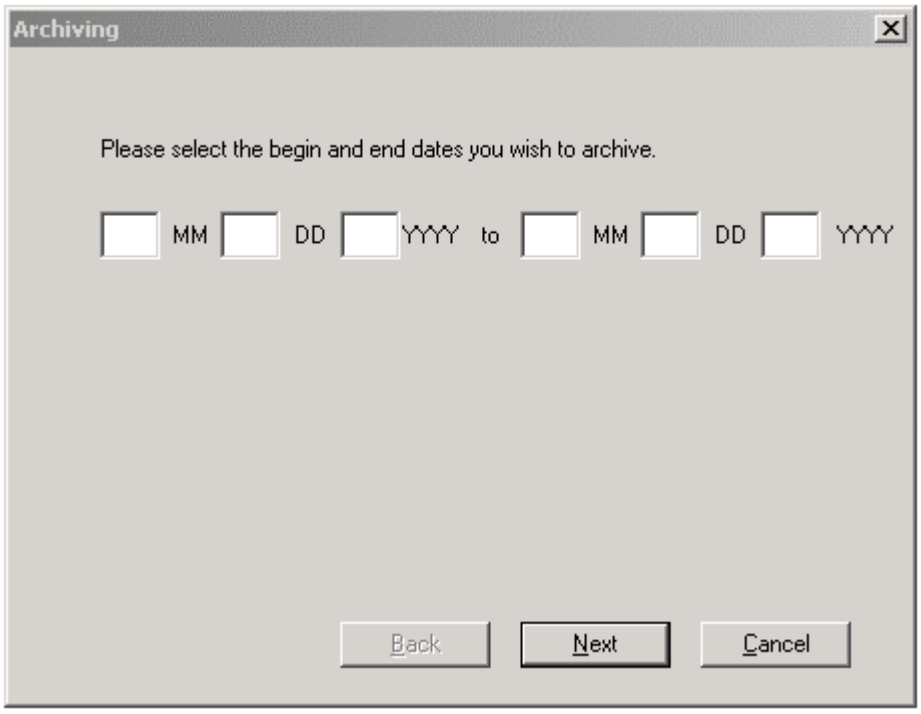


Annual Report:

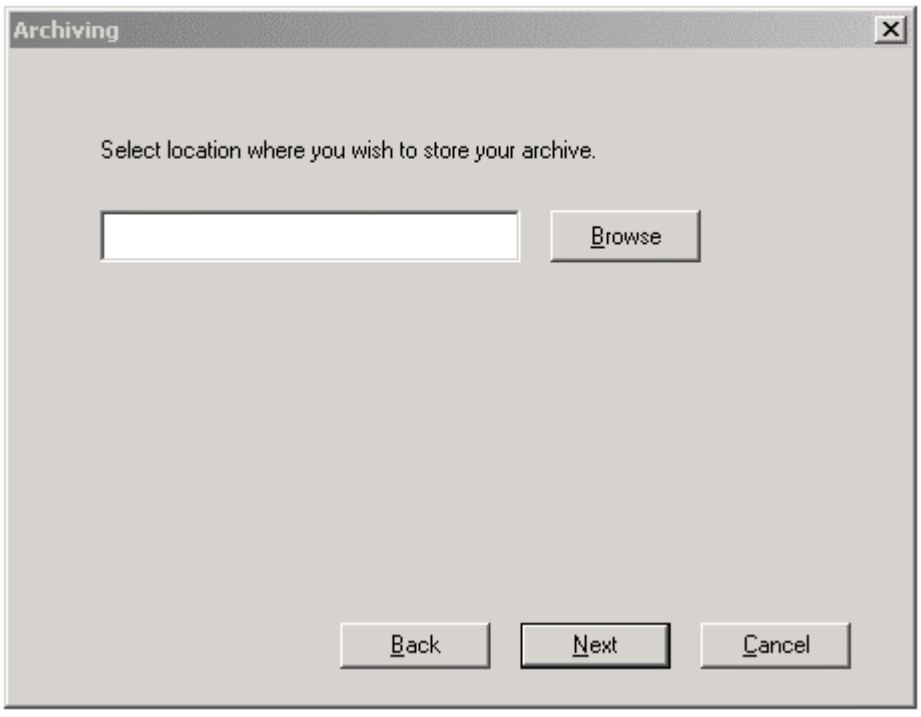


Archiving:

Step 1:

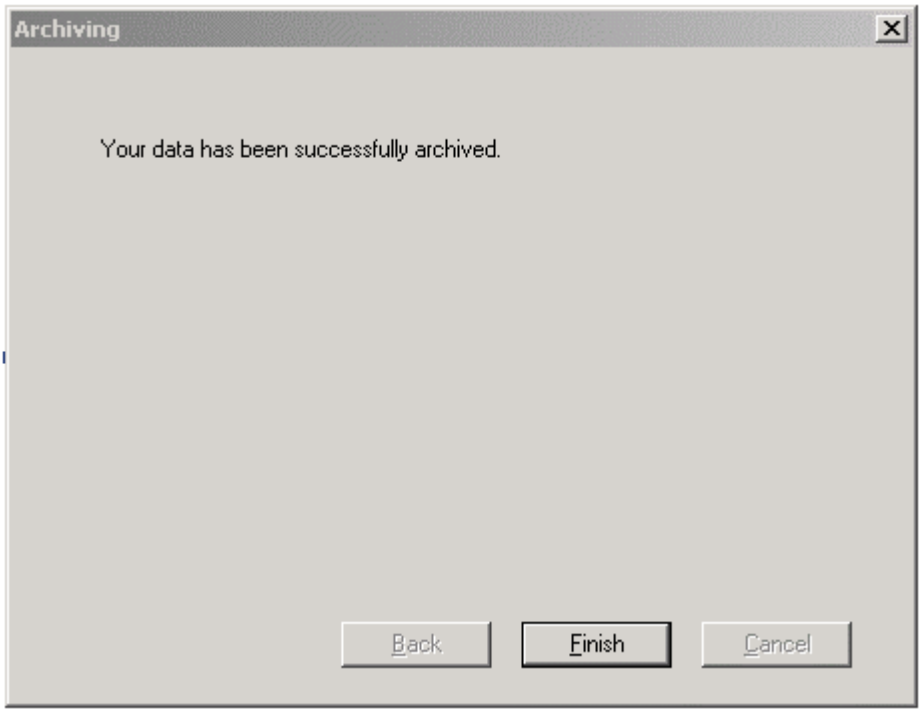


Step 2:

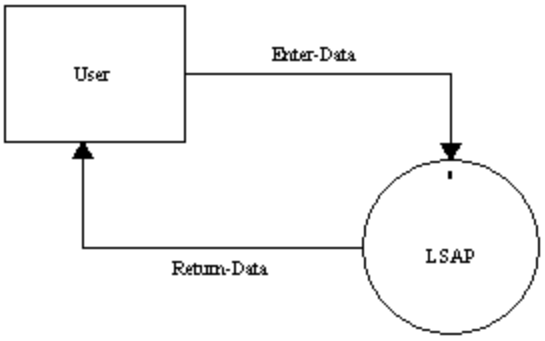


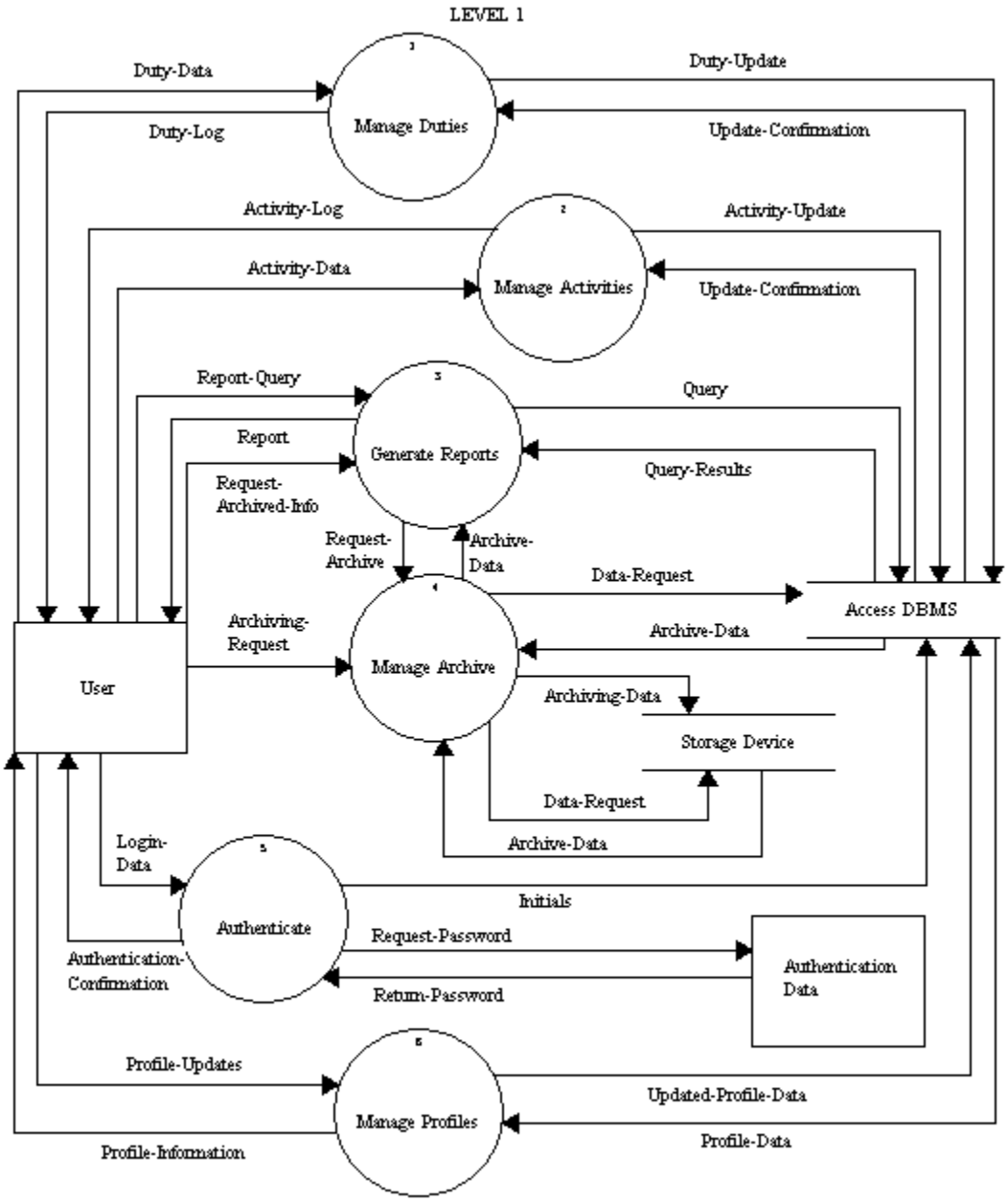
Archiving Con't:

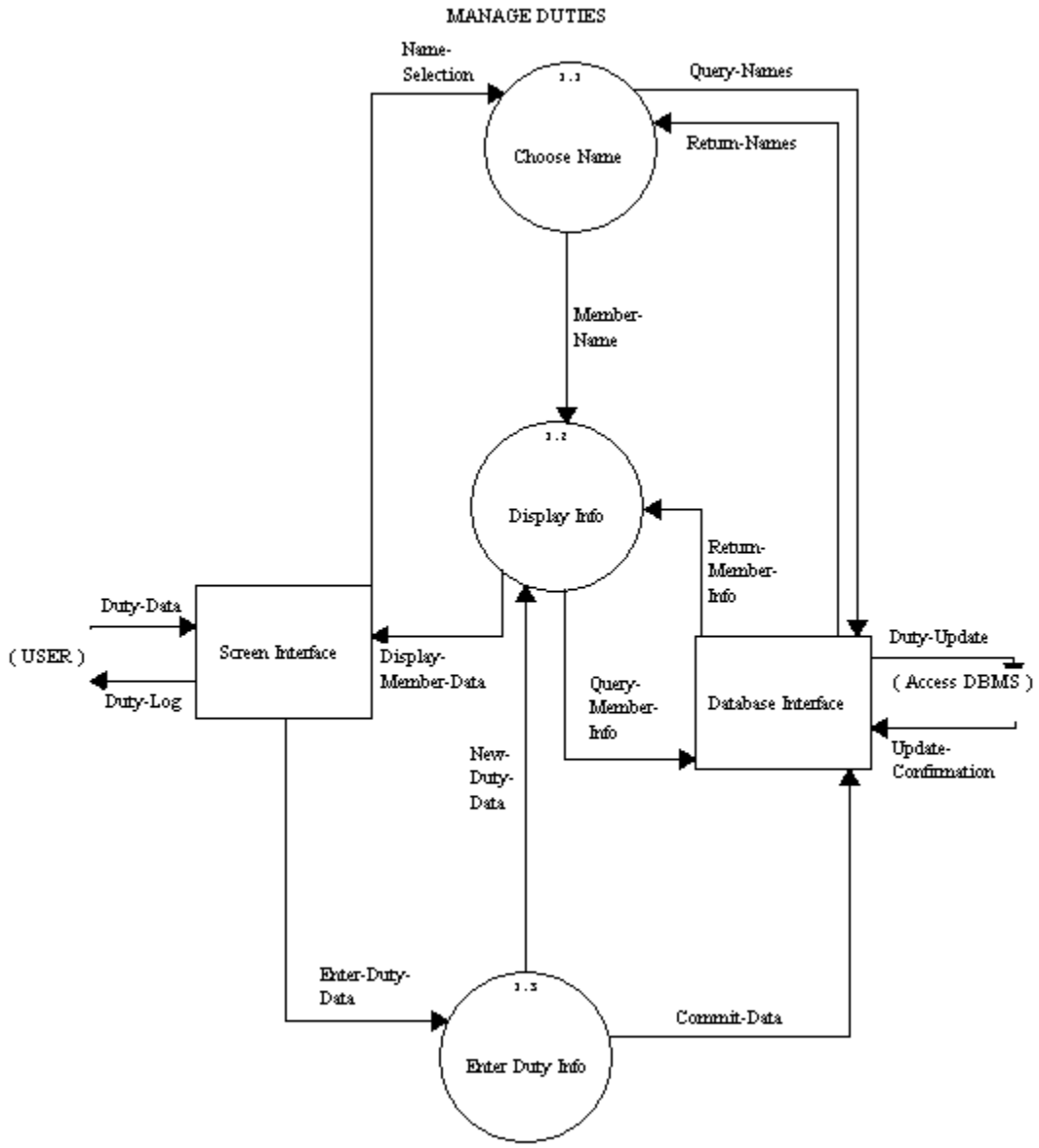
Step 3:

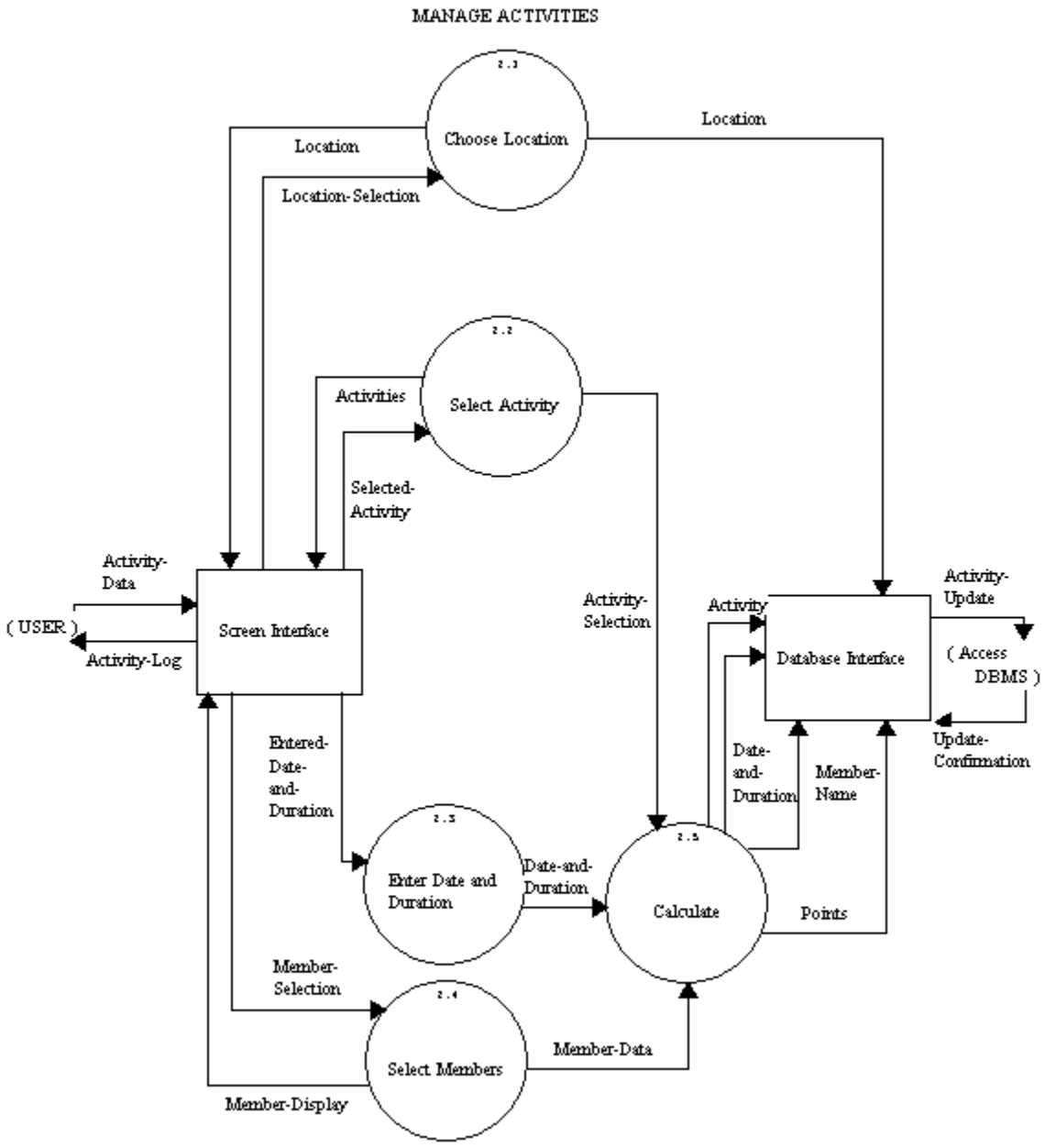


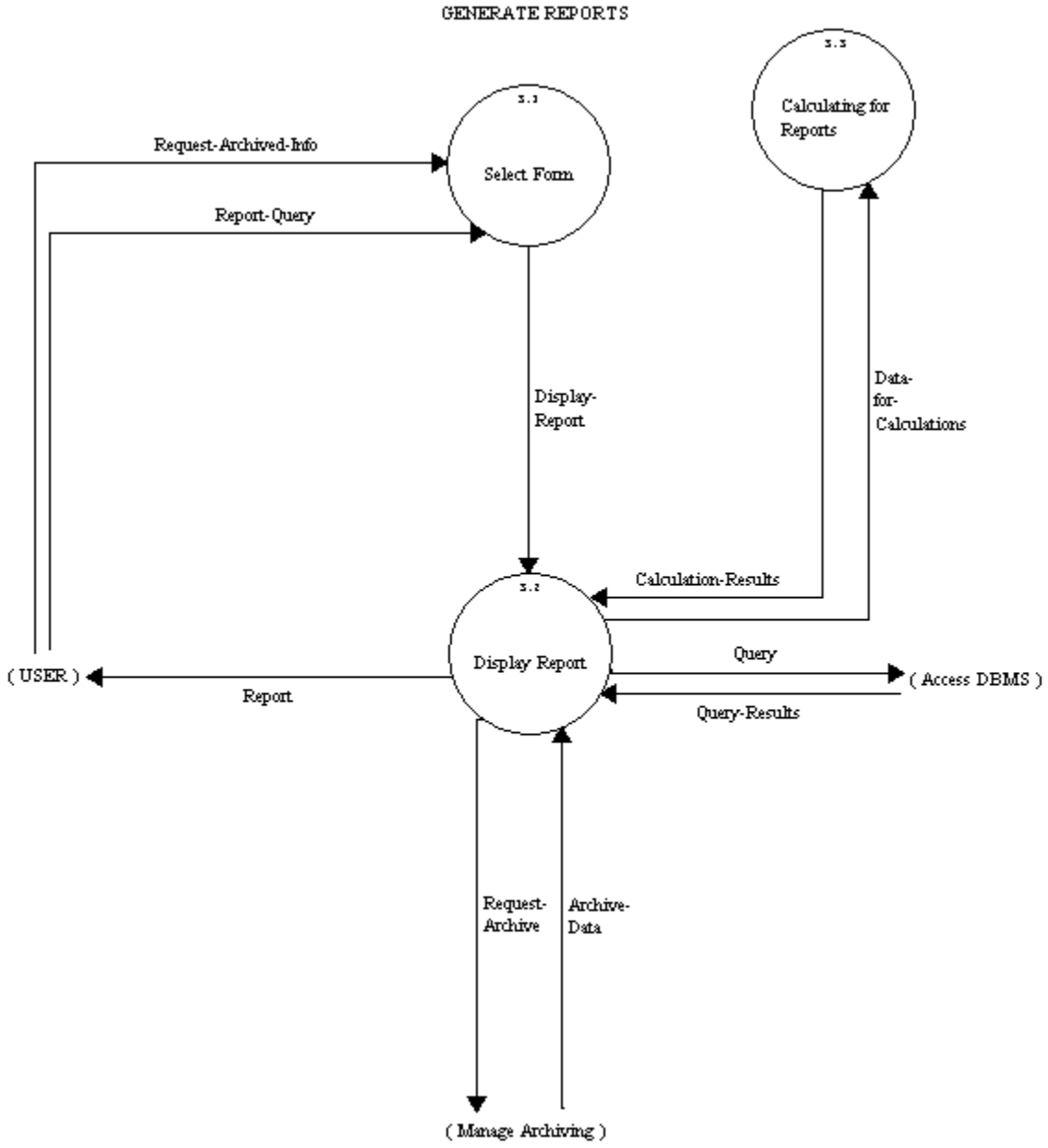
Data Flow Diagrams



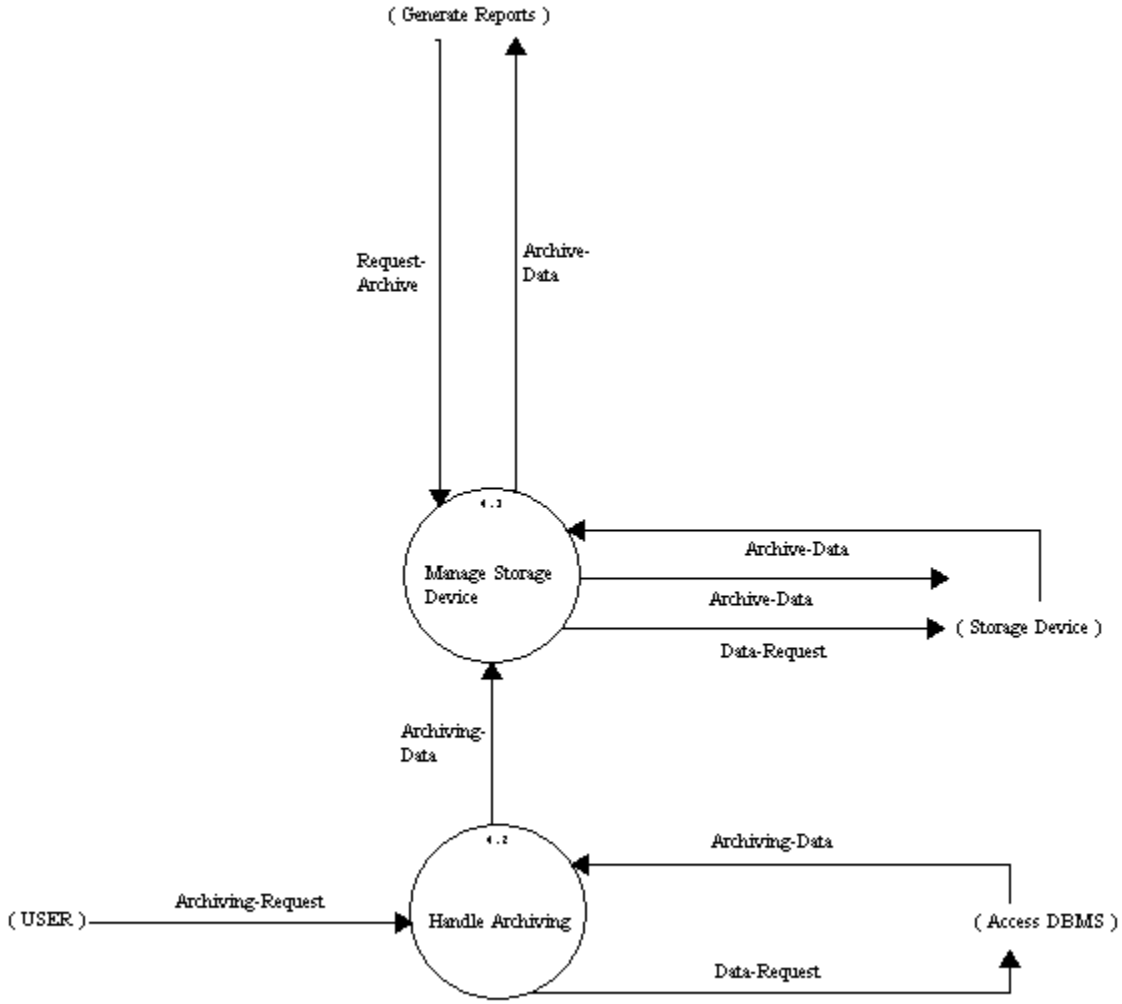

LEVEL 1
Duty-Data
Duty-Update
Duty-Log
Manage Duties
Update-Confirmation
Activity-Log
Activity-Update
Activity-Data
Manage Activities
Update-Confirmation
Report-Query
Query
Report
Generate Reports
Query-Results
Request-
Archived-Info
Request-
Archive
Archive-
Data
Data-Request
Access DBMS
Archiving-
Request
Archive-Data
User
Manage Archive
Archiving-Data
Storage Device
Data-Request
Archive-Data
Login-
Data
Initials
Authenticate
Request-Password
Authentication-
Confirmation
Return-Password
Authentication
Data
Profile-Updates
Updated-Profile-Data
Manage Profiles
Profile-Information
Profile-Data

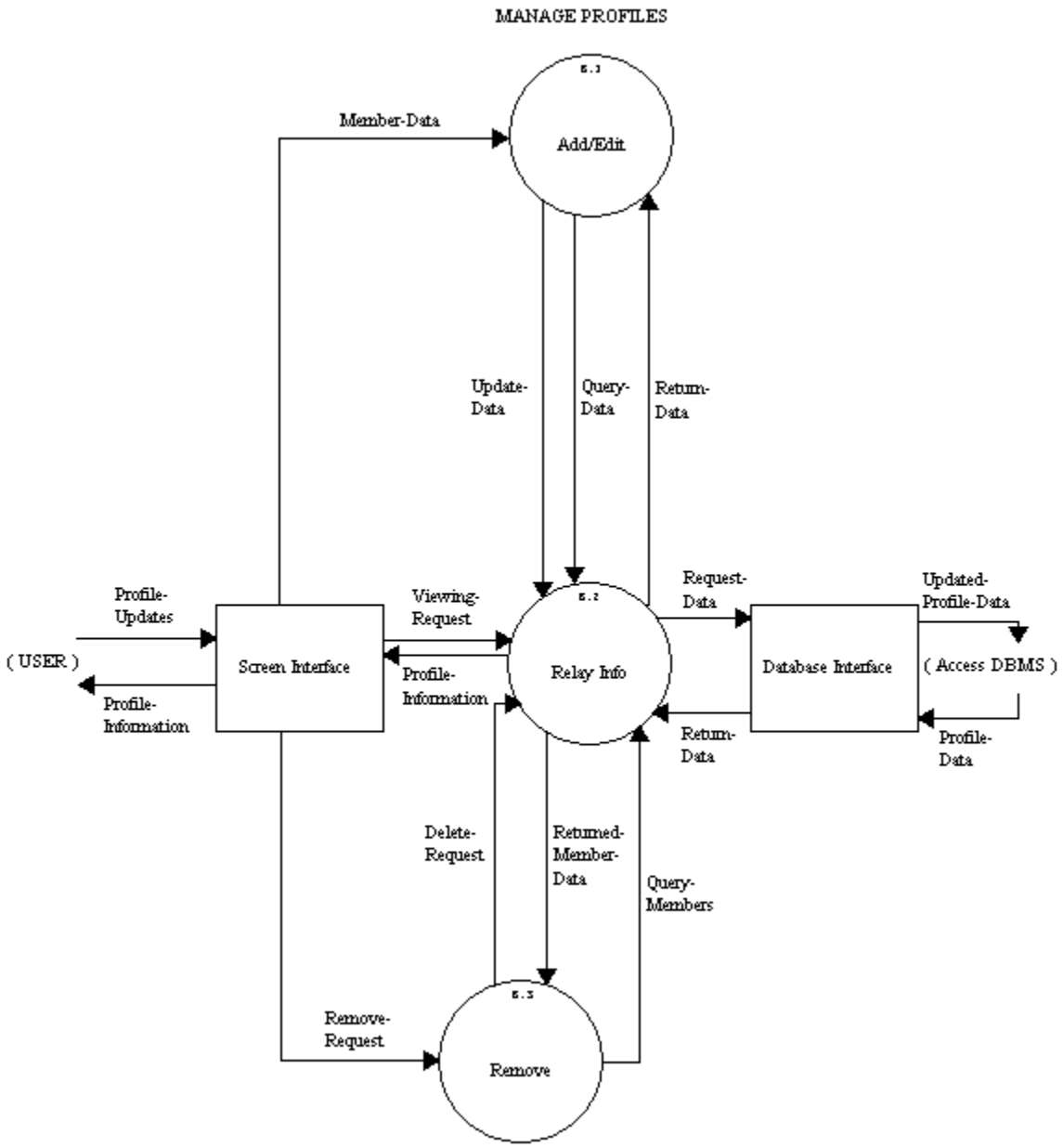

MANAGE DUTIES
Name-
Selection
1.1
Choose Name
Query-Names
Return-Names
Member-
Name
1.2
Display Info
Return-
Member-
Info
Duty-Data
(USER)
Duty-Log
Screen Interface
Display-
Member-Data
Query-
Member-
Info
Database Interface
Duty-Update
(Access DBMS)
Update-
Confirmation
New-
Duty-
Data
Enter-Duty-
Data
1.3
Enter Duty Info
Commit-Data


MANAGE ACTIVITIES
2.1
Choose Location
Location
Location
Location-Selection
2.2
Select Activity
Activities
Selected-
Activity
Activity-
Data
(USER)
Activity-Log
Screen Interface
Activity-
Selection
Activity
Database Interface
Activity-
Update
(Access
DBMS)
Update-
Confirmation
Entered-
Date-
and-
Duration
2.3
Enter Date and
Duration
Date-and-
Duration
2.5
Calculate
Date-
and-
Duration
Member-
Name
Points
Member-
Selection
2.4
Select Members
Member-Data
Member-Display

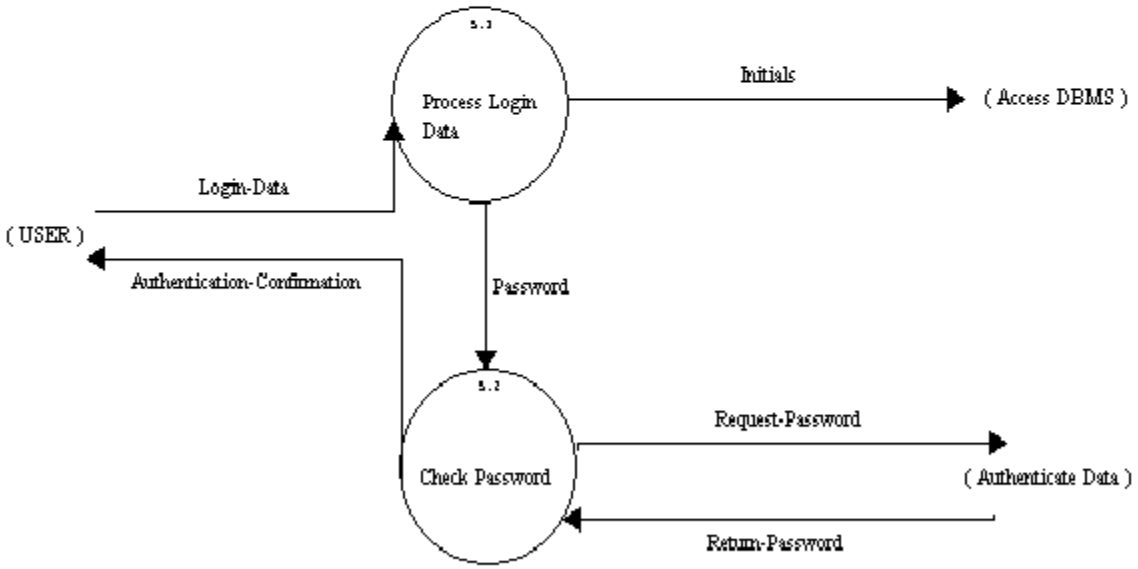

GENERATE REPORTS
3.3
Calculating for Reports
3.1
Select Form
Request-Archived-Info
Report-Query
Display-Report
Data-for-Calculations
Calculation-Results
3.2
Display Report
(USER)
Report
Query
(Access DBMS)
Query-Results
Request-Archive
Archive-Data
(Manage Archiving)

MANAGE ARCHIVE




MANAGE PROFILES
6.1
Add/Edit
Member-Data
Update-Data
Query-Data
Return-Data
6.2
Relay Info
Request-Data
Updated-Profile-Data
Database Interface
(Access DBMS)
Profile-Data
Return-Data
Profile-Updates
(USER)
Profile-Information
Screen Interface
Viewing-Request
Profile-Information
Delete-Request
Returned-Member-Data
Query-Members
6.3
Remove
Remove-Request

AUTHENTICATE



Data Dictionary

Enter-Data Data Flow
Location:
Level 0 (CONTEXT)
Source: User (Source/Sink)
Dest: LSAP (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

LSAP Process
Description:
The system that interacts with the user for form data entry, report generating, and data archiving.
Process #: 0
Process Description:
Controls all functions of the LSAP program
Location:
Level 0 (CONTEXT)
Input Flows:
Enter-Data
Output Flows:
Return-Data

Date Last Altered:10/28/2002 Date Created:10/28/2002

Reports and screen data Data Element
Data element attributes
Storage Type: Undefined
Location:
Data Flow --> Return-Data

Date Last Altered:10/28/2002 Date Created:10/28/2002

Return-Data Data Flow
Composition:
Reports and screen data
Location:
Level 0 (CONTEXT)
Source: LSAP (Process)
Dest: User (Source/Sink)
Date Last Altered:10/28/2002 Date Created:10/28/2002

User Source/Sink

Values & Meanings:

Activity and tour of duty data

Report and archving requests

Location:

Level 0 (CONTEXT)

Input Flows:

Return-Data

Output Flows:

Enter-Data

Date Last Altered:10/28/2002 Date Created:10/28/2002

Access DBMS File

Description:

The Microsoft Access Database in which all Member/Activity/Duty data will be stored.

Location:

level 1 (0)

Input Flows:

Duty-Update

Activity-Update

Query

Data-Requst

Updated-Profile-Data

Initials

Initials

Output Flows:

Update-Confirmation

Query-Results

Archive-Data

Profile-Data

Update-Confirmation

Date Last Altered:10/28/2002 Date Created:10/28/2002

Activities Data Flow

Description:

The activity information to be displayed to the user for confirmation.

Location:

Manage Activities (2)

Source: Select Activity (Process)

Dest: Screen Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Activity Data Flow

Description:

The selected activity transferred to the database after calculations take place.

Location:

Manage Activities (2)

Source: Calculate (Process)

Dest: Database Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Activity-Data Data Flow

Description:

All the activity data inputted by the user.

Location:

level 1 (0)

Source: User (Source/Sink)

Dest: Manage Activities (Process)

Manage Activities (2)

Source: *** Not on Diagram ***

Dest: Screen Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Activity-Log Data Flow

Description:

The activity information which needs to be displayed to the user .

Location:

level 1 (0)

Source: Manage Activities (Process)

Dest: User (Source/Sink)

Manage Activities (2)

Source: Screen Interface (Source/Sink)

Dest: *** Not on Diagram ***

Date Last Altered:10/28/2002 Date Created:10/28/2002

Activity-Selection Data Flow

Description:

The user selected activity which is being sent to be calculated.

Location:

Manage Activities (2)

Source: Select Activity (Process)

Dest: Calculate (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Activity-Update Data Flow

Description:

The new activity information to be sent to the database to update it.

Location:

level 1 (0)

Source: Manage Activities (Process)

Dest: Access DBMS (File)

Manage Activities (2)

Source: Database Interface (Source/Sink)

Dest: *** Not on Diagram ***

Date Last Altered:10/28/2002 Date Created:10/28/2002

Add/Edit Process

Description:

Allows the user to add or edit members and member information into the database.

Process #: 6.1

Process Description:

Takes the inputed user updates and sends it to Relay Info which will send it on to the database interface.

Location:

Manage Profiles (6)

Input Flows:

Member-Data

Return-Data

Output Flows:

Update-Data

Query-Data

Date Last Altered:10/28/2002 Date Created:10/28/2002

Archive-Data Data Flow

Description:

Data that has been archived already and it being inputed from a storage device.

Location:

level 1 (0)

Source: Manage Archive (Process)

Dest: Generate Reports (Process)

Source: Access DBMS (File)

Dest: Manage Archive (Process)

Source: Storage Device (File)

Dest: Manage Archive (Process)

Generate Reports (3)

Source: *** Not on Diagram ***

Dest: Display Report (Process)

Manage Archive (4)

Source: *** Not on Diagram ***

Dest: Manage Storage Device (Process)

Source: Manage Storage Device (Process)

Dest: *** Not on Diagram ***

Source: Manage Storage Device (Process)

Dest: *** Not on Diagram ***

Date Last Altered:10/28/2002 Date Created:10/28/2002

Archiving-Data Data Flow

Description:

Data that is being transferred to a storage device to be archived.

Location:

level 1 (0)

Source: Manage Archive (Process)

Dest: Storage Device (File)

Manage Archive (4)

Source: *** Not on Diagram ***

Dest: Handle Archiving (Process)

Source: Manage Archive (Process)

Dest: Manage Storage Device (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Archiving-Request Data Flow

Description:

An index to data that is going to be transferred from a database to a storage device.

Location:

level 1 (0)

Source: User (Source/Sink)

Dest: Manage Archive (Process)

Manage Archive (4)

Source: *** Not on Diagram ***

Dest: Handle Archiving (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Authenticate Process

Description:

Secures the system from entry from unwanted users.

Process #: 5

Process Description:

Takes the user entered log in data and sends the password on to be verified and sends the user's initials to the database. A confirmation is then sent back to the user.

Location:

level 1 (0)

Input Flows:

Return-Password

Login-Data

Output Flows:

Request-Password

Authentication-Confirmation

Initials

Date Last Altered:10/28/2002 Date Created:10/28/2002

Authentication Data Source/Sink

Description:

A file holding the information which allows users to access the system.

Location:

level 1 (0)

Input Flows:

Request-Password

Output Flows:

Return-Password

Date Last Altered:10/28/2002 Date Created:10/28/2002

Authentication-Confirmation Data Flow

Description:

The information displayed to the user verifying their sucessful/failed log in attempt.

Location:

level 1 (0)

Source: Authenticate (Process)

Dest: User (Source/Sink)

Generate Reports (3)

Source: *** Not on Diagram ***

Dest: *** Not on Diagram ***

Authenticate (5)

Source: Check Password (Process)

Dest: *** Not on Diagram ***

Source: *** Not on Diagram ***

Dest: *** Not on Diagram ***

Date Last Altered:10/28/2002 Date Created:10/28/2002

Calculate Process

Description:

Tallies the points in which the members recieve for various activities/duties performed.

Process #: 2.5

Process Description:

Takes the inputed activity/duty, by using the guidelines the comptroller has designed, it will calculate the points the member recieves.

Location:

Manage Activities (2)

Input Flows:

Activity-Selection
Date-and-Duration
Member-Data

Output Flows:

Date-and-Duration
Activity
Points
Member-Name

Date Last Altered:10/28/2002 Date Created:10/28/2002

Calculating for Reports Process

Description:

Determines which members have met the requirements for retirement benefits.

Process #: 3.3

Process Description:

Takes the calculations for all the activities and duties and then determines whether or not the members meet the retirement benefits.

Location:

Generate Reports (3)

Input Flows:

Data-for-Calculations

Output Flows:

Calculation-Results

Date Last Altered:10/28/2002 Date Created:10/28/2002

Calculation-Results Data Flow

Description:

The final information regarding whether or not the member qualifies for retirement benefits and is displayed to the user.

Location:

Generate Reports (3)

Source: Calculating for Reports (Process)

Dest: Display Report (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Check Password Process

Description:

Varifies the user password to allow access to the system.

Process #: 5.2

Process Description:

Takes in the user entered password, sends it to be authenticated and then sends the user confirmation on the sucessful or failed log in attempt.

Location:

Authenticate (5)

Input Flows:

Return-Password

Password

Output Flows:

Request-Password

Authentication-Confirmation

Date Last Altered:10/28/2002 Date Created:10/28/2002

Choose Location Process

Description:

Allows the user to enter or select the location of an activity and store it in the database.

Process #: 2.1

Process Description:

Takes the user selected/entered location and stores it in the database and then displays that information back to the user.

Location:

Manage Activities (2)

Input Flows:

Location-Selection

Output Flows:

Location

Location

Date Last Altered:10/28/2002 Date Created:10/28/2002

Choose Name Process

Description:

Allows the user to choose a member name to record duty data in the database.

Process #: 1.1

Process Description:

The user selects a name and the name is displayed to the user and the information is updated in the database.

Location:

Manage Duties (1)

Input Flows:

Name-Selection

Return-Names

Output Flows:

Member-Name

Query-Names

Date Last Altered:10/28/2002 Date Created:10/28/2002

Commit-Data Data Flow

Description:

The information that the user made which is sent to the database for update.

Location:

Manage Duties (1)

Source: Enter Duty Info (Process)

Dest: Database Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Data-for-Calculations Data Flow

Description:

The total credits obtained by a specific member.

Location:

Generate Reports (3)

Source: Display Report (Process)

Dest: Calculating for Reports (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Data-Request Data Flow

Description:

The archived data requested to be retrieved from the storage device.

Location:

level 1 (0)

Source: Manage Archive (Process)

Dest: Storage Device (File)

Manage Archive (4)

Source: Manage Storage Device (Process)

Dest: *** Not on Diagram ***

Source: Handle Archiving (Process)

Dest: *** Not on Diagram ***

Date Last Altered:10/28/2002 Date Created:10/28/2002

Data-Requst Data Flow

Location:

level 1 (0)

Source: Manage Archive (Process)

Dest: Access DBMS (File)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Database Interface Source/Sink

Description:

The interaction between the system and the database.

Location:

Manage Duties (1)

Input Flows:

Update-Confirmation
Query-Names
Query-Member-Info
Commit-Data

Output Flows:

Return-Names
Return-Member-Info
Duty-Update

Manage Activities (2)

Input Flows:

Update-Confirmation
Location
Credits
Activity
Points
Member-Name

Output Flows:

Activity-Update

Manage Profiles (6)

Input Flows:

Request-Data
Profile-Data

Output Flows:

Return-Data
Updated-Profile-Data

Date Last Altered:10/28/2002 Date Created:10/28/2002

Date-and-Duration Data Flow

Description:

The date of the activity or duty along with the duration.

Location:

Manage Activities (2)

Source: Enter Date and Duration (Process)
Dest: Calculate (Process)
Source: Calculate (Process)
Dest: Database Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Delete-Request Data Flow

Description:

The index of the data to be deleted.

Location:

Manage Profiles (6)

Source: Remove (Process)

Dest: Relay Info (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Display Info Process

Description:

Displays the member names chosen by the user along with all other relevant information.

Process #: 1.2

Process Description:

Takes the member name which has been selected by the user and retrieves all corresponding data from the database and displays it.

Location:

Manage Duties (1)

Input Flows:

New-Duty-Data

Member-Name

Return-Member-Info

Output Flows:

Display-Member-Data

Query-Member-Info

Date Last Altered:10/28/2002 Date Created:10/28/2002

Display Report Process

Description:

Displays the information for report the user has selected.

Process #: 3.2

Process Description:

Displays the information for one of the 5 main reports.

Location:

Generate Reports (3)

Input Flows:

Display-Report

Archive-Data

Query-Results

Calculation-Results

Output Flows:

Report

Request-Archive

Query

Data-for-Calculations

Date Last Altered:10/28/2002 Date Created:10/28/2002

Display-Member-Data Data Flow

Description:

The member information that is to be displayed to the user.

Location:

Manage Duties (1)

Source: Display Info (Process)

Dest: Screen Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Display-Report Data Flow

Description:

Sends the report information to the process Display Report.

Location:

Generate Reports (3)

Source: Select Form (Process)

Dest: Display Report (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Duty-Data Data Flow

Description:

The name, date, duration of duties, and calls per month.

Location:

level 1 (0)

Source: User (Source/Sink)

Dest: Manage Duties (Process)

Manage Duties (1)

Source: *** Not on Diagram ***

Dest: Screen Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Duty-Log Data Flow

Description:

The duty information which needs to be displayed to the user .

Location:

level 1 (0)

Source: Manage Duties (Process)

Dest: User (Source/Sink)

Manage Duties (1)

Source: Screen Interface (Source/Sink)

Dest: *** Not on Diagram ***

Date Last Altered:10/28/2002 Date Created:10/28/2002

Duty-Update Data Flow

Description:

All new duty data to be inputed into the Access DBMS

Location:

level 1 (0)

Source: Manage Duties (Process)

Dest: Access DBMS (File)

Manage Duties (1)

Source: Database Interface (Source/Sink)

Dest: *** Not on Diagram ***

Date Last Altered:10/28/2002 Date Created:10/28/2002

Enter Date And Duration Process

Description:

Stores inputted Date and Duration as objects to be entered into the database and also used for calculations.

Process #: 2.3

Process Description:

User enters the date and duration, they are processed through Calculate and then stored into the database.

Location:

Manage Activities (2)

Input Flows:

Entered-Date-and-Duration

Output Flows:

Date-and-Duration

Date Last Altered:10/28/2002 Date Created:10/28/2002

Enter Duty Info Process

Description:

Takes the inputted duty data and stores it into the database.

Process #: 1.3

Process Description:

User enters all duty data through the screen interface and as entered, the display will refresh and show the new data. When the user is done, the data is committed to the database.

Location:

Manage Duties (1)

Input Flows:

Enter-Duty-Data

Output Flows:

New-Duty-Data

Commit-Data

Date Last Altered:10/28/2002 Date Created:10/28/2002

Enter-Duty-Data Data Flow

Description:

Holds the name, year, month, day, duration, minutes and calls per month

Location:

Manage Duties (1)

Source: Screen Interface (Source/Sink)

Dest: Enter Duty Info (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Entered-Date-and-Duration Data Flow

Description:

It is the date and duration as inputed by the user

Location:

Manage Activities (2)

Source: Screen Interface (Source/Sink)

Dest: Enter Date And Duration (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Generate Reports Process

Description:

Allows the user to choose from five different query types from the database, this includes current information and archived data.

Process #: 3

Process Description:

Takes in a query or archive request from the user and returns the report from the database or storage device.

Notes:

The five types of queries are: annual report, individual summary, individual detailed, squad summary and squad detailed.

Location:

level 1 (0)

Input Flows:

Report-Query

Request-Archived-Info

Archive-Data

Query-Results

Output Flows:

Report

Request-Archive

Query

Date Last Altered:10/28/2002 Date Created:10/28/2002

Handle Archiving Process

Description:

Retrieves data to be archived from the database

Process #: 4.2

Process Description:

Takes the inputted archive request and retrieves the data from the database and returns it to be sent to the storage device.

Location:

Manage Archive (4)

Input Flows:

Archiving-Request

Output Flows:

Data-Request

Archiving-Data

Date Last Altered:10/28/2002 Date Created:10/28/2002

Initials Data Flow

Description:

The user's initials that are inputed at the log in screen that will be stored in the database.

Notes:

2-3 characters in length

Location:

level 1 (0)

Source: Authenticate (Process)

Dest: Access DBMS (File)

Source: Authenticate (Process)

Dest: Access DBMS (File)

Authenticate (5)

Source: Process Login Data (Process)

Dest: *** Not on Diagram ***

Date Last Altered:10/28/2002 Date Created:10/28/2002

Location Data Flow

Description:

The location of the activity as inputed by the user.

Location:

Manage Activities (2)

Source: Choose Location (Process)

Dest: Screen Interface (Source/Sink)

Source: Choose Location (Process)

Dest: Database Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Location-Selection Data Flow

Description:

The location to be displayed through the screen interface.

Location:

Manage Activities (2)

Source: Screen Interface (Source/Sink)

Dest: Choose Location (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Login-Data Data Flow

Description:

The initials and password inputed by the user at the log-in screen.

Location:

level 1 (0)

Source: User (Source/Sink)

Dest: Authenticate (Process)

Generate Reports (3)

Source: *** Not on Diagram ***

Dest: *** Not on Diagram ***

Authenticate (5)

Source: *** Not on Diagram ***

Dest: Process Login Data (Process)

Source: *** Not on Diagram ***

Dest: *** Not on Diagram ***

Date Last Altered:10/28/2002 Date Created:10/28/2002

Manage Activities Process

Description:

Stores activity information in the database.

Process #: 2

Process Description:

Takes the activities information as inputed by the user and stores them into the database.

Location:

level 1 (0)

Input Flows:

Activity-DAta

Update-Confirmation

Output Flows:

Activity-Log

Activity-Update

Date Last Altered:10/28/2002 Date Created:10/28/2002

Manage Archive Process

Description:

Archives data from database to a specific storage device

Process #: 4

Process Description:

Retrieves the requested data from the database as specified by the user and stores to a storage device.

Location:

level 1 (0)

Input Flows:

Archiving-Request

Request-Archive

Archive-Data

Archive-Data

Output Flows:

Archive-Data

Data-Requst

Archiving-Data

Data-Request

Date Last Altered:10/28/2002 Date Created:10/28/2002

Manage Duties Process

Description:

Stores Duty information entered by the user in the database.

Process #: 1

Process Description:

Takes the Duty information as inputed by the user and stores them into the database.

Location:

level 1 (0)

Input Flows:

Duty-Data

Update-Confirmation

Output Flows:

Duty-Log

Duty-Update

Date Last Altered:10/28/2002 Date Created:10/28/2002

Manage Profiles Process

Description:

Allows the addition, editing, deletion and viewing of member profiles.

Process #: 6

Process Description:

Any changes the user may need to make are modified in the database.

Location:

level 1 (0)

Input Flows:

Profile-Updates

Profile-Data

Output Flows:

Profile-Information

Updated-Profile-Data

Date Last Altered:10/28/2002 Date Created:10/28/2002

Manage Storage Device Process

Description:

Both takes the data to be archived and transfers it to the storage device, and retrieves the storage device for reports.

Process #: 4.1

Process Description:

Takes the requested archive information from Generate Reports and retrieves the data from the storage device or takes the archiving data from 4.2 and stores it in the storage device.

Location:

Manage Archive (4)

Input Flows:

Request-Archive
Archive-Data
Archiving-Data

Output Flows:

Archive-Data
Data-Request
Archive-Data

Date Last Altered:10/28/2002 Date Created:10/28/2002

Member-Data Data Flow

Description:

Information regarding a volunteer, as entered by the user.

Notes:

Data to be stored: First Name, Last Name, Middle Initial,SSN, Street, Street2, City, State, Zip, Home Phone, Work Phone.

Location:

Manage Activities (2)

Source: Select Members (Process)
Dest: Calculate (Process)

Manage Profiles (6)

Source: Screen Interface (Source/Sink)
Dest: Add/Edit (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Member-Display Data Flow

Description:

The information to be displayed regarding a specific member.

Location:

Manage Activities (2)

Source: Select Members (Process)

Dest: Screen Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Member-Name Data Flow

Description:

The name of the specific volunteer to be stored in the database.

Location:

Manage Duties (1)

Source: Choose Name (Process)

Dest: Display Info (Process)

Manage Activities (2)

Source: Calculate (Process)

Dest: Database Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Member-Selection Data Flow

Description:

The name of the member selected by the user.

Location:

Manage Activities (2)

Source: Screen Interface (Source/Sink)

Dest: Select Members (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Name-Selection Data Flow

Description:

The name of the volunteer selected by the user.

Location:

Manage Duties (1)

Source: Screen Interface (Source/Sink)

Dest: Choose Name (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

New-Duty-Data Data Flow

Description:

The duty information that was entered by the user to be displayed.

Location:

Manage Duties (1)

Source: Enter Duty Info (Process)

Dest: Display Info (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Password Data Flow

Description:

The password entered by the user.

Location:

Authenticate (5)

Source: Process Login Data (Process)

Dest: Check Password (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Points Data Flow

Description:

The calculated points the member recieves towards retirement based on the activities/duties performed.

Location:

Manage Activities (2)

Source: Calculate (Process)

Dest: Database Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Process Login Data Process

Description:

Separates the log in data into initials and password.

Process #: 5.1

Process Description:

Takes the log in information entered by the user and sends the initials to be stored in the database and the password to be verified.

Location:

Authenticate (5)

Input Flows:

Login-Data

Output Flows:

Initials

Password

Date Last Altered:10/28/2002 Date Created:10/28/2002

Profile-Data Data Flow

Description:

Member data requested from the database.

Location:

level 1 (0)

Source: Access DBMS (File)

Dest: Manage Profiles (Process)

Manage Profiles (6)

Source: *** Not on Diagram ***

Dest: Database Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Profile-Information Data Flow

Description:

The member information to be displayed to the user.

Location:

level 1 (0)

Source: Manage Profiles (Process)

Dest: User (Source/Sink)

Manage Profiles (6)

Source: Screen Interface (Source/Sink)

Dest: *** Not on Diagram ***

Source: Relay Info (Process)

Dest: Screen Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Profile-Updates Data Flow

Description:

Changes made to member profiles.

Location:

level 1 (0)

Source: User (Source/Sink)

Dest: Manage Profiles (Process)

Manage Profiles (6)

Source: *** Not on Diagram ***

Dest: Screen Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Query Data Flow

Description:

The report requested from the database.

Location:

level 1 (0)

Source: Generate Reports (Process)

Dest: Access DBMS (File)

Generate Reports (3)

Source: Display Report (Process)

Dest: *** Not on Diagram ***

Date Last Altered:10/28/2002 Date Created:10/28/2002

Query-Data Data Flow

Description:

The requested data to be edited by the user.

Location:

Manage Profiles (6)

Source: Add/Edit (Process)

Dest: Relay Info (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Query-Member-Info Data Flow

Description:

Member name sent to the database in order to retrieve the other member information.

Location:

Manage Duties (1)

Source: Display Info (Process)

Dest: Database Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Query-Members Data Flow

Description:

Member information to be matched up with database members for deletion.

Location:

Manage Profiles (6)

Source: Remove (Process)

Dest: Relay Info (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Query-Names Data Flow

Description:

Name to be matched up with the database.

Location:

Manage Duties (1)

Source: Choose Name (Process)

Dest: Database Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Query-Results Data Flow

Description:

The requested report information as queried from the database.

Location:

level 1 (0)

Source: Access DBMS (File)

Dest: Generate Reports (Process)

Generate Reports (3)

Source: *** Not on Diagram ***

Dest: Display Report (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Relay Info Process

Description:

Transfers the requested member information to the process in which it is needed.

Process #: 6.2

Process Description:

It can 1) relay member information to be viewed to user. 2) Allow member data in the database to be added or edited or 3) Allow member data stored in the database to be removed.

Location:

Manage Profiles (6)

Input Flows:

Viewing-Request
Query-Members
Delete-Request
Update-Data
Query-Data
Return-Data

Output Flows:

Returned-Member-Data
Return-Data
Request-Data
Profile-Information

Date Last Altered:10/28/2002 Date Created:10/28/2002

Remove Process

Description:

Allows the user to remove a member and their corresponding member information from the database.

Process #: 6.3

Process Description:

Takes the remove request made by the user and matches it with the database information and removes all relevant information.

Location:

Manage Profiles (6)

Input Flows:

Remove-Request
Returned-Member-Data

Output Flows:

Query-Members
Delete-Request

Date Last Altered:10/28/2002 Date Created:10/28/2002

Remove-Request Data Flow

Description:

The requested member information to be removed from the database.

Location:

Manage Profiles (6)

Source: Screen Interface (Source/Sink)

Dest: Remove (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Report Data Flow

Description:

One of the 5 different forms of data to be displayed to the user.

Location:

level 1 (0)

Source: Generate Reports (Process)

Dest: User (Source/Sink)

Generate Reports (3)

Source: Display Report (Process)

Dest: *** Not on Diagram ***

Date Last Altered:10/28/2002 Date Created:10/28/2002

Report-Query Data Flow

Description:

Request for one of the 5 types of reports.

Location:

level 1 (0)

Source: User (Source/Sink)

Dest: Generate Reports (Process)

Generate Reports (3)

Source: *** Not on Diagram ***

Dest: Select Form (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Request-Archive Data Flow

Description:

Information requested to be archived from the database.

Location:

level 1 (0)

Source: Generate Reports (Process)

Dest: Manage Archive (Process)
Generate Reports (3)
Source: Display Report (Process)
Dest: *** Not on Diagram ***
Manage Archive (4)
Source: *** Not on Diagram ***
Dest: Manage Storage Device (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Request-Archived-Info Data Flow
Description:
Requested information to be retreived from a storage device.
Location:
level 1 (0)
Source: User (Source/Sink)
Dest: Generate Reports (Process)
Generate Reports (3)
Source: *** Not on Diagram ***
Dest: Select Form (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Request-Data Data Flow
Description:
Information to be retrieved from the database to be viewed by the user.
Location:
Manage Profiles (6)
Source: Relay Info (Process)
Dest: Database Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Request-Password Data Flow

Description:

The password entered by the user to be sent to the authenticate data for verification.

Location:

level 1 (0)

Source: Authenticate (Process)

Dest: Authentication Data (Source/Sink)

Generate Reports (3)

Source: *** Not on Diagram ***

Dest: *** Not on Diagram ***

Authenticate (5)

Source: Check Password (Process)

Dest: *** Not on Diagram ***

Source: *** Not on Diagram ***

Dest: *** Not on Diagram ***

Date Last Altered:10/28/2002 Date Created:10/28/2002

Return-Data Data Flow

Description:

Member data retrieved from the database to be edited or viewed by the user.

Location:

Manage Profiles (6)

Source: Relay Info (Process)

Dest: Add/Edit (Process)

Source: Database Interface (Source/Sink)

Dest: Relay Info (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Return-Member-Info Data Flow

Description:

Retrieved duty information from the database to be displayed to the user.

Location:

Manage Duties (1)

Source: Database Interface (Source/Sink)

Dest: Display Info (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Return-Names Data Flow

Description:

Names retrieved from the database to be sent to process 1.1

Location:

Manage Duties (1)

Source: Database Interface (Source/Sink)

Dest: Choose Name (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Return-Password Data Flow

Description:

Returns whether or not the entered password was found in Authenticate Data.

Location:

level 1 (0)

Source: Authentication Data (Source/Sink)

Dest: Authenticate (Process)

Generate Reports (3)

Source: *** Not on Diagram ***

Dest: Authenticate (Process)

Authenticate (5)

Source: *** Not on Diagram ***

Dest: Check Password (Process)

Source: *** Not on Diagram ***

Dest: *** Not on Diagram ***

Date Last Altered:10/28/2002 Date Created:10/28/2002

Returned-Member-Data Data Flow

Description:

Member data from the database to be removed.

Location:

Manage Profiles (6)

Source: Relay Info (Process)

Dest: Remove (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Screen Interface Source/Sink

Description:

The graphical user interface used as a menu for selection and input.

Location:

Manage Duties (1)

Input Flows:

Duty-Data

Display-Member-Data

Output Flows:

Duty-Log

Name-Selection

Enter-Duty-Data

Manage Activities (2)

Input Flows:

Activity-DAta

Location

Activities

Member-Display

Output Flows:

Activity-Log

Location-Selection

Selected-Activity

Entered-Date-and-Duration

Member-Selection

Manage Profiles (6)

Input Flows:

Profile-Updates

Profile-Information

Output Flows:

Profile-Information

Viewing-Request

Member-Data

Remove-Request

Date Last Altered:10/28/2002 Date Created:10/28/2002

Select Activity Process

Description:

Takes activity selected by the user and sends it to be calculated which is process 2.5

Process #: 2.2

Location:

Manage Activities (2)

Input Flows:

Selected-Activity

Output Flows:

Activities

Activity-Selection

Date Last Altered:10/28/2002 Date Created:10/28/2002

Select Form Process

Description:

Allows the user to select one of the 5 types of forms.

Process #: 3.1

Process Description:

Takes the type of report the user wants to view and sends it on to be processed by display reports.

Location:

Generate Reports (3)

Input Flows:

Request-Archived-Info

Report-Query

Output Flows:

Display-Report

Date Last Altered:10/28/2002 Date Created:10/28/2002

Select Members Process

Description:

Allows the user to select the members who attended a certain activity.

Process #: 2.4

Process Description:

The user inputs the names of members who were in attendance and then sends that information to be calculated.

Location:

Manage Activities (2)

Input Flows:

Member-Selection

Output Flows:

Member-Display

Member-Data

Date Last Altered:10/28/2002 Date Created:10/28/2002

Selected-Activity Data Flow

Description:

The activity selected by the user in the screen interface.

Location:

Manage Activities (2)

Source: Screen Interface (Source/Sink)

Dest: Select Activity (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Storage Device File

Description:

Anything that data will be archived to, such as disk, cd or hard drive, etc.

Location:

level 1 (0)

Input Flows:

Data-Request

Archiving-Data

Output Flows:

Archive-Data

Date Last Altered:10/28/2002 Date Created:10/28/2002

Update-Confirmation Data Flow

Description:

The data sent back to the database interface confirming that an update has been made to the database.

Location:

level 1 (0)

Source: Access DBMS (File)

Dest: Manage Duties (Process)

Source: Access DBMS (File)

Dest: Manage Activities (Process)

Manage Duties (1)

Source: *** Not on Diagram ***

Dest: Database Interface (Source/Sink)

Manage Activities (2)

Source: *** Not on Diagram ***

Dest: Database Interface (Source/Sink)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Update-Data Data Flow

Description:

Sends the data edited by the user to be updated to Relay Info to be updated to the database.

Location:

Manage Profiles (6)

Source: Add/Edit (Process)

Dest: Relay Info (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Updated-Profile-Data Data Flow

Description:

Member data that has been edited by the user that is being sent to update the database

Location:

level 1 (0)

Source: Manage Profiles (Process)

Dest: Access DBMS (File)

Manage Profiles (6)

Source: Database Interface (Source/Sink)

Dest: *** Not on Diagram ***

Date Last Altered:10/28/2002 Date Created:10/28/2002

User Source/Sink

Description:

The person logged in and operating the software.

Location:

level 1 (0)

Input Flows:

Duty-Log
Activity-Log
Report
Authentication-Confirmation
Profile-Information

Output Flows:

Duty-Data
Activity-DAta
Report-Query
Request-Archived-Info
Archiving-Request
Login-Data
Profile-Updates

Date Last Altered:10/28/2002 Date Created:10/28/2002

Viewing-Request Data Flow

Description:

The member information requested from the database by the user to be viewed.

Location:

Manage Profiles (6)

Source: Screen Interface (Source/Sink)
Dest: Relay Info (Process)

Date Last Altered:10/28/2002 Date Created:10/28/2002

Section 4:
Functional Requirements

Process 0: LSAP

The LSAP database will allow for a user to track the activities and tours of duty, in which EMS members have participated in throughout the course of a year. The software package will allow the user to work with the database through the use of interactive, standardized forms and reports. The main purpose of these forms is to derive the number of points acquired towards retirement benefits. This will be done through the use of calculations based on guidelines defined by the New York State Comptroller.

Process 1: Manage Duties

This process is designed to provide a way for the user to input duty logs into the LSAP database. The duty logs consist of the dates and duration that a specific member was on duty. It will also keep track of the calls a member responded to per month.

Process 2: Manage Activities

The Manage Activities process is engineered with the ability to enter activity information, on an individual basis or by the whole squad. Specifically, the activity information includes one of the seven predefined activities, the location of the activity, the date on which the activity occurred, and the duration of the activity.

Process 3: Generate Reports

This process provides the bulk of the work that this system is designed to accomplish. It allows the user to compose various reports based upon the various activities and duty log information. This process will also handle the majority of the calculations that pertain to retirement benefits.

Process 4: Manage Archive

This process is the systems' interface between the user, the database management system and the storage device. It allows the user to archive the current database to a specified storage device. Also, it will retrieve archived data that is requested when the user wishes to generate a report on information within that data.

Process 5: Authenticate

The authentication process secures the LSAP system from entry by unwanted users. This is accomplished by a system password entered by the user in order to grant access to the system. Along with access control, the authenticate process will keep a transaction log by tagging each transaction made with the initials that the user has entered upon logging into the system.

Process 6: Manage Profiles

This process is designed to let the user add, remove, edit or view a specific members' personal information. The fields of the profile will include the members' name, address, and contact number. This process will interact directly with the database system for storage or removal of information.

Section 5:
Performance Requirements

The system must provide reliable tracking of tours of duty and member activity attendance. The security precautions taken are: logging on through the use of a system password and each transaction being tagged with the initials of the user. The response time of the system is dependant upon Microsoft Access' ability to retrieve and update information in the database.

Section 6:
Exception Handling

The LSAP system should be flexible enough to handle any form of abnormal occurrences that might be encountered within the system constraints. Such occurrences may be:

1. Bad or erroneous data entered into fields. If there is an attempted to commit incorrect data into the system, it will be blocked by the field and require a valid selection to be made.
2. Archived data will be accessible for viewing but not editing. This information will be unchangeable because the comptroller has confirmed it, and editing within the system after confirmation would cause conflict between submitted data and company data.

Section 7:
Early Subsets and Implementation Priorities

The system is required to provide certain functions in order to perform the tasks that it is designed to carry out. These functions can be defined as followed:

- Before the user has access to the system, it is required that they enter a system password for a security precaution.
- The system must allow the user to be able to create, remove, edit, and view all EMS member profiles.
- One of the two primary methods for inputting data into the system is presented as an activity entry form. This form must allow users to select an activity, its location, duration, and the members who attended it.
- The other primary method for data entry is a tour of duty form. This form will allow the user to select an EMS member, and enter the required field data as specified within the form.
- The system must be able to create and print reports in one of the specified formats.
- Finally, the system must be able to archive the data, which has been confirmed by the comptroller, into a storage device specified by the user.

Section 8:
Foreseeable Modification & Enhancements

There are some opportunities that can allow or require the enhancement of the software in the future. These opportunities include:

1) Electronic submission of squad annual reports to the New York State Comptroller.
2) Remote accessing of LSAP via the Internet.

Section 9:
Acceptance Criteria

This software must be able to effectively perform a number of different functions to make usability simple and fast. The actual functioning of our product will be thoroughly tested and finalized with verification by LSAP. The criteria for this project are as follows:

1) The user(s) will log in with a single password that will be the same for all users, along with the user being required to enter their initials for identification purposes. Also, along with this, there will be a log kept tracking all transactions made by each user.

2) User must be able to enter activities within the specified categories, members who attended, a description of activity, location of the activity, and the duration of the activity in hours.

3) Software will check for conflicts and redundant information pertaining to the activities entered for each member that is already existing within the database.

4) A Tour of Duty record must also be kept within the database for each LSAP member.

5) Reports should be available in the form of an annual report, individual detailed report, individual summary report, and squad report.

6) The entire database will be archived to save on disk space. The archiving will take place on a storage device of the client's discretion, and will be archived by year. This information will be accessible at all times.

Section 10:
Testing Requirements

1) The testing requirements phase of the project will consist of thoroughly testing all of the interfaces of the software. This will be the interface that exists between the user and the software, and then the interaction between the software and database.

2) The interaction between the user and our product will be done through interactions on a local PC. This will include a login attempt, which if is successful will allow the user access into the system. While inside the system, the user will have full access, allowing editing of the current database.

3) After each entry the program will update the fields of the database, and reports can be printed at that time if necessary.

Section 11:
Design Hints and Guidelines

Every project has its limitations and guidelines it must follow. These limit but also narrow down our direction in the design process as the projects progresses. Some of these limitations and guidelines are stated as follows:

- The LSAP software package will be designed and maintained using Microsoft Visual C++, running on a Windows operating system.
- All data will be stored within a Microsoft Access database file.
- All design will be done in conjunction with the input from Dr. Timoth Lederman.
- The user will have an easy to follow interface for interacting with the system.

Section 12:
Glossary

LSAP: (Length of Service Awards Program). Software package that tracks credits towards retirement benefits for volunteer EMS members.

MFC: (Microsoft Foundation Class). A software development tool used in conjunction with the C++ programming language, implemented within Microsoft Visual C++.

Microsoft Access: An application that provides simple management and versatility of small to medium sized data bases.

Microsoft Excel: An application that gives a user and efficient method of creating and editing spreadsheets.

Microsoft Visual C++: A software development tool that provides an efficient programming environment for the C++ programming language, and all libraries associated with it.

PC: (Personal Computer). A device that gives an individual many of the similar tools used on large and expensive network servers and mainframes.

Windows: A Microsoft product that provides a platform on which to run software and interact with peripheral hardware on personal computers.