

## Assignment #2

*Worth: 15% of final grade*

### **Account Ticketing System**

Milestone	Worth	Due Date	Submission Required
1	10%	(Suggested Target: March 23 <sup>rd</sup> )	NO
2	40%	March 26 <sup>th</sup> by 23:59 EST (end of Week 10)	YES
3	10%	(Suggested Target: April 2 <sup>nd</sup> )	NO
4	40%	April 9 <sup>th</sup> by 23:59 EST (end of Week 12)	YES

### Introduction

Assignment 2 is a continuation of Assignment 1 Milestone 4 and will complete the account ticketing system. The ticketing component will be added among other improvements.

Additional business and data validation rules will be required to ensure a higher quality data store is maintained including security and overall application functionality.

Customers will be able to login using their credentials and have their own menu of options which include viewing their account information, creating a new ticket, viewing their active tickets, and managing their tickets.

Agents will have more features available from respective main menu options including viewing new tickets, viewing active tickets, managing tickets, and archiving closed tickets.

Persistent storage of data will be implemented so data can be stored (to files) when it changes and reloaded when the application is later restarted. An archiving feature will permit agents to move closed tickets to an archive data file which will help contribute towards better performance and limit resource usage by keeping the active ticket data set lean.

In this assignment, you will be provided with a set of generalized instructions and given **more freedom to create your own solution** (this means creating your own functions, macro's, and deciding in what file they should be placed). **However, you must use the data types and functions that are explicitly stated**).

### Preparation

Download or clone the Assignment 2 (A2) from <https://github.com/Seneca-144100/BTP-Project>  
In the directory: A2/MS1 you will find the Visual Studio project files ready to load. Open the project (**a2ms1.vcxproj**) in Visual Studio.

#### IMPORTANT

- **You will need to copy your work from Assignment 1 Milestone 4 and add all the header and source code files to the a2ms1 Visual Studio project before continuing.**
- **Remember to update the comments at the top of each file to reflect Assignment 2 Milestone 1.**
- **DO NOT ADD the a1ms4.c file.**

## **Milestone – 1** (Worth 10%, Target Due Date: March 23<sup>rd</sup>)

Milestone – 1 does not require a submission and does not have a specific deadline, however, you should target to have this part completed no later than **March 23<sup>rd</sup>** to ensure you leave enough time to complete Milestone – 2 which must be submitted and is due **March 26<sup>th</sup>**.

Milestone-1 includes the main function and should not be modified (***a2ms1.c***). This main will do some preliminary data type testing by creating some test data using the ***new data types*** and then launch the application logic by calling the ***applicationStart*** function accordingly.

This milestone focuses on accommodating some ***new data types*** and extending/improving on data validation routines including implementing additional business logic (rules and conditions for data).

## **Specifications**

### **New Data Types**

You will need to create three (3) new data types in this milestone ("**Message**", "**Ticket**", and "**AccountTicketingData**") which will complete what is needed for this application.

Review the ***a2ms1.c*** file (more specifically the "***main***" and "***populateTickets***" functions) to learn more about the field information used in these new data types based on the data being assigned.

The "**Message**" and "**Ticket**" data types will need to be defined in a **new header file** "***ticket.h***" (don't forget to apply the ***safeguarding*** technique as described in Assignment 1).

### **Message type**

- The **Message** data type has three members. The 1<sup>st</sup> member is a single character representing the account type of the author of the message (same as used in the **Account** type). The 2<sup>nd</sup> member represents the display name for a given user (same as used in the **Account** type) and should be able to accommodate 30 printable characters. The 3<sup>rd</sup> member represents the message details and should be sized to accommodate 150 printable characters.
- Create meaningful member names for each.

### **Ticket type**

- The **Ticket** type has six (6) members.
  1. Unique number for a ticket.
  2. Customer account number related to the ticket.
  3. A ticket status indicator where 0 represents closed and 1 represent active (still open)
  4. A subject line (like an email subject line) that should be able to accommodate up to 30 printable characters.
  5. A counter that represents the number of messages associated with the ticket.
  6. An array of **Message** types that should be able to store up to 20 messages.
- Create meaningful member names for each.

### AccountTicketingData type

- This new data type is provided for you below and should be placed in the existing header file "**accountTicketingUI.h**". This type will be used to help simplify the passing of data between key functions with more efficiency and readability.

```
struct AccountTicketingData
{
    struct Account* accounts;    // array of accounts
    const int ACCOUNT_MAX_SIZE; // maximum elements for account array

    struct Ticket* tickets;      // array of tickets
    const int TICKET_MAX_SIZE;   // maximum elements for ticket array
};
```

- Review the **a2ms1.c** file to see how this is instantiated and used.

### Application Logic Entry-Point

The function parameters for "**applicationStart**" will need to be modified so it receives just one argument which is a pointer to the new "**AccountTicketingData**" type.

- Update the necessary function definition to use the new argument accordingly (after reading and implementing the menu changes below).

### Menu Modifications

#### menuAgent

- The function used for the **agent** main menu "**menuAgent**" currently has three (3) parameters but will require modification. Since the accounts array and its maximum size information are now members of the new data type "**AccountTicketingData**", the existing first two parameters can be replaced with a pointer to the new "**AccountTicketingData**" type. This means this function should now only have two (2) parameters.
- Update the necessary function definition to use the new argument accordingly.
- The **agentMenu** function should be modified to display four (4) more menu options (6 – 9). Selecting any of these new options will display a temporary notice that the feature is not currently available. Review the sample output for details.

#### New Client Main Menu

- A new menu needs to be created that will be the main menu for a customer login.
- Currently, when a customer log's in with a customer account number, the application states "CUSTOMER: home menu currently unavailable...". This should be removed and replaced with the customer main menu.
- Review the sample output for the available customer menu options.
- You will need to handle option 1 that displays the account detail information however the other options should display a temporary notice that the feature is not currently available. Review the sample output for details.
- Something to consider: The customer main menu should only have access to Ticket information and the customer's own account record – it should not have access to the system's accounts array information.

## Data Validation and Business Rules

You should be applying system library functions like the character analysis and manipulators you have recently learned about to help enforce data validation and business rules where appropriate (review your code and apply where necessary).

### New Account

- The application currently prompts the user for an account number when creating a new **Account**. This is not ideal and needs to be replaced with an **auto-generated account number** based on the next increment of the highest number found in the accounts data set.
  - Upgrade your process for creating a new account so the account number is automatically assigned before getting user input for the remaining data. The account number should also be **displayed as part of the title/banner** (see below sample, the **50600** was automatically assigned).
  - Prompting for a new account should therefore start with the account type like this:

```
New Account Data (Account#:50600)
-----
Enter the account type (A=Agent | C=Customer):
```

### User Login

- Enhance the validation for obtaining the **UserLogin** member that stores the **login identifier** and do not allow any **whitespace characters** (spaces and tabs etc.). Below is an example of an attempt to enter whitespace characters:

```
User Login Data Input
-----
Enter user login (10 chars max): my login
ERROR: The user login must NOT contain whitespace characters.
Enter user login (10 chars max): my login
ERROR: The user login must NOT contain whitespace characters.
Enter user login (10 chars max):
```

- Enhance the validation for obtaining the **UserLogin** member that stores the **password** to enforce the password meets the new criteria (see example below):

```
Enter the password (must be 8 chars in length): password
SECURITY: Password must contain 2 of each:
    Digit: 0-9
    UPPERCASE character
    lowercase character
    symbol character: !@#$$%^&*
Enter the password (must be 8 chars in length): aaAA#$12
```

Note: "aaAA##\$12" is valid because it meets the password validation criteria.

### Demographic

- Enhance the **Demographic** process so that entered values for the **country** member are stored as all UPPERCASE characters (the user should be able to enter lowercase characters and you will convert it to uppercase accordingly).

## A2-MS1: Sample Output

```
=====
Account Ticketing System - Login
=====
1) Login to the system
0) Exit application
-----

Selection: 1

Enter your account#: 50008

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) Manage a ticket
9) Archive closed tickets
-----
0) Logout

Selection: 1

New Account Data (Account#:50600)
-----
Enter the account type (A=Agent | C=Customer): C

User Login Data Input
-----
Enter user login (10 chars max): Has Space
ERROR: The user login must NOT contain whitespace characters.
Enter user login (10 chars max): NoSpace
Enter the display name (30 chars max): Customer Chris
Enter the password (must be 8 chars in length): A
ERROR: String length must be exactly 8 chars: 12345678
SECURITY: Password must contain 2 of each:
    Digit: 0-9
    UPPERCASE character
    lowercase character
    symbol character: !@#$%^&*
Enter the password (must be 8 chars in length): pa55WD!d
SECURITY: Password must contain 2 of each:
    Digit: 0-9
```

```

        UPPERCASE character
        lowercase character
        symbol character: !@#$%^&*
Enter the password (must be 8 chars in length): pa55WD&!

Demographic Data Input
-----
Enter birth year (current age must be between 18 and 110): 1999
Enter the household Income: $240750.11
Enter the country (30 chars max.): england

*** New account added! ***

```

```
<< ENTER key to Continue... >> [ENTER]
```

```

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) Manage a ticket
9) Archive closed tickets
-----
0) Logout

```

```
Selection: 5
```

Acct#	Acct.Type	Birth	Income	Country	Disp.Name	Login	Password
30001	CUSTOMER	1990	\$ 150000.10	CANADA	Silly Sally	cust1	A*1*3*D*
50599	AGENT	1972	\$2250400.22	AFRICA	Fred Flintstone	agent1	y*b*#*@*
30004	CUSTOMER	1978	\$ 250800.74	INDIA	Betty Boop	cust2	1*E*P*!*
50008	AGENT	1952	\$2350600.82	U.S.A.	Will Smith	agentJ	T***2*t*
20020	CUSTOMER	2000	\$ 350500.35	KOREA	Shrimpy Shrimp	cust3	8*3*J*m*
50600	CUSTOMER	1999	\$ 240750.11	ENGLAND	Customer Chris	NoSpace	p*5*W*&*

```
<< ENTER key to Continue... >> [ENTER]
```

```

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view

```

```
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) Manage a ticket
9) Archive closed tickets
-----
0) Logout

Selection: 2

Enter the account#: 50600

Account: 50600 - Update Options
-----
1) Update account type (current value: C)
2) Login
3) Demographics
0) Done
Selection: 2

User Login: NoSpace - Update Options
-----
1) Display name (current value: Customer Chris)
2) Password
0) Done
Selection: 2

Enter the password (must be 8 chars in length): juMP1!*&
SECURITY: Password must contain 2 of each:
    Digit: 0-9
    UPPERCASE character
    lowercase character
    symbol character: !@#$%^&*
Enter the password (must be 8 chars in length): juMP1!*9

User Login: NoSpace - Update Options
-----
1) Display name (current value: Customer Chris)
2) Password
0) Done
Selection: 0

Account: 50600 - Update Options
-----
1) Update account type (current value: C)
2) Login
3) Demographics
0) Done
Selection: 3

Demographic Update Options
-----
```

```
1) Household Income (current value: $240750.11)
2) Country (current value: ENGLAND)
0) Done
Selection: 2
```

```
Enter the country (30 chars max.): romania
```

```
Demographic Update Options
```

```
-----
1) Household Income (current value: $240750.11)
2) Country (current value: ROMANIA)
0) Done
Selection: 0
```

```
Account: 50600 - Update Options
```

```
-----
1) Update account type (current value: C)
2) Login
3) Demographics
0) Done
Selection: 0
```

```
AGENT: Will Smith (50008)
```

```
=====
Account Ticketing System - Agent Menu
=====
```

```
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
```

```
-----
6) List new tickets
7) List active tickets
8) Manage a ticket
9) Archive closed tickets
```

```
-----
0) Logout
```

```
Selection: 6
```

```
Feature #6 currently unavailable!
```

```
<< ENTER key to Continue... >> [ENTER]
```

```
AGENT: Will Smith (50008)
```

```
=====
Account Ticketing System - Agent Menu
=====
```

```
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
```



5) List accounts: detailed view

-----  
6) List new tickets

7) List active tickets

8) Manage a ticket

9) Archive closed tickets

-----  
0) Logout

Selection: 7

Feature #7 currently unavailable!

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu

=====  
1) Add a new account

2) Modify an existing account

3) Remove an account

4) List accounts: summary view

5) List accounts: detailed view

-----  
6) List new tickets

7) List active tickets

8) Manage a ticket

9) Archive closed tickets

-----  
0) Logout

Selection: 8

Feature #8 currently unavailable!

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu

=====  
1) Add a new account

2) Modify an existing account

3) Remove an account

4) List accounts: summary view

5) List accounts: detailed view

-----  
6) List new tickets

7) List active tickets

8) Manage a ticket

9) Archive closed tickets

0) Logout

Selection: 9

Feature #9 currently unavailable!

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 
- 6) List new tickets
  - 7) List active tickets
  - 8) Manage a ticket
  - 9) Archive closed tickets
- 

0) Logout

Selection: 0

### LOGGED OUT ###

=====  
Account Ticketing System - Login  
=====

- 1) Login to the system
  - 0) Exit application
- 

Selection: 1

Enter your account#: 12345

ERROR: Access Denied.

<< ENTER key to Continue... >> [ENTER]

=====  
Account Ticketing System - Login  
=====

- 1) Login to the system
  - 0) Exit application
- 

Selection: 1

Enter your account#: 50600

CUSTOMER: Customer Chris (50600)

Customer Main Menu

- 1) View your account detail
- 2) List my tickets
- 3) Create a new ticket
- 4) Manage a ticket

0) Logout

Selection: 1

Acct#	Acct.Type	Birth	Income	Country	Disp.Name	Login	Password
50600	CUSTOMER	1999	\$ 240750.11	ROMANIA	Customer Chris	NoSpace	j*M*1***

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Customer Chris (50600)

Customer Main Menu

- 1) View your account detail
- 2) List my tickets
- 3) Create a new ticket
- 4) Manage a ticket

0) Logout

Selection: 2

Feature #2 currently unavailable!

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Customer Chris (50600)

Customer Main Menu

- 1) View your account detail
- 2) List my tickets
- 3) Create a new ticket
- 4) Manage a ticket

0) Logout

Selection: 3

Feature #3 currently unavailable!

```
<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Customer Chris (50600)
=====
Customer Main Menu
=====
1) View your account detail
2) List my tickets
3) Create a new ticket
4) Manage a ticket
-----
0) Logout

Selection: 4

Feature #4 currently unavailable!

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Customer Chris (50600)
=====
Customer Main Menu
=====
1) View your account detail
2) List my tickets
3) Create a new ticket
4) Manage a ticket
-----
0) Logout

Selection: 0

### LOGGED OUT ###

=====
Account Ticketing System - Login
=====
1) Login to the system
0) Exit application
-----

Selection: 0

Are you sure you want to exit? ([Y]es|[N]o): y

=====
Account Ticketing System - Terminated
=====
```

## **Milestone – 1 Submission**

1. ***This is a test submission for verifying your work only*** – no files will be submitted to your instructor.
2. Upload (file transfer) your all header and source files:
  - **a2ms1.c**
  - **account.c**
  - **account.h**
  - **accountTicketingUI.c**
  - **accountTicketingUI.h**
  - **commonHelpers.c**
  - **commonHelpers.h**
  - **ticket.h**
3. Login to matrix in an SSH terminal and change directory to where you placed your source code.
4. Manually compile and run your program to make sure everything works properly:

```
gcc -Wall a2ms1.c account.c accountTicketingUI.c commonHelpers.c -o  
ms1 <ENTER>
```

*If there are no error/warnings are generated, execute it: ms1 <ENTER>*

5. Run the submission command below (replace **profname.proflastname** with **your professors** Seneca userid and replace **NAA** with your section):

```
~profName.proflastname/submit 100a2ms1/NAA_ms1 <ENTER>
```

6. Follow the on-screen submission instructions.

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## **Milestone – 2** (Worth 20%, Due Date: March 26<sup>TH</sup>)

Milestone – 2 will involve refinements to be made to any appropriate code that would benefit from using the string library (string.h). In addition, the login procedure and requirements will be enhanced to include more robust authentication. This will involve the prompting of the user for their account number, login identifier, and password to be validated before being given access to the system (only three (3) attempts will be permitted and if not successful, will be returned to the login menu). Lastly, the viewing of ticket information will be added for both the customer and agent account types.

Milestone-2 includes the main function which should not be modified (**a2ms2.c**). The main function will populate account and ticketing data to be used in testing the changes and new features before handing off the process to your business logic, starting in the **applicationStart** function.

This milestone focuses on accommodating some **new data types** and extending/improving on data validation routines including implementing additional business logic (rules and conditions for data).

## Specifications

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### Reminder

You will be provided with a set of generalized instructions and given more freedom to create your own solution and unless otherwise explicitly stated, you should **create your own functions and macro's where appropriate, including deciding in what file they should be placed.**

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### String Library

- Review all your code and upgrade where necessary to use functions available from the string library. Functions you should be considering can be any of the following (but no others):  
**strlen, strcpy, strcat, strcmp, strncat, strncmp, strncpy, strchr, strrchr**

### Business Rules and Logic Modifications

#### Login Process

- The login process currently only prompts for an account number to permit access to the system. This must be changed to incorporate more robust authentication. This will now include prompting for the following:
  - Account number
  - User login identifier
  - Password
- The combined validation of all these pieces of information will determine if the user can have access to the system where the appropriate main menu will be loaded as determined by the account type (customer or agent).
- Only three (3) attempts are permitted. If the 3<sup>rd</sup> attempt does not match the records for the provided account and user information, the user should be returned to the starting menu.
- Review the sample output carefully to see how the process should work when invalid account numbers, and/or invalid user login identifiers, and/or invalid passwords are entered.
- Note: You do not want to disclose to the user which of the three (3) fields were incorrect – doing so helps hackers determine where they have guessed correctly!

### Viewing Tickets

#### Customer

- Currently, the **customer main menu** option #4 to "List my tickets" indicates the feature is currently unavailable. This must now be replaced with the functionality to display all the tickets related to the logged-in customer's account.
- Review the sample output to see how this should work including what content should be displayed and the desired tabular format.
- You will notice, after displaying the main ticket summaries, the user should have the option to enter a specific ticket number to view the messages related to that specific ticket.

- Review how the contents of the messages should be displayed and the required formatting.
- When the user enters a zero (0), control will be returned to the ticket menu.

### Agent

- Currently, the **agent main menu** options #6 and #7 to list new and active tickets indicates the feature is currently unavailable. This must now be replaced with the functionality to display all the appropriate tickets for the respective views (new or active).
- **New tickets** are determined based on two field values. The ticket status must be open (will have a value of 1) and there will be only one (1) message.

Note: Only customers can create tickets and when they do, a message will be created to describe the problem, so the first message for a ticket will always be authored by the customer. The creating of new tickets will not be done in this milestone but will be done in the next milestone!

- **Active tickets** are determined based on the status being open (will have a value of 1) and this listing will include new tickets.
- The ticket listing is like the customer view but will include two (2) additional pieces of information:
  - Account number
  - Customer's login display name \*

\*Hint: see "note" above regarding ticket construction. You may assume the 1<sup>st</sup> message in a ticket will be authored by a customer.
- Review the sample output to see how this should work including what content should be displayed and the desired tabular format.
- You will notice, after displaying the main ticket summaries, the user should have the option to enter a specific ticket number to view the messages related to that specific ticket.
- Review how the contents of the messages should be displayed and the required formatting.
- When the user enters a zero (0), control will be returned to the ticket menu.

## A2-MS2: Sample Output

```
=====
Account Ticketing System - Login
=====
1) Login to the system
0) Exit application
-----

Selection: Buffalo Bison
ERROR: Value must be an integer: -1
ERROR: Value must be between 0 and 1 inclusive: 1

Enter the account#: ACCT 1234
ERROR: Value must be an integer: 1234
User Login      : Rooster Ronnie
```

```
Password      : Hippo Henrietta
INVALID user login/password combination! [attempts remaining:2]
```

```
Enter the account#: 1234
User Login     : cust2
Password       : 1pE@Pr!3
INVALID user login/password combination! [attempts remaining:1]
```

```
Enter the account#: 50008
User Login     : cust2
Password       : 1pE@Pr!3
INVALID user login/password combination! [attempts remaining:0]
```

```
ERROR: Login failed!
```

```
<< ENTER key to Continue... >> [ENTER]
```

```
=====
Account Ticketing System - Login
=====
```

- 1) Login to the system
  - 0) Exit application
- ```
-----
```

```
Selection: 1
```

```
Enter the account#: 50008
User Login     : agentJ
Password       : TT*&21tt
```

```
AGENT: Will Smith (50008)
```

```
=====
Account Ticketing System - Agent Menu
=====
```

- 1) Add a new account
  - 2) Modify an existing account
  - 3) Remove an account
  - 4) List accounts: summary view
  - 5) List accounts: detailed view
- ```
-----
```

- 6) List new tickets
  - 7) List active tickets
  - 8) Manage a ticket
  - 9) Archive closed tickets
- ```
-----
```

```
0) Logout
```

```
Selection: 4
```

```
Acct# Acct.Type Birth
-----
30001 CUSTOMER 1990
50599 AGENT    1972
```



```
30004 CUSTOMER 1978
50008 AGENT 1952
20020 CUSTOMER 2000
```

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

-----

- 6) List new tickets
- 7) List active tickets
- 8) Manage a ticket
- 9) Archive closed tickets

-----

0) Logout

Selection: 5

| Acct# | Acct.Type | Birth | Income       | Country | Disp.Name       | Login  | Password |
|-------|-----------|-------|--------------|---------|-----------------|--------|----------|
| 30001 | CUSTOMER  | 1990  | \$ 150000.10 | CANADA  | Silly Sally     | cust1  | A*1*3*D* |
| 50599 | AGENT     | 1972  | \$2250400.22 | AFRICA  | Fred Flintstone | agent1 | y*b*##@* |
| 30004 | CUSTOMER  | 1978  | \$ 250800.74 | INDIA   | Betty Boop      | cust2  | 1*E*p*!* |
| 50008 | AGENT     | 1952  | \$2350600.82 | U.S.A.  | Will Smith      | agentJ | T***2*t* |
| 20020 | CUSTOMER  | 2000  | \$ 350500.35 | KOREA   | Shrimpy Shrimp  | cust3  | 8*3*J*m* |

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

-----

- 6) List new tickets
- 7) List active tickets
- 8) Manage a ticket
- 9) Archive closed tickets

-----

0) Logout

Selection: 2

Enter the account#: 30004

Account: 30004 - Update Options

-----  
1) Update account type (current value: C)  
2) Login  
3) Demographics  
0) Done  
Selection: 2

User Login: cust2 - Update Options

-----  
1) Display name (current value: Betty Boop)  
2) Password  
0) Done  
Selection: 2

Enter the password (must be 8 chars in length): bb33&&44

SECURITY: Password must contain 2 of each:

Digit: 0-9

UPPERCASE character

lowercase character

symbol character: !@#\$%^&\*

Enter the password (must be 8 chars in length): bb33&&BB

User Login: cust2 - Update Options

-----  
1) Display name (current value: Betty Boop)  
2) Password  
0) Done  
Selection: 0

Account: 30004 - Update Options

-----  
1) Update account type (current value: C)  
2) Login  
3) Demographics  
0) Done  
Selection: 0

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu

=====  
1) Add a new account  
2) Modify an existing account  
3) Remove an account  
4) List accounts: summary view  
5) List accounts: detailed view  
-----  
6) List new tickets  
7) List active tickets

8) Manage a ticket  
 9) Archive closed tickets

-----  
 0) Logout

Selection: **5**

| Acct# | Acct.Type | Birth | Income       | Country | Disp.Name       | Login  | Password  |
|-------|-----------|-------|--------------|---------|-----------------|--------|-----------|
| 30001 | CUSTOMER  | 1990  | \$ 150000.10 | CANADA  | Silly Sally     | cust1  | A*1*3*D*  |
| 50599 | AGENT     | 1972  | \$2250400.22 | AFRICA  | Fred Flintstone | agent1 | y*b*##*@* |
| 30004 | CUSTOMER  | 1978  | \$ 250800.74 | INDIA   | Betty Boop      | cust2  | b*3*&*B*  |
| 50008 | AGENT     | 1952  | \$2350600.82 | U.S.A.  | Will Smith      | agentJ | T***2*t*  |
| 20020 | CUSTOMER  | 2000  | \$ 350500.35 | KOREA   | Shrimpy Shrimp  | cust3  | 8*3*J*m*  |

<< ENTER key to Continue... >> **[ENTER]**

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

1) Add a new account  
 2) Modify an existing account  
 3) Remove an account  
 4) List accounts: summary view  
 5) List accounts: detailed view

-----

6) List new tickets  
 7) List active tickets  
 8) Manage a ticket  
 9) Archive closed tickets

-----

0) Logout

Selection: **6**

| Ticket | Acct# | Display Name | Status | Subject                   | Messages |
|--------|-------|--------------|--------|---------------------------|----------|
| 080599 | 30001 | Silly Sally  | OPEN   | No power/does not turn on | 1        |

Enter the ticket number to view the messages or

0 to return to previous menu: **-1**

ERROR: Value must be positive or zero: **123456**

ERROR: Invalid ticket number.

<< ENTER key to Continue... >> **[ENTER]**

| Ticket | Acct# | Display Name | Status | Subject | Messages |
|--------|-------|--------------|--------|---------|----------|
|--------|-------|--------------|--------|---------|----------|

```
080599 30001 Silly Sally      OPEN   No power/does not turn on      1
-----
```

Enter the ticket number to view the messages or  
0 to return to previous menu: 080599

```
=====
080599 (OPEN) Re: No power/does not turn on
=====
```

CUSTOMER (Silly Sally):

The unit won't turn on - please help.

<< ENTER key to Continue... >> [ENTER]

```
-----
Ticket Acct# Display Name      Status Subject                      Messages
-----
080599 30001 Silly Sally      OPEN   No power/does not turn on      1
-----
```

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

AGENT: Will Smith (50008)

```
=====
Account Ticketing System - Agent Menu
=====
```

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- ```
-----
```
- 6) List new tickets
  - 7) List active tickets
  - 8) Manage a ticket
  - 9) Archive closed tickets
- ```
-----
```

0) Logout

Selection: 7

```
-----
Ticket Acct# Display Name      Status Subject                      Messages
-----
060001 30004 Betty Boop      OPEN   Frequent Disconnects          2
080599 30001 Silly Sally      OPEN   No power/does not turn on      1
080004 20020 Shrimpy Shrimp  OPEN   My head hurts!                 3
080020 20020 Shrimpy Shrimp  OPEN   It's broken/does not work      3
-----
```

Enter the ticket number to view the messages or  
0 to return to previous menu: 123456

ERROR: Invalid ticket number.

<< ENTER key to Continue... >> [ENTER]

| Ticket | Acct# | Display Name   | Status | Subject                   | Messages |
|--------|-------|----------------|--------|---------------------------|----------|
| 060001 | 30004 | Betty Boop     | OPEN   | Frequent Disconnects      | 2        |
| 080599 | 30001 | Silly Sally    | OPEN   | No power/does not turn on | 1        |
| 080004 | 20020 | Shrimpy Shrimp | OPEN   | My head hurts!            | 3        |
| 080020 | 20020 | Shrimpy Shrimp | OPEN   | It's broken/does not work | 3        |

Enter the ticket number to view the messages or  
0 to return to previous menu: 80004

=====

080004 (OPEN) Re: My head hurts!

=====

CUSTOMER (Shrimpy Shrimp):  
When the unit is placed on my head it hurts.

AGENT (Will Smith):  
Don't place it on your head.

CUSTOMER (Shrimpy Shrimp):  
I don't understand - why not?

<< ENTER key to Continue... >> [ENTER]

| Ticket | Acct# | Display Name   | Status | Subject                   | Messages |
|--------|-------|----------------|--------|---------------------------|----------|
| 060001 | 30004 | Betty Boop     | OPEN   | Frequent Disconnects      | 2        |
| 080599 | 30001 | Silly Sally    | OPEN   | No power/does not turn on | 1        |
| 080004 | 20020 | Shrimpy Shrimp | OPEN   | My head hurts!            | 3        |
| 080020 | 20020 | Shrimpy Shrimp | OPEN   | It's broken/does not work | 3        |

Enter the ticket number to view the messages or  
0 to return to previous menu: 080020

=====

080020 (OPEN) Re: It's broken/does not work

=====

CUSTOMER (Shrimpy Shrimp):  
When I took it out of the box, it's in pieces.

AGENT (Fred Flintstone):  
You have to assemble it - read the instructions.

CUSTOMER (Shrimpy Shrimp):

What are instructions?

<< ENTER key to Continue... >> [ENTER]

| Ticket | Acct# | Display Name   | Status | Subject                   | Messages |
|--------|-------|----------------|--------|---------------------------|----------|
| 060001 | 30004 | Betty Boop     | OPEN   | Frequent Disconnects      | 2        |
| 080599 | 30001 | Silly Sally    | OPEN   | No power/does not turn on | 1        |
| 080004 | 20020 | Shrimpy Shrimp | OPEN   | My head hurts!            | 3        |
| 080020 | 20020 | Shrimpy Shrimp | OPEN   | It's broken/does not work | 3        |

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

AGENT: Will Smith (50008)

Account Ticketing System - Agent Menu

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 6) List new tickets
- 7) List active tickets
- 8) Manage a ticket
- 9) Archive closed tickets

0) Logout

Selection: 0

### LOGGED OUT ###

Account Ticketing System - Login

- 1) Login to the system
- 0) Exit application

Selection: 1

Enter the account#: 30004

User Login : cust2

Password : bb33&&44

INVALID user login/password combination! [attempts remaining:2]

Enter the account#: 30004

User Login : cust2

Password : **bb33&&BB**

CUSTOMER: Betty Boop (30004)

=====

Customer Main Menu

=====

- 1) View your account detail
  - 2) Create a new ticket
  - 3) Modify an active ticket
  - 4) List my tickets
- 

0) Logout

Selection: **1**

| Acct# | Acct.Type | Birth | Income       | Country | Disp.Name  | Login | Password |
|-------|-----------|-------|--------------|---------|------------|-------|----------|
| 30004 | CUSTOMER  | 1978  | \$ 250800.74 | INDIA   | Betty Boop | cust2 | b*3*&*B* |

<< ENTER key to Continue... >> **[ENTER]**

CUSTOMER: Betty Boop (30004)

=====

Customer Main Menu

=====

- 1) View your account detail
  - 2) Create a new ticket
  - 3) Modify an active ticket
  - 4) List my tickets
- 

0) Logout

Selection: **4**

| Ticket | Status | Subject              | Messages |
|--------|--------|----------------------|----------|
| 060001 | OPEN   | Frequent Disconnects | 2        |
| 070533 | CLOSED | Nothing happens...   | 7        |

Enter the ticket number to view the messages or  
0 to return to previous menu: **123456**

ERROR: Invalid ticket number.

<< ENTER key to Continue... >> **[ENTER]**

| Ticket | Status | Subject              | Messages |
|--------|--------|----------------------|----------|
| 060001 | OPEN   | Frequent Disconnects | 2        |
| 070533 | CLOSED | Nothing happens...   | 7        |

-----  
Enter the ticket number to view the messages or  
0 to return to previous menu: 060001

=====

060001 (OPEN) Re: Frequent Disconnects

=====

CUSTOMER (Betty Boop):

Every time I go near the microwave the unit disconnects.

AGENT (Will Smith):

Don't go near the microwave.

<< ENTER key to Continue... >> [ENTER]

-----

| Ticket | Status | Subject              | Messages |
|--------|--------|----------------------|----------|
| 060001 | OPEN   | Frequent Disconnects | 2        |
| 070533 | CLOSED | Nothing happens...   | 7        |

-----

Enter the ticket number to view the messages or  
0 to return to previous menu: 70533

=====

070533 (CLOSED) Re: Nothing happens...

=====

CUSTOMER (Betty Boop):

Instructions state to 'say yes' to the prompts - but nothing happens.

AGENT (Fred Flintstone):

Is this when setting up the unit for the first time?

CUSTOMER (Betty Boop):

Yes - it asks me if I'm ready to start and I tell it 'yes' nothing happens.

AGENT (Fred Flintstone):

Are you pressing the 'yes' button on the unit?

CUSTOMER (Betty Boop):

No, instructions state to say yes - not press any buttons.

AGENT (Will Smith):

'say' was meant to be interpreted as press the 'yes' button.

CUSTOMER (Betty Boop):

Oh I get it now - thanks!

<< ENTER key to Continue... >> [ENTER]

-----



| Ticket | Status | Subject              | Messages |
|--------|--------|----------------------|----------|
| 060001 | OPEN   | Frequent Disconnects | 2        |
| 070533 | CLOSED | Nothing happens...   | 7        |

Enter the ticket number to view the messages or  
 0 to return to previous menu: -1  
 ERROR: Value must be positive or zero: 0

CUSTOMER: Betty Boop (30004)

Customer Main Menu

- 1) View your account detail
- 2) Create a new ticket
- 3) Modify an active ticket
- 4) List my tickets

0) Logout

Selection: 0

### LOGGED OUT ###

Account Ticketing System - Login

- 1) Login to the system
- 0) Exit application

Selection: 0

Are you sure you want to exit? ([Y]es|[N]o): y

Account Ticketing System - Terminated

## **Reflection (Worth 20%, Due Date: March 26<sup>th</sup>)**

### **Academic Integrity**

It is a violation of academic policy to copy content from the course notes or any other published source (including websites, work from another student, or sharing your work with others).

Failure to adhere to this policy will result in the filing of a violation report to the Academic Integrity Committee.

## Instructions

- Create a text file named “**reflect.txt**” and record your answers to the questions below in this file.
  - Answer each question in sentence/paragraph form unless otherwise instructed.
  - A minimum **350** overall word count is required (does NOT include the question or any sample code) and no more than **600**.
  - Whenever possible, it is expected you will substantiate your answers with a brief example to demonstrate your view(s).
1. What is your favourite string function from the string library that you have used in this application? Describe why?
  2. List all the **new** function **prototypes** you added to this milestone. For each new function, briefly describe why you created it and include what module/library you put it in and why.

**Reflections will be graded based on the published rubric:**

<https://github.com/Seneca-144100/BTP-Project/tree/master/Reflection%20Rubric.pdf>

## Milestone – 2 Submission

1. Upload (file transfer) your all header and source files including your reflection:

- **a2ms1.c**
- **account.c**
- **account.h**
- **accountTicketingUI.c**
- **accountTicketingUI.h**
- **commonHelpers.c**
- **commonHelpers.h**
- **ticket.h**
- **reflect.txt**

2. Login to matrix in an SSH terminal and change directory to where you placed your source code.
3. Manually compile and run your program to make sure everything works properly:

```
gcc -Wall a2ms2.c account.c accountTicketingUI.c commonHelpers.c -o ms2  
<ENTER>
```

*If there are no error/warnings are generated, execute it: **ms2** <ENTER>*

4. Run the submission command below (replace **profname.proflastname** with **your professors** Seneca userid and replace **NAA** with your section):

```
~profName.proflastname/submit 100a2ms2/NAA_ms2 <ENTER>
```

5. Follow the on-screen submission instructions.

## **Milestone – 3** (Worth 10%, Target Due Date: April 2<sup>nd</sup>)

Milestone – 3 does not require a submission and does not have a specific deadline, however, you should target to have this part completed no later than **April 2<sup>nd</sup>** to ensure you leave enough time to complete Milestone – 4 which must be submitted and is due **April 9<sup>th</sup>**. Milestone-3 includes the main function and, like previous milestones, should not be modified (**a2ms3.c**). The provided main creates some test data and then launches the application logic by calling the **applicationStart** function.

This milestone completes the ticketing component where data input and the management of tickets is implemented. It is highly possible you will need to create a source code file (.c) for the **ticket** module/library to address some of the new features for this milestone.

## **Specifications**

### **Ticket Status**

Management did not like the inconsistency in terminology used for the ticket status. The term "active" is used in all the UI menu's while the listing of the ticket status values state "OPEN". It has been decided that all displayed values of a ticket status must state "**ACTIVE**" (and not "OPEN"). Refer to the sample output for details.

### **Viewing Ticket Messages**

Additional logic needs to be added so the UI will pause execution (wait for the user to hit the enter key) after displaying every 5<sup>th</sup> message. This will implement paging of the tickets one screen at a time when there are too many messages to see on a single screen.

### **Customer Ticket Management**

Options from the **customer main menu**:

#### **Create a new ticket**

- New tickets must be initiated by the customer (agents are not permitted to create tickets).
- The system must **automatically determine** the next available **ticket number** (follows the same logic applied in the generation of the next account number).

Note: If the ticketing system has reached the maximum allowable number of tickets, the following error message should be displayed and then return to the main menu:

**ERROR: Ticket listing is FULL, call ITS Support!**

- All new tickets are immediately set to the "ACTIVE" status.
- The customer's account number must be associated with the new ticket being created.
- The main **subject** of the ticket must be entered by the customer that concisely summarizes the purpose of the ticket (the problem).
- It is mandatory the customer enter an initial **message** that details the reason for the ticket.

Hint: You can guarantee and assume that all active or closed tickets will have at least one message and that the first message will be generated by the customer

- The user type and display name must be recorded with the message.

#### Modify an active ticket

- The customer must enter the ticket number to be modified.
- A customer is not permitted to modify another customer's ticket – only their own and they may not modify a closed ticket.
- The customer may modify the ticket **subject**, add another **message** to the ticket, or **close** the ticket to indicate the problem has been resolved.
- If the message limit has been reached, you should display an error:

**ERROR: Message limit has been reached, call ITS Support!**

Note: Closing a ticket should prompt the customer for confirmation followed by an opportunity to enter a final message but only if the message limit has not been reached.

- Review the sample output to see how these options are processed.

#### Agent Ticket Management

Options from the **agent main menu**:

Management noted the agent main menu did not provide a way to view a listing of **closed tickets**. This feature "**List closed tickets**" must be added accordingly (these would be filtered records where the ticket status is CLOSED). It should be placed after the 7<sup>th</sup> option "List active tickets" and renumber the remaining options accordingly.

#### Remove an account

- Removal of an account should also **remove any related tickets** that have an **ACTIVE** status – affected ticket records should be marked as removed by setting the **ticket number to zero** which will free-up the ticket record listing and allow for more tickets to be added by other customers.

Note: In Milestone 4, the removed account record will be archived to persistent storage.

- Do not remove tickets that have a **CLOSED** status (these will be archived in the next milestone).

#### Manage a ticket

- The agent must enter a valid ticket number to be modified.
- The agent may modify the ticket in three (3) possible ways:
  1. Add a message (if the limits have not been reached and only if the ticket is NOT closed)
  2. Close the ticket (only if it is currently active)
    - Like the customer closing options, the agent should be prompted for confirmation followed by an opportunity to enter a final message but only if the message limit has not been reached.
  3. Re-open a ticket to make it ACTIVE again (only if it is currently closed) and should get confirmation from the agent.

#### Archive closed tickets

- This option will be completed in milestone 4.

## A2-MS3: Sample Output

```
=====
Account Ticketing System - Login
=====
1) Login to the system
0) Exit application
-----

Selection: 1

Enter the account#: 30004
User Login      : cust2
Password       : 77*&FFaa

CUSTOMER: Betty Boop (30004)
=====
Customer Main Menu
=====
1) View your account detail
2) Create a new ticket
3) Modify an active ticket
4) List my tickets
-----
0) Logout

Selection: 4

-----
Ticket Status Subject                               Messages
-----
060001 ACTIVE Frequent Disconnects                    5
030530 ACTIVE Does not respond to command...         20
070533 ACTIVE Nothing happens...                     20
080020 ACTIVE It's broken/does not work               19
-----

Enter the ticket number to view the messages or
0 to return to previous menu: 80004

ERROR: Invalid ticket number - you may only access your own tickets.

<< ENTER key to Continue... >> [ENTER]

-----
Ticket Status Subject                               Messages
-----
060001 ACTIVE Frequent Disconnects                    5
030530 ACTIVE Does not respond to command...         20
070533 ACTIVE Nothing happens...                     20
080020 ACTIVE It's broken/does not work               19
-----
```

Enter the ticket number to view the messages or  
0 to return to previous menu: **60001**

=====

060001 (ACTIVE) Re: Frequent Disconnects

=====

CUSTOMER (Betty Boop):

Every time I go near the microwave the unit disconnects.

AGENT (Will Smith):

Don't go near the microwave.

AGENT (Will Smith):

It will radiate waves which will interrupt the unit.

CUSTOMER (Betty Boop):

But I use the microwave a lot.

AGENT (Will Smith):

You cook too much!

<< ENTER key to Continue... >> **[ENTER]**

| Ticket | Status | Subject                        | Messages |
|--------|--------|--------------------------------|----------|
| 060001 | ACTIVE | Frequent Disconnects           | 5        |
| 030530 | ACTIVE | Does not respond to command... | 20       |
| 070533 | ACTIVE | Nothing happens...             | 20       |
| 080020 | ACTIVE | It's broken/does not work      | 19       |

Enter the ticket number to view the messages or  
0 to return to previous menu: **80020**

=====

080020 (ACTIVE) Re: It's broken/does not work

=====

CUSTOMER (Betty Boop):

When I took it out of the box, it was in pieces.

AGENT (Will Smith):

You have to assemble it - read the instructions.

CUSTOMER (Betty Boop):

What are instructions?

AGENT (Will Smith):

The paper document that look's like a book with words.

CUSTOMER (Betty Boop):

Oh - right, okay so it says to snap part-1 to part-2.

<< ENTER key to Continue... >> [ENTER]

CUSTOMER (Betty Boop):  
Hello? what should I do?

CUSTOMER (Betty Boop):  
Then it says to place part-3 on parts 1 and 2 then twist.

CUSTOMER (Betty Boop):  
Please help... I don't know what this means.

AGENT (Will Smith):  
It's been 9 months, are you still unable to assemble it?

CUSTOMER (Betty Boop):  
Yes, I am stuck on instruction 2 the twist part.

<< ENTER key to Continue... >> [ENTER]

AGENT (Will Smith):  
Place part-3 into the grooves of parts 1 and 2, then rotate clockwise.

CUSTOMER (Betty Boop):  
Why?

CUSTOMER (Betty Boop):  
Hello?

CUSTOMER (Betty Boop):  
Well I did what you said, now it's in 3 pieces again.

AGENT (Will Smith):  
What did you do?

<< ENTER key to Continue... >> [ENTER]

CUSTOMER (Betty Boop):  
I put part-3 in the grooves, than I turned clockwise causing it to fall off the table.

AGENT (Will Smith):  
You were to rotate part-3 not turn yourself around!

CUSTOMER (Betty Boop):  
Well now what do I do?

AGENT (Will Smith):  
What do you think?

<< ENTER key to Continue... >> [ENTER]

-----

| Ticket | Status | Subject                        | Messages |
|--------|--------|--------------------------------|----------|
| 060001 | ACTIVE | Frequent Disconnects           | 5        |
| 030530 | ACTIVE | Does not respond to command... | 20       |
| 070533 | ACTIVE | Nothing happens...             | 20       |
| 080020 | ACTIVE | It's broken/does not work      | 19       |

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

CUSTOMER: Betty Boop (30004)

Customer Main Menu

- 1) View your account detail
- 2) Create a new ticket
- 3) Modify an active ticket
- 4) List my tickets

0) Logout

Selection: 2

New Ticket (Ticket#:080600)

Enter the ticket SUBJECT (30 chars. maximum): Funny Noise!

Enter the ticket message details (150 chars. maximum). Press the ENTER key to submit:

When it turns on it screams at me and it's quite offending.

\*\*\* New ticket created! \*\*\*

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)

Customer Main Menu

- 1) View your account detail
- 2) Create a new ticket
- 3) Modify an active ticket
- 4) List my tickets

0) Logout

Selection: 4

| Ticket | Status | Subject              | Messages |
|--------|--------|----------------------|----------|
| 060001 | ACTIVE | Frequent Disconnects | 5        |



```
030530 ACTIVE Does not respond to command... 20
070533 ACTIVE Nothing happens... 20
080020 ACTIVE It's broken/does not work 19
080600 ACTIVE Funny Noise! 1
```

-----

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

CUSTOMER: Betty Boop (30004)

=====  
Customer Main Menu  
=====

- 1) View your account detail
- 2) Create a new ticket
- 3) Modify an active ticket
- 4) List my tickets

-----  
0) Logout

Selection: 2

ERROR: Ticket listing is FULL, call ITS Support!

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)

=====  
Customer Main Menu  
=====

- 1) View your account detail
- 2) Create a new ticket
- 3) Modify an active ticket
- 4) List my tickets

-----  
0) Logout

Selection: 3

Enter ticket number: 80004

ERROR: Invalid ticket number - you may only modify your own ticket.

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)

=====  
Customer Main Menu  
=====

- 1) View your account detail
- 2) Create a new ticket
- 3) Modify an active ticket
- 4) List my tickets

-----  
0) Logout

Selection: 3

Enter ticket number: 80020

-----  
Ticket 080020 - Update Options  
-----

Status : ACTIVE

Subject : It's broken/does not work  
-----

1) Modify the subject

2) Add a message

3) Close ticket

0) Done

Selection: 2

Enter the ticket message details (150 chars. maximum). Press the ENTER key to submit:

I'm so confused.

-----  
Ticket 080020 - Update Options  
-----

Status : ACTIVE

Subject : It's broken/does not work  
-----

1) Modify the subject

2) Add a message

3) Close ticket

0) Done

Selection: 1

Enter the revised ticket SUBJECT (30 chars. maximum): Double broken!

-----  
Ticket 080020 - Update Options  
-----

Status : ACTIVE

Subject : Double broken!  
-----

1) Modify the subject

2) Add a message

3) Close ticket

0) Done

Selection: 2

ERROR: Message limit has been reached, call ITS Support!

-----  
Ticket 080020 - Update Options

```
-----
Status   : ACTIVE
Subject  : Double broken!
-----

1) Modify the subject
2) Add a message
3) Close ticket
0) Done
Selection: 0

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)
=====
Customer Main Menu
=====
1) View your account detail
2) Create a new ticket
3) Modify an active ticket
4) List my tickets
-----
0) Logout

Selection: 3

Enter ticket number: 60001

-----
Ticket 060001 - Update Options
-----
Status   : ACTIVE
Subject  : Frequent Disconnects
-----

1) Modify the subject
2) Add a message
3) Close ticket
0) Done
Selection: 3

Are you sure you CLOSE this ticket? ([Y]es|[N]o): Y

Do you want to leave a closing message? ([Y]es|[N]o): N

*** Ticket closed! ***

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)
=====
Customer Main Menu
=====
1) View your account detail
2) Create a new ticket
```

3) Modify an active ticket

4) List my tickets

-----  
0) Logout

Selection: 3

Enter ticket number: 80600

-----  
Ticket 080600 - Update Options  
-----

Status : ACTIVE

Subject : Funny Noise!

-----  
1) Modify the subject

2) Add a message

3) Close ticket

0) Done

Selection: 3

Are you sure you CLOSE this ticket? ([Y]es|[N]o): Y

Do you want to leave a closing message? ([Y]es|[N]o): Y

Enter the ticket message details (150 chars. maximum). Press the ENTER key to submit:

Never mind, I oiled it and all is fine now.

\*\*\* Ticket closed! \*\*\*

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)

=====  
Customer Main Menu  
=====

1) View your account detail

2) Create a new ticket

3) Modify an active ticket

4) List my tickets

-----  
0) Logout

Selection: 4

-----  
Ticket Status Subject Messages  
-----  
060001 CLOSED Frequent Disconnects 5  
030530 ACTIVE Does not respond to command... 20  
070533 ACTIVE Nothing happens... 20  
080020 ACTIVE Double broken! 20

```
080600 CLOSED Funny Noise!                2
-----

Enter the ticket number to view the messages or
0 to return to previous menu: 80600

=====
080600 (CLOSED) Re: Funny Noise!
=====
CUSTOMER (Betty Boop):
    When it turns on it screams at me and it's quite offending.

CUSTOMER (Betty Boop):
    Never mind, I oiled it and all is fine now.

<< ENTER key to Continue... >> [ENTER]

-----
Ticket Status Subject                      Messages
-----
060001 CLOSED Frequent Disconnects         5
030530 ACTIVE Does not respond to command... 20
070533 ACTIVE Nothing happens...           20
080020 ACTIVE Double broken!               20
080600 CLOSED Funny Noise!                 2
-----

Enter the ticket number to view the messages or
0 to return to previous menu: 0

CUSTOMER: Betty Boop (30004)
=====
Customer Main Menu
=====
1) View your account detail
2) Create a new ticket
3) Modify an active ticket
4) List my tickets
-----
0) Logout

Selection: 3

Enter ticket number: 30530

-----
Ticket 030530 - Update Options
-----
Status   : ACTIVE
Subject  : Does not respond to command...
-----
1) Modify the subject
2) Add a message
```

3) Close ticket

0) Done

Selection: 3

Are you sure you CLOSE this ticket? ([Y]es|[N]o): Y

\*\*\* Ticket closed! \*\*\*

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)

=====

Customer Main Menu

=====

1) View your account detail

2) Create a new ticket

3) Modify an active ticket

4) List my tickets

-----

0) Logout

Selection: 3

Enter ticket number: 80600

ERROR: Ticket is closed - changes are not permitted.

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)

=====

Customer Main Menu

=====

1) View your account detail

2) Create a new ticket

3) Modify an active ticket

4) List my tickets

-----

0) Logout

Selection: 4

| Ticket Status Subject                        |  | Messages |
|----------------------------------------------|--|----------|
| 060001 CLOSED Frequent Disconnects           |  | 5        |
| 030530 CLOSED Does not respond to command... |  | 20       |
| 070533 ACTIVE Nothing happens...             |  | 20       |
| 080020 ACTIVE Double broken!                 |  | 20       |
| 080600 CLOSED Funny Noise!                   |  | 2        |

Enter the ticket number to view the messages or

0 to return to previous menu: 80020

=====

080020 (ACTIVE) Re: Double broken!

=====

CUSTOMER (Betty Boop):

When I took it out of the box, it was in pieces.

AGENT (Will Smith):

You have to assemble it - read the instructions.

CUSTOMER (Betty Boop):

What are instructions?

AGENT (Will Smith):

The paper document that look's like a book with words.

CUSTOMER (Betty Boop):

Oh - right, okay so it says to snap part-1 to part-2.

<< ENTER key to Continue... >> [ENTER]

CUSTOMER (Betty Boop):

Hello? what should I do?

CUSTOMER (Betty Boop):

Then it says to place part-3 on parts 1 and 2 then twist.

CUSTOMER (Betty Boop):

Please help... I don't know what this means.

AGENT (Will Smith):

It's been 9 months, are you still unable to assemble it?

CUSTOMER (Betty Boop):

Yes, I am stuck on instruction 2 the twist part.

<< ENTER key to Continue... >> [ENTER]

AGENT (Will Smith):

Place part-3 into the grooves of parts 1 and 2, then rotate clockwise.

CUSTOMER (Betty Boop):

Why?

CUSTOMER (Betty Boop):

Hello?

CUSTOMER (Betty Boop):

Well I did what you said, now it's in 3 pieces again.

AGENT (Will Smith):

What did you do?

<< ENTER key to Continue... >> [ENTER]

CUSTOMER (Betty Boop):

I put part-3 in the grooves, than I turned clockwise causing it to fall off the table.

AGENT (Will Smith):

You were to rotate part-3 not turn yourself around!

CUSTOMER (Betty Boop):

Well now what do I do?

AGENT (Will Smith):

What do you think?

CUSTOMER (Betty Boop):

I'm so confused.

<< ENTER key to Continue... >> [ENTER]

| Ticket | Status | Subject                        | Messages |
|--------|--------|--------------------------------|----------|
| 060001 | CLOSED | Frequent Disconnects           | 5        |
| 030530 | CLOSED | Does not respond to command... | 20       |
| 070533 | ACTIVE | Nothing happens...             | 20       |
| 080020 | ACTIVE | Double broken!                 | 20       |
| 080600 | CLOSED | Funny Noise!                   | 2        |

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

CUSTOMER: Betty Boop (30004)

Customer Main Menu

- 1) View your account detail
- 2) Create a new ticket
- 3) Modify an active ticket
- 4) List my tickets

0) Logout

Selection: 0

### LOGGED OUT ###

Account Ticketing System - Login

- 1) Login to the system



0) Exit application

-----  
Selection: 1

Enter the account#: 50008

User Login : agentJ

Password : TT\*&21tt

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 
- 6) List new tickets
  - 7) List active tickets
  - 8) List closed tickets
  - 9) Manage a ticket
  - 10) Archive closed tickets
- 

0) Logout

Selection: 1

New Account Data (Account#:50600)

-----  
Enter the account type (A=Agent | C=Customer): C

User Login Data Input

-----  
Enter user login (10 chars max): HarryHorse

Enter the display name (30 chars max): Nay to Hay

Enter the password (must be 8 chars in length): RR\$#jj99

Demographic Data Input

-----  
Enter birth year (current age must be between 18 and 110): 1940

Enter the household Income: \$12345.33

Enter the country (30 chars max.): japan

\*\*\* New account added! \*\*\*

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 
- 6) List new tickets
  - 7) List active tickets
  - 8) List closed tickets
  - 9) Manage a ticket
  - 10) Archive closed tickets

---

0) Logout

Selection: **1**

ERROR: Account listing is FULL, call ITS Support!

<< ENTER key to Continue... >> **[ENTER]**

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 
- 6) List new tickets
  - 7) List active tickets
  - 8) List closed tickets
  - 9) Manage a ticket
  - 10) Archive closed tickets

---

0) Logout

Selection: **6**

| Ticket | Acct# | Display Name   | Status | Subject                   | Messages |
|--------|-------|----------------|--------|---------------------------|----------|
| 080599 | 20020 | Shrimpy Shrimp | ACTIVE | No power/does not turn on | 1        |

Enter the ticket number to view the messages or  
0 to return to previous menu: **80599**

=====  
080599 (ACTIVE) Re: No power/does not turn on  
=====

CUSTOMER (Shrimpy Shrimp):

The unit won't turn on - please help.

<< ENTER key to Continue... >> [ENTER]

| Ticket | Acct# | Display Name   | Status | Subject                   | Messages |
|--------|-------|----------------|--------|---------------------------|----------|
| 080599 | 20020 | Shrimpy Shrimp | ACTIVE | No power/does not turn on | 1        |

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

AGENT: Will Smith (50008)

Account Ticketing System - Agent Menu

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

0) Logout

Selection: 7

| Ticket | Acct# | Display Name   | Status | Subject                   | Messages |
|--------|-------|----------------|--------|---------------------------|----------|
| 080599 | 20020 | Shrimpy Shrimp | ACTIVE | No power/does not turn on | 1        |
| 080004 | 20020 | Shrimpy Shrimp | ACTIVE | My head hurts!            | 3        |
| 070533 | 30004 | Betty Boop     | ACTIVE | Nothing happens...        | 20       |
| 080020 | 30004 | Betty Boop     | ACTIVE | Double broken!            | 20       |
| 080204 | 30001 | Silly Sally    | ACTIVE | It's very messy!          | 2        |

Enter the ticket number to view the messages or  
0 to return to previous menu: 70533

070533 (ACTIVE) Re: Nothing happens...

CUSTOMER (Betty Boop):

Instructions state to 'say yes' to the prompts - but nothing happens.

AGENT (Fred Flintstone):

Is this when setting up the unit for the first time?

CUSTOMER (Betty Boop):

Yes - it asks me if I'm ready to start and I tell it 'yes' nothing happens.

AGENT (Fred Flintstone):

Are you pressing the 'yes' button on the unit?

CUSTOMER (Betty Boop):

No, instructions state to say yes - not press any buttons.

<< ENTER key to Continue... >> [ENTER]

AGENT (Will Smith):

'say' was meant to be interpreted as press the 'yes' button.

CUSTOMER (Betty Boop):

But the instructions don't mention any buttons.

AGENT (Will Smith):

Agreed, it isn't very clear, but you must press the yes button.

CUSTOMER (Betty Boop):

There's no button in the instruction booklet.

AGENT (Will Smith):

The button isn't in the instructions, it will be on the device.

<< ENTER key to Continue... >> [ENTER]

CUSTOMER (Betty Boop):

Oh I get it that now makes sense.

CUSTOMER (Betty Boop):

Wait... I get further now, but it's stops after pressing the yes button.

AGENT (Will Smith):

What is the problem now?

CUSTOMER (Betty Boop):

The instructions state to 'say no' if I have health issues.

AGENT (Will Smith):

Do you have health issues?

<< ENTER key to Continue... >> [ENTER]

CUSTOMER (Betty Boop):

No.

AGENT (Will Smith):

Then what is the problem exactly?

CUSTOMER (Betty Boop):

It doesn't do anything when I say No.

AGENT (Will Smith):

Again, you don't 'say' no, you must press the no button.

CUSTOMER (Betty Boop):

Oh I get it now - thanks!

<< ENTER key to Continue... >> [ENTER]

| Ticket | Acct# | Display Name   | Status | Subject                   | Messages |
|--------|-------|----------------|--------|---------------------------|----------|
| 080599 | 20020 | Shrimpy Shrimp | ACTIVE | No power/does not turn on | 1        |
| 080004 | 20020 | Shrimpy Shrimp | ACTIVE | My head hurts!            | 3        |
| 070533 | 30004 | Betty Boop     | ACTIVE | Nothing happens...        | 20       |
| 080020 | 30004 | Betty Boop     | ACTIVE | Double broken!            | 20       |
| 080204 | 30001 | Silly Sally    | ACTIVE | It's very messy!          | 2        |

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

0) Logout

Selection: 8

| Ticket | Acct# | Display Name   | Status | Subject                        | Messages |
|--------|-------|----------------|--------|--------------------------------|----------|
| 060001 | 30004 | Betty Boop     | CLOSED | Frequent Disconnects           | 5        |
| 064611 | 20020 | Shrimpy Shrimp | CLOSED | It gets hot and smokes         | 4        |
| 030530 | 30004 | Betty Boop     | CLOSED | Does not respond to command... | 20       |
| 080600 | 30004 | Betty Boop     | CLOSED | Funny Noise!                   | 2        |

Enter the ticket number to view the messages or  
0 to return to previous menu: **64611**

=====

064611 (CLOSED) Re: It gets hot and smokes

=====

CUSTOMER (Shrimpy Shrimp):

When I put it in the oven, it gets hot and starts smoking.

AGENT (Will Smith):

It is not designed to be put in the oven - your warranty is now void.

CUSTOMER (Shrimpy Shrimp):

So you won't fix it?

AGENT (Will Smith):

No - you will have to purchase another.

<< ENTER key to Continue... >> **[ENTER]**

| Ticket | Acct# | Display Name   | Status | Subject                        | Messages |
|--------|-------|----------------|--------|--------------------------------|----------|
| 060001 | 30004 | Betty Boop     | CLOSED | Frequent Disconnects           | 5        |
| 064611 | 20020 | Shrimpy Shrimp | CLOSED | It gets hot and smokes         | 4        |
| 030530 | 30004 | Betty Boop     | CLOSED | Does not respond to command... | 20       |
| 080600 | 30004 | Betty Boop     | CLOSED | Funny Noise!                   | 2        |

Enter the ticket number to view the messages or  
0 to return to previous menu: **0**

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 
- 6) List new tickets
  - 7) List active tickets
  - 8) List closed tickets
  - 9) Manage a ticket
  - 10) Archive closed tickets
- 

0) Logout

Selection: **3**

Enter the account#: **20020**

| Acct# | Acct.Type | Birth | Income       | Country | Disp.Name      | Login | Password |
|-------|-----------|-------|--------------|---------|----------------|-------|----------|
| 20020 | CUSTOMER  | 2000  | \$ 350500.35 | KOREA   | Shrimpy Shrimp | cust3 | 8*3*J*m* |

Are you sure you want to remove this record? ([Y]es|[N]o): **Y**

\*\*\* Account Removed! \*\*\*

<< ENTER key to Continue... >> **[ENTER]**

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 
- 6) List new tickets
  - 7) List active tickets
  - 8) List closed tickets
  - 9) Manage a ticket
  - 10) Archive closed tickets
- 

0) Logout

Selection: **4**

| Acct# | Acct.Type | Birth |
|-------|-----------|-------|
| 30001 | CUSTOMER  | 1990  |
| 50599 | AGENT     | 1972  |
| 30004 | CUSTOMER  | 1978  |
| 50008 | AGENT     | 1952  |
| 50600 | CUSTOMER  | 1940  |

<< ENTER key to Continue... >> **[ENTER]**

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 
- 6) List new tickets
  - 7) List active tickets
  - 8) List closed tickets

9) Manage a ticket  
 10) Archive closed tickets

-----  
 0) Logout

Selection: **5**

| Acct# | Acct.Type | Birth | Income       | Country | Disp.Name       | Login      | Password  |
|-------|-----------|-------|--------------|---------|-----------------|------------|-----------|
| 30001 | CUSTOMER  | 1990  | \$ 150000.10 | CANADA  | Silly Sally     | cust1      | A*1*3*D*  |
| 50599 | AGENT     | 1972  | \$2250400.22 | AFRICA  | Fred Flintstone | agent1     | y*b*##@*  |
| 30004 | CUSTOMER  | 1978  | \$ 250800.74 | INDIA   | Betty Boop      | cust2      | 7***F*a*  |
| 50008 | AGENT     | 1952  | \$2350600.82 | U.S.A.  | Will Smith      | agentJ     | T***2*t*  |
| 50600 | CUSTOMER  | 1940  | \$ 12345.33  | JAPAN   | Nay to Hay      | HarryHorse | R*\$*j*9* |

<< ENTER key to Continue... >> **[ENTER]**

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

1) Add a new account  
 2) Modify an existing account  
 3) Remove an account  
 4) List accounts: summary view  
 5) List accounts: detailed view

-----

6) List new tickets  
 7) List active tickets  
 8) List closed tickets  
 9) Manage a ticket  
 10) Archive closed tickets

-----

0) Logout

Selection: **7**

| Ticket | Acct# | Display Name | Status | Subject            | Messages |
|--------|-------|--------------|--------|--------------------|----------|
| 070533 | 30004 | Betty Boop   | ACTIVE | Nothing happens... | 20       |
| 080020 | 30004 | Betty Boop   | ACTIVE | Double broken!     | 20       |
| 080204 | 30001 | Silly Sally  | ACTIVE | It's very messy!   | 2        |

-----

Enter the ticket number to view the messages or  
 0 to return to previous menu: **0**

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

1) Add a new account



- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

0) Logout

Selection: 8

| Ticket | Acct# | Display Name   | Status | Subject                        | Messages |
|--------|-------|----------------|--------|--------------------------------|----------|
| 060001 | 30004 | Betty Boop     | CLOSED | Frequent Disconnects           | 5        |
| 064611 | 20020 | Shrimpy Shrimp | CLOSED | It gets hot and smokes         | 4        |
| 030530 | 30004 | Betty Boop     | CLOSED | Does not respond to command... | 20       |
| 080600 | 30004 | Betty Boop     | CLOSED | Funny Noise!                   | 2        |

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

AGENT: Will Smith (50008)

Account Ticketing System - Agent Menu

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

0) Logout

Selection: 1

New Account Data (Account#:50601)

Enter the account type (A=Agent | C=Customer): C

User Login Data Input

```
Enter user login (10 chars max): CrazyCamel
Enter the display name (30 chars max): Sandy Sand
Enter the password (must be 8 chars in length): 12RR!@jj

Demographic Data Input
-----
Enter birth year (current age must be between 18 and 110): 1949
Enter the household Income: $54321.22
Enter the country (30 chars max.): Australia

*** New account added! ***

<< ENTER key to Continue... >> [ENTER]
```

```
AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
0) Logout

Selection: 5
```

| Acct# | Acct.Type | Birth | Income       | Country   | Disp.Name       | Login      | Password  |
|-------|-----------|-------|--------------|-----------|-----------------|------------|-----------|
| 30001 | CUSTOMER  | 1990  | \$ 150000.10 | CANADA    | Silly Sally     | cust1      | A*1*3*D*  |
| 50599 | AGENT     | 1972  | \$2250400.22 | AFRICA    | Fred Flintstone | agent1     | y*b*#*@*  |
| 30004 | CUSTOMER  | 1978  | \$ 250800.74 | INDIA     | Betty Boop      | cust2      | 7***F*a*  |
| 50008 | AGENT     | 1952  | \$2350600.82 | U.S.A.    | Will Smith      | agentJ     | T***2*t*  |
| 50601 | CUSTOMER  | 1949  | \$ 54321.22  | AUSTRALIA | Sandy Sand      | CrazyCamel | 1*R*!*j*  |
| 50600 | CUSTOMER  | 1940  | \$ 12345.33  | JAPAN     | Nay to Hay      | HarryHorse | R*\$*j*9* |

```
<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
```

```
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
0) Logout

Selection: 9

Enter ticket number: 80600

-----
Ticket 080600 - Update Options
-----
Status   : CLOSED
Subject  : Funny Noise!
Acct#    : 30004
Customer: Betty Boop
-----
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 1

ERROR: Ticket is closed - new messages are not permitted.

-----
Ticket 080600 - Update Options
-----
Status   : CLOSED
Subject  : Funny Noise!
Acct#    : 30004
Customer: Betty Boop
-----
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 2

ERROR: Ticket is already closed!

-----
Ticket 080600 - Update Options
-----
Status   : CLOSED
Subject  : Funny Noise!
Acct#    : 30004
Customer: Betty Boop
```

- ```
-----
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 3
```

Are you sure you RE-OPEN this closed ticket? ([Y]es|[N]o): N

```
-----
Ticket 080600 - Update Options
-----
```

```
Status   : CLOSED
Subject  : Funny Noise!
Acct#    : 30004
Customer: Betty Boop
-----
```

- ```
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 0
```

AGENT: Will Smith (50008)

```
=====
Account Ticketing System - Agent Menu
=====
```

- ```
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----
```

- ```
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
```

```
0) Logout
```

Selection: 8

```
-----
Ticket Acct# Display Name      Status Subject                      Messages
-----
060001 30004 Betty Boop          CLOSED Frequent Disconnects          5
064611 20020 Shrimpy Shrimp        CLOSED It gets hot and smokes      4
030530 30004 Betty Boop          CLOSED Does not respond to command... 20
080600 30004 Betty Boop          CLOSED Funny Noise!              2
-----
```

Enter the ticket number to view the messages or

0 to return to previous menu: 0

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 
- 6) List new tickets
  - 7) List active tickets
  - 8) List closed tickets
  - 9) Manage a ticket
  - 10) Archive closed tickets
- 

0) Logout

Selection: 9

Enter ticket number: 80600

-----

Ticket 080600 - Update Options

-----

Status : CLOSED  
Subject : Funny Noise!  
Acct# : 30004  
Customer: Betty Boop

-----

- 1) Add a message
- 2) Close ticket
- 3) Re-open ticket
- 0) Done

Selection: 3

Are you sure you RE-OPEN this closed ticket? ([Y]es|[N]o): Y

\*\*\* Ticket re-opened! \*\*\*

-----

Ticket 080600 - Update Options

-----

Status : ACTIVE  
Subject : Funny Noise!  
Acct# : 30004  
Customer: Betty Boop

-----

- 1) Add a message
- 2) Close ticket
- 3) Re-open ticket

0) Done

Selection: **1**

Enter the ticket message details (150 chars. maximum). Press the ENTER key to submit:

**Enjoy your purchase!**

-----  
Ticket 080600 - Update Options  
-----

Status : ACTIVE

Subject : Funny Noise!

Acct# : 30004

Customer: Betty Boop  
-----

1) Add a message

2) Close ticket

3) Re-open ticket

0) Done

Selection: **2**

Are you sure you CLOSE this ticket? ([Y]es|[N]o): **Y**

Do you want to leave a closing message? ([Y]es|[N]o): **Y**

Enter the ticket message details (150 chars. maximum). Press the ENTER key to submit:

**Ticket is now closed.**

\*\*\* Ticket closed! \*\*\*

-----  
Ticket 080600 - Update Options  
-----

Status : CLOSED

Subject : Funny Noise!

Acct# : 30004

Customer: Betty Boop  
-----

1) Add a message

2) Close ticket

3) Re-open ticket

0) Done

Selection: **0**

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

1) Add a new account

2) Modify an existing account

3) Remove an account

4) List accounts: summary view

5) List accounts: detailed view

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

0) Logout

Selection: **8**

| Ticket | Acct# | Display Name   | Status | Subject                        | Messages |
|--------|-------|----------------|--------|--------------------------------|----------|
| 060001 | 30004 | Betty Boop     | CLOSED | Frequent Disconnects           | 5        |
| 064611 | 20020 | Shrimpy Shrimp | CLOSED | It gets hot and smokes         | 4        |
| 030530 | 30004 | Betty Boop     | CLOSED | Does not respond to command... | 20       |
| 080600 | 30004 | Betty Boop     | CLOSED | Funny Noise!                   | 4        |

Enter the ticket number to view the messages or  
0 to return to previous menu: **80600**

=====

080600 (CLOSED) Re: Funny Noise!

=====

CUSTOMER (Betty Boop):

When it turns on it screams at me and it's quite offending.

CUSTOMER (Betty Boop):

Never mind, I oiled it and all is fine now.

AGENT (Will Smith):

Enjoy your purchase!

AGENT (Will Smith):

Ticket is now closed.

<< ENTER key to Continue... >> **[ENTER]**

| Ticket | Acct# | Display Name   | Status | Subject                        | Messages |
|--------|-------|----------------|--------|--------------------------------|----------|
| 060001 | 30004 | Betty Boop     | CLOSED | Frequent Disconnects           | 5        |
| 064611 | 20020 | Shrimpy Shrimp | CLOSED | It gets hot and smokes         | 4        |
| 030530 | 30004 | Betty Boop     | CLOSED | Does not respond to command... | 20       |
| 080600 | 30004 | Betty Boop     | CLOSED | Funny Noise!                   | 4        |

Enter the ticket number to view the messages or  
0 to return to previous menu: **0**

```
AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
0) Logout

Selection: 9

Enter ticket number: 70533

-----
Ticket 070533 - Update Options
-----
Status   : ACTIVE
Subject  : Nothing happens...
Acct#    : 30004
Customer: Betty Boop
-----
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 1

ERROR: Message limit has been reached, call ITS Support!

-----
Ticket 070533 - Update Options
-----
Status   : ACTIVE
Subject  : Nothing happens...
Acct#    : 30004
Customer: Betty Boop
-----
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 0

AGENT: Will Smith (50008)
```



```
=====
Account Ticketing System - Agent Menu
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
0) Logout

Selection: 9

Enter ticket number: 80204

-----
Ticket 080204 - Update Options
-----
Status   : ACTIVE
Subject  : It's very messy!
Acct#    : 30001
Customer: Silly Sally
-----
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 2

Are you sure you CLOSE this ticket? ([Y]es|[N]o): Y

Do you want to leave a closing message? ([Y]es|[N]o): N

*** Ticket closed! ***

-----
Ticket 080204 - Update Options
-----
Status   : CLOSED
Subject  : It's very messy!
Acct#    : 30001
Customer: Silly Sally
-----
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
```

Selection: 0

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 
- 6) List new tickets
  - 7) List active tickets
  - 8) List closed tickets
  - 9) Manage a ticket
  - 10) Archive closed tickets
- 

0) Logout

Selection: 9

Enter ticket number: 70533

-----

Ticket 070533 - Update Options

-----

Status : ACTIVE  
Subject : Nothing happens...  
Acct# : 30004  
Customer: Betty Boop

-----

- 1) Add a message
- 2) Close ticket
- 3) Re-open ticket
- 0) Done

Selection: 3

ERROR: Ticket is already active!

-----

Ticket 070533 - Update Options

-----

Status : ACTIVE  
Subject : Nothing happens...  
Acct# : 30004  
Customer: Betty Boop

-----

- 1) Add a message
- 2) Close ticket
- 3) Re-open ticket
- 0) Done

Selection: 0

```
AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
 1) Add a new account
 2) Modify an existing account
 3) Remove an account
 4) List accounts: summary view
 5) List accounts: detailed view
-----
 6) List new tickets
 7) List active tickets
 8) List closed tickets
 9) Manage a ticket
10) Archive closed tickets
-----
0) Logout

Selection: 9

Enter ticket number: 60001

-----
Ticket 060001 - Update Options
-----
Status   : CLOSED
Subject  : Frequent Disconnects
Acct#    : 30004
Customer: Betty Boop
-----
 1) Add a message
 2) Close ticket
 3) Re-open ticket
 0) Done
Selection: 3

Are you sure you RE-OPEN this closed ticket? ([Y]es|[N]o): N

-----
Ticket 060001 - Update Options
-----
Status   : CLOSED
Subject  : Frequent Disconnects
Acct#    : 30004
Customer: Betty Boop
-----
 1) Add a message
 2) Close ticket
 3) Re-open ticket
 0) Done
Selection: 3
```

Are you sure you RE-OPEN this closed ticket? ([Y]es|[N]o): **Y**

\*\*\* Ticket re-opened! \*\*\*

-----  
Ticket 060001 - Update Options  
-----

Status : ACTIVE  
Subject : Frequent Disconnects  
Acct# : 30004  
Customer: Betty Boop  
-----

- 1) Add a message
- 2) Close ticket
- 3) Re-open ticket
- 0) Done

Selection: **0**

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 
- 6) List new tickets
  - 7) List active tickets
  - 8) List closed tickets
  - 9) Manage a ticket
  - 10) Archive closed tickets
- 

0) Logout

Selection: **7**

-----

| Ticket | Acct# | Display Name | Status | Subject              | Messages |
|--------|-------|--------------|--------|----------------------|----------|
| 060001 | 30004 | Betty Boop   | ACTIVE | Frequent Disconnects | 5        |
| 070533 | 30004 | Betty Boop   | ACTIVE | Nothing happens...   | 20       |
| 080020 | 30004 | Betty Boop   | ACTIVE | Double broken!       | 20       |

-----

Enter the ticket number to view the messages or  
0 to return to previous menu: **60001**

=====

060001 (ACTIVE) Re: Frequent Disconnects

=====

CUSTOMER (Betty Boop):

Every time I go near the microwave the unit disconnects.

AGENT (Will Smith):

Don't go near the microwave.

AGENT (Will Smith):

It will radiate waves which will interrupt the unit.

CUSTOMER (Betty Boop):

But I use the microwave a lot.

AGENT (Will Smith):

You cook too much!

<< ENTER key to Continue... >> [ENTER]

| Ticket | Acct# | Display Name | Status | Subject              | Messages |
|--------|-------|--------------|--------|----------------------|----------|
| 060001 | 30004 | Betty Boop   | ACTIVE | Frequent Disconnects | 5        |
| 070533 | 30004 | Betty Boop   | ACTIVE | Nothing happens...   | 20       |
| 080020 | 30004 | Betty Boop   | ACTIVE | Double broken!       | 20       |

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

-----

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

-----

0) Logout

Selection: 0

### LOGGED OUT ###

=====

Account Ticketing System - Login

=====

- 1) Login to the system

```
0) Exit application
-----

Selection: 0

Are you sure you want to exit? ([Y]es|[N]o): y

=====
Account Ticketing System - Terminated
=====
```

## Milestone – 3 Submission

7. ***This is a test submission for verifying your work only*** – no files will be submitted to your instructor.
8. Upload (file transfer) your all header and source files:
  - **a2ms3.c**
  - **account.c**
  - **account.h**
  - **accountTicketingUI.c**
  - **accountTicketingUI.h**
  - **commonHelpers.c**
  - **commonHelpers.h**
  - **ticket.h**
  - **ticket.c**
9. Login to matrix in an SSH terminal and change directory to where you placed your source code.
10. Manually compile and run your program to make sure everything works properly:

```
gcc -Wall a2ms3.c account.c ticket.c accountTicketingUI.c commonHelpers.c -o
ms3 <ENTER>
```

*If there are no error/warnings are generated, execute it: ms3 <ENTER>*

11. Run the submission command below (replace **profname.proflastname** with **your professors** Seneca userid and replace **NAA** with your section):

```
~profName.proflastname/submit 100a2ms3/NAA_ms3 <ENTER>
```

12. Follow the on-screen submission instructions.

---

## Milestone – 4 (Worth 20%, Due Date: April 9<sup>th</sup>)

This will be the final milestone for the account ticketing system application. The last major component to be added will involve the implementation of persistent storage of the account and ticketing data. The system will require the functionality to load account and ticket information from files, save account and ticket information to files and finally archive data which will no longer be actively used in the system.

This is your last chance to refine your work! The completion of this milestone is a culmination of weeks of hard work, and you should celebrate it by polishing it with all the refinements you can think of and make it a piece of work you can be proud of. Therefore, it is expected you will thoroughly review your code and...

1. Implement all necessary changes as per your instructor's feedback from previous milestones.
2. Beautify your code so it is easy to read and maintain, which includes:
  - Consistent formatting of code (indentation and line-spacing).
  - Use of sufficient comments that concisely describe critical sections of logic to maximize the understanding of your code where the code is otherwise not quickly easy to read.
  - Applying best practices for variable, function, and parameter naming.
  - Following the style guidelines as demonstrated by the course notes, video examples, previous tests quizzes, and your professor's examples.
3. Remove any violations of the single-entry single-exit principle (see course notes regarding the use of flags to control logic flow).
4. Apply as best you can, the design principles for modularity and structured design as described in the course notes.

## **Specifications**

The application will need to add support for reading and writing of data from and to text files that will store data persistently – there are four (4) text files involved:

### **accounts.txt**

The "**accounts.txt**" file is responsible for storing all the system's account data. Each member of the Account data type is represented in the data and delimited using a tilde (~) symbol. Review the contents of this file carefully. (See the file included with this project.)

### **tickets.txt**

The "**tickets.txt**" file is responsible for storing all the system's ticket data (including messages). Each member of the Ticket data type is represented in the data and delimited using a pipe (|) symbol. Review the contents of this file carefully – particularly how it stores the related messages. (See the file included with this project.)

### **accounts\_arc.txt**

The "**accounts\_arc.txt**" file is responsible for storing all the **archived** (removed) accounts from the system. The data format for this file is the same as in the "accounts.txt" file.

### **tickets\_arc.txt**

The "**tickets\_arc.txt**" file is responsible for storing all the **archived** (closed) tickets. The data format for this file is the same as in the "tickets.txt" file.

There are critical times when data must be either read from a file or written to a file based on the following rules:

### Application Start

- The starting routine of the application must read from the **accounts.txt** and **tickets.txt** files to prepare the system for operation. Review the main() code in **a2ms4.c** and develop the necessary functions that are called which populate the Account and Ticket type array's.

### Customer

- When a **customer** log's out of their session and returns to the main login menu, the current state of the **tickets array** must be saved to the **tickets.txt** file (recreates the file) and displays the number of ticket records stored to the file. Review the sample output where a customer log's out to see how this should work.

#### Note

The customer portion of the system should not have access to all the account data (other than the customer's own account record which cannot be modified) so there is no reason to update the accounts data file.

### Agent

- Menu option: " 3) Remove an account"
  - Removing an account record will involve the **archiving** of all related tickets to the **"tickets\_arc.txt"** data file that are in a **"closed"** state (closed tickets must be retained for auditing purposes).
  - All tickets related to the account being removed (open or closed status) should be removed from the system's main tickets array and set to an empty state to free-up space for new tickets.
  - Removing of an account record will also require the account record to be archived to the **"accounts\_arc.txt"** data file and removed from the system's main accounts array and set to an empty state to free-up space for new accounts.
- Menu option: "10) Archive closed tickets"
  - All tickets in a **"closed"** state, should be appended to the **"tickets\_arc.txt"** data file.
  - After archiving a ticket record, the element in the system's tickets array should be **set to an empty state** to free-up space for new tickets.
- The agent main menu requires modification to include **two (2)** more options:

11) View archived account statistics

12) View archived tickets statistics

- Viewing of the **account** statistics will display the number of account records in the account archive file **"accounts\_arc.txt"**.
- Viewing of the **tickets** statistics will display the number of ticket records and total messages that are stored in the archive file **"tickets\_arc.txt"**.
- Review the sample output for how this should work.



- When an **agent** log's out of their session and returns to the main login menu, the current state of the **accounts array** must be saved to the **accounts.txt** file (recreates the file). The current state of the **tickets array** must also be saved to the **tickets.txt** file (recreates the file) and displays the number of records saved to each file. Review the sample output where an agent log's out to see how this should work.

## A2-MS4: Sample Output

```
#####
Starting Account Ticketing System...
  Loading account data... (15 accounts loaded)
  Loading ticket data... (16 tickets loaded)
#####

=====
Account Ticketing System - Login
=====

1) Login to the system
0) Exit application
-----

Selection: 1

Enter the account#: 30004
User Login      : cust2
Password       : 77*&FFaa7
INVALID user login/password combination! [attempts remaining:2]

Enter the account#: 30004
User Login      : cust2
Password       : TT*&21tt
INVALID user login/password combination! [attempts remaining:1]

Enter the account#: 30004
User Login      : cust3
Password       : 77*&FFaa
INVALID user login/password combination! [attempts remaining:0]

ERROR:  Login failed!

<< ENTER key to Continue... >> [ENTER]

=====
Account Ticketing System - Login
=====

1) Login to the system
0) Exit application
-----

Selection: 1

Enter the account#: 30005
User Login      : cust2
Password       : 77*&FFaa
```

INVALID user login/password combination! [attempts remaining:2]

Enter the account#: 30004

User Login : cust2

Password : 77\*&FFaa

CUSTOMER: Betty Boop (30004)

=====

Customer Main Menu

=====

- 1) View your account detail
- 2) Create a new ticket
- 3) Modify an active ticket
- 4) List my tickets

-----

0) Logout

Selection: 1

| Acct# | Acct.Type | Birth | Income       | Country | Disp.Name  | Login | Password |
|-------|-----------|-------|--------------|---------|------------|-------|----------|
| 30004 | CUSTOMER  | 1978  | \$ 250800.74 | INDIA   | Betty Boop | cust2 | 7***F*a* |

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)

=====

Customer Main Menu

=====

- 1) View your account detail
- 2) Create a new ticket
- 3) Modify an active ticket
- 4) List my tickets

-----

0) Logout

Selection: 4

| Ticket | Status | Subject                        | Messages |
|--------|--------|--------------------------------|----------|
| 060001 | ACTIVE | Frequent Disconnects           | 5        |
| 030530 | ACTIVE | Does not respond to command... | 20       |
| 070533 | ACTIVE | Nothing happens...             | 20       |
| 080020 | ACTIVE | It's broken/does not work      | 19       |

Enter the ticket number to view the messages or

0 to return to previous menu: 80004

ERROR: Invalid ticket number - you may only access your own tickets.

<< ENTER key to Continue... >> [ENTER]

| Ticket | Status | Subject              | Messages |
|--------|--------|----------------------|----------|
| 060001 | ACTIVE | Frequent Disconnects | 5        |

```
030530 ACTIVE Does not respond to command... 20
070533 ACTIVE Nothing happens... 20
080020 ACTIVE It's broken/does not work 19
-----
```

Enter the ticket number to view the messages or  
0 to return to previous menu: **60001**

=====

060001 (ACTIVE) Re: Frequent Disconnects

=====

CUSTOMER (Betty Boop):

Every time I go near the microwave the unit disconnects.

AGENT (Will Smith):

Don't go near the microwave.

AGENT (Will Smith):

It will radiate waves which will interrupt the unit.

CUSTOMER (Betty Boop):

But I use the microwave a lot.

AGENT (Will Smith):

You cook too much!

<< ENTER key to Continue... >> **[ENTER]**

```
-----
Ticket Status Subject                               Messages
-----
060001 ACTIVE Frequent Disconnects                   5
030530 ACTIVE Does not respond to command...        20
070533 ACTIVE Nothing happens...                     20
080020 ACTIVE It's broken/does not work              19
-----
```

Enter the ticket number to view the messages or  
0 to return to previous menu: **80020**

=====

080020 (ACTIVE) Re: It's broken/does not work

=====

CUSTOMER (Betty Boop):

When I took it out of the box, it was in pieces.

AGENT (Will Smith):

You have to assemble it - read the instructions.

CUSTOMER (Betty Boop):

What are instructions?

AGENT (Will Smith):

The paper document that look's like a book with words.

CUSTOMER (Betty Boop):

Oh - right, okay so it says to snap part-1 to part-2.

<< ENTER key to Continue... >> [ENTER]

CUSTOMER (Betty Boop):  
Hello? what should I do?

CUSTOMER (Betty Boop):  
Then it says to place part-3 on parts 1 and 2 then twist.

CUSTOMER (Betty Boop):  
Please help... I don't know what this means.

AGENT (Will Smith):  
It's been 9 months, are you still unable to assemble it?

CUSTOMER (Betty Boop):  
Yes, I am stuck on instruction 2 the twist part.

<< ENTER key to Continue... >> [ENTER]

AGENT (Will Smith):  
Place part-3 into the grooves of parts 1 and 2, then rotate clockwise.

CUSTOMER (Betty Boop):  
Why?

CUSTOMER (Betty Boop):  
Hello?

CUSTOMER (Betty Boop):  
Well I did what you said, now it's in 3 pieces again.

AGENT (Will Smith):  
What did you do?

<< ENTER key to Continue... >> [ENTER]

CUSTOMER (Betty Boop):  
I put part-3 in the grooves, than I turned clockwise causing it to fall off the table.

AGENT (Will Smith):  
You were to rotate part-3 not turn yourself around!

CUSTOMER (Betty Boop):  
Well now what do I do?

AGENT (Will Smith):  
What do you think?

<< ENTER key to Continue... >> [ENTER]

| Ticket | Status | Subject                        | Messages |
|--------|--------|--------------------------------|----------|
| 060001 | ACTIVE | Frequent Disconnects           | 5        |
| 030530 | ACTIVE | Does not respond to command... | 20       |
| 070533 | ACTIVE | Nothing happens...             | 20       |
| 080020 | ACTIVE | It's broken/does not work      | 19       |

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

CUSTOMER: Betty Boop (30004)

=====

Customer Main Menu

=====

- 1) View your account detail
- 2) Create a new ticket
- 3) Modify an active ticket
- 4) List my tickets

-----

0) Logout

Selection: 2

New Ticket (Ticket#:080600)

-----

Enter the ticket SUBJECT (30 chars. maximum): Funny Noises are coming from the unit!

ERROR: String length must be no more than 30 chars: Funny Noise!

Enter the ticket message details (150 chars. maximum). Press the ENTER key to submit:

When it turns on it screams at me and it's quite offending.

\*\*\* New ticket created! \*\*\*

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)

=====

Customer Main Menu

=====

- 1) View your account detail
- 2) Create a new ticket
- 3) Modify an active ticket
- 4) List my tickets

-----

0) Logout

Selection: 4

| Ticket | Status | Subject                        | Messages |
|--------|--------|--------------------------------|----------|
| 060001 | ACTIVE | Frequent Disconnects           | 5        |
| 030530 | ACTIVE | Does not respond to command... | 20       |
| 070533 | ACTIVE | Nothing happens...             | 20       |
| 080020 | ACTIVE | It's broken/does not work      | 19       |
| 080600 | ACTIVE | Funny Noise!                   | 1        |

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

CUSTOMER: Betty Boop (30004)

=====

Customer Main Menu

```
=====
1) View your account detail
2) Create a new ticket
3) Modify an active ticket
4) List my tickets
-----
0) Logout

Selection: 2

ERROR: Ticket listing is FULL, call ITS Support!

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)
=====
Customer Main Menu
=====
1) View your account detail
2) Create a new ticket
3) Modify an active ticket
4) List my tickets
-----
0) Logout

Selection: 3

Enter ticket number: 80004

ERROR: Invalid ticket number - you may only modify your own ticket.

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)
=====
Customer Main Menu
=====
1) View your account detail
2) Create a new ticket
3) Modify an active ticket
4) List my tickets
-----
0) Logout

Selection: 3

Enter ticket number: 80020

-----
Ticket 080020 - Update Options
-----
Status : ACTIVE
Subject : It's broken/does not work
-----
1) Modify the subject
2) Add a message
3) Close ticket
0) Done
```

```
Selection: 2

Enter the ticket message details (150 chars. maximum). Press the ENTER key to submit:
I'm so confused.

-----
Ticket 080020 - Update Options
-----
Status : ACTIVE
Subject : It's broken/does not work
-----
1) Modify the subject
2) Add a message
3) Close ticket
0) Done
Selection: 1

Enter the revised ticket SUBJECT (30 chars. maximum): Double broken!

-----
Ticket 080020 - Update Options
-----
Status : ACTIVE
Subject : Double broken!
-----
1) Modify the subject
2) Add a message
3) Close ticket
0) Done
Selection: 2

ERROR: Message limit has been reached, call ITS Support!

-----
Ticket 080020 - Update Options
-----
Status : ACTIVE
Subject : Double broken!
-----
1) Modify the subject
2) Add a message
3) Close ticket
0) Done
Selection: 0

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)
=====
Customer Main Menu
=====
1) View your account detail
2) Create a new ticket
3) Modify an active ticket
4) List my tickets
-----
0) Logout
```

```
Selection: 3

Enter ticket number: 60001

-----
Ticket 060001 - Update Options
-----
Status  : ACTIVE
Subject : Frequent Disconnects
-----

1) Modify the subject
2) Add a message
3) Close ticket
0) Done
Selection: 3

Are you sure you CLOSE this ticket? ([Y]es|[N]o): Y

Do you want to leave a closing message? ([Y]es|[N]o): N

*** Ticket closed! ***

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)
=====
Customer Main Menu
=====
1) View your account detail
2) Create a new ticket
3) Modify an active ticket
4) List my tickets
-----
0) Logout

Selection: 3

Enter ticket number: 80600

-----
Ticket 080600 - Update Options
-----
Status  : ACTIVE
Subject : Funny Noise!
-----

1) Modify the subject
2) Add a message
3) Close ticket
0) Done
Selection: 3

Are you sure you CLOSE this ticket? ([Y]es|[N]o): Y

Do you want to leave a closing message? ([Y]es|[N]o): Y

Enter the ticket message details (150 chars. maximum). Press the ENTER key to submit:
Never mind, I oiled it and all is fine now.
```



\*\*\* Ticket closed! \*\*\*

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)

=====

Customer Main Menu

=====

- 1) View your account detail
- 2) Create a new ticket
- 3) Modify an active ticket
- 4) List my tickets

-----

0) Logout

Selection: 4

| -----  |        |                                | -----    |
|--------|--------|--------------------------------|----------|
| Ticket | Status | Subject                        | Messages |
| -----  |        |                                | -----    |
| 060001 | CLOSED | Frequent Disconnects           | 5        |
| 030530 | ACTIVE | Does not respond to command... | 20       |
| 070533 | ACTIVE | Nothing happens...             | 20       |
| 080020 | ACTIVE | Double broken!                 | 20       |
| 080600 | CLOSED | Funny Noise!                   | 2        |
| -----  |        |                                | -----    |

Enter the ticket number to view the messages or

0 to return to previous menu: 80600

=====

080600 (CLOSED) Re: Funny Noise!

=====

CUSTOMER (Betty Boop):

When it turns on it screams at me and it's quite offending.

CUSTOMER (Betty Boop):

Never mind, I oiled it and all is fine now.

<< ENTER key to Continue... >> [ENTER]

| -----  |        |                                | -----    |
|--------|--------|--------------------------------|----------|
| Ticket | Status | Subject                        | Messages |
| -----  |        |                                | -----    |
| 060001 | CLOSED | Frequent Disconnects           | 5        |
| 030530 | ACTIVE | Does not respond to command... | 20       |
| 070533 | ACTIVE | Nothing happens...             | 20       |
| 080020 | ACTIVE | Double broken!                 | 20       |
| 080600 | CLOSED | Funny Noise!                   | 2        |
| -----  |        |                                | -----    |

Enter the ticket number to view the messages or

0 to return to previous menu: 0

CUSTOMER: Betty Boop (30004)

=====

Customer Main Menu

=====

```
1) View your account detail
2) Create a new ticket
3) Modify an active ticket
4) List my tickets
-----
0) Logout

Selection: 3

Enter ticket number: 30530

-----
Ticket 030530 - Update Options
-----
Status : ACTIVE
Subject : Does not respond to command...
-----
1) Modify the subject
2) Add a message
3) Close ticket
0) Done
Selection: 3

Are you sure you CLOSE this ticket? ([Y]es|[N]o): Y

*** Ticket closed! ***

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)
=====
Customer Main Menu
=====
1) View your account detail
2) Create a new ticket
3) Modify an active ticket
4) List my tickets
-----
0) Logout

Selection: 3

Enter ticket number: 80600

ERROR: Ticket is closed - changes are not permitted.

<< ENTER key to Continue... >> [ENTER]

CUSTOMER: Betty Boop (30004)
=====
Customer Main Menu
=====
1) View your account detail
2) Create a new ticket
3) Modify an active ticket
4) List my tickets
-----
0) Logout
```

Selection: 4

| Ticket | Status | Subject                        | Messages |
|--------|--------|--------------------------------|----------|
| 060001 | CLOSED | Frequent Disconnects           | 5        |
| 030530 | CLOSED | Does not respond to command... | 20       |
| 070533 | ACTIVE | Nothing happens...             | 20       |
| 080020 | ACTIVE | Double broken!                 | 20       |
| 080600 | CLOSED | Funny Noise!                   | 2        |

Enter the ticket number to view the messages or  
0 to return to previous menu: 80020

=====

080020 (ACTIVE) Re: Double broken!

=====

CUSTOMER (Betty Boop):

When I took it out of the box, it was in pieces.

AGENT (Will Smith):

You have to assemble it - read the instructions.

CUSTOMER (Betty Boop):

What are instructions?

AGENT (Will Smith):

The paper document that look's like a book with words.

CUSTOMER (Betty Boop):

Oh - right, okay so it says to snap part-1 to part-2.

<< ENTER key to Continue... >> [ENTER]

CUSTOMER (Betty Boop):

Hello? what should I do?

CUSTOMER (Betty Boop):

Then it says to place part-3 on parts 1 and 2 then twist.

CUSTOMER (Betty Boop):

Please help... I don't know what this means.

AGENT (Will Smith):

It's been 9 months, are you still unable to assemble it?

CUSTOMER (Betty Boop):

Yes, I am stuck on instruction 2 the twist part.

<< ENTER key to Continue... >> [ENTER]

AGENT (Will Smith):

Place part-3 into the grooves of parts 1 and 2, then rotate clockwise.

CUSTOMER (Betty Boop):

Why?

```
CUSTOMER (Betty Boop):
    Hello?

CUSTOMER (Betty Boop):
    Well I did what you said, now it's in 3 pieces again.

AGENT (Will Smith):
    What did you do?

<< ENTER key to Continue... >> [ENTER]

CUSTOMER (Betty Boop):
    I put part-3 in the grooves, than I turned clockwise causing it to fall off the table.

AGENT (Will Smith):
    You were to rotate part-3 not turn yourself around!

CUSTOMER (Betty Boop):
    Well now what do I do?

AGENT (Will Smith):
    What do you think?

CUSTOMER (Betty Boop):
    I'm so confused.

<< ENTER key to Continue... >> [ENTER]

-----
Ticket Status Subject                               Messages
-----
060001 CLOSED Frequent Disconnects                   5
030530 CLOSED Does not respond to command...        20
070533 ACTIVE Nothing happens...                     20
080020 ACTIVE Double broken!                         20
080600 CLOSED Funny Noise!                           2
-----

Enter the ticket number to view the messages or
0 to return to previous menu: 0

CUSTOMER: Betty Boop (30004)
=====
Customer Main Menu
=====
1) View your account detail
2) Create a new ticket
3) Modify an active ticket
4) List my tickets
-----
0) Logout

Selection: 0

Saving session modifications...
    17 tickets saved.
### LOGGED OUT ###
```

```
=====
Account Ticketing System - Login
=====
1) Login to the system
0) Exit application
-----

Selection: 1

Enter the account#: 50008
User Login      : agentJ
Password       : TT*&21tt

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
 1) Add a new account
 2) Modify an existing account
 3) Remove an account
 4) List accounts: summary view
 5) List accounts: detailed view
-----
 6) List new tickets
 7) List active tickets
 8) List closed tickets
 9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout

Selection: 11

There are 0 account(s) currently archived.

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
 1) Add a new account
 2) Modify an existing account
 3) Remove an account
 4) List accounts: summary view
 5) List accounts: detailed view
-----
 6) List new tickets
 7) List active tickets
 8) List closed tickets
 9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
```

```
12) View archived tickets statistics
-----
0) Logout

Selection: 12

There are 0 ticket(s) and a total of 0 message(s) archived.

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
 1) Add a new account
 2) Modify an existing account
 3) Remove an account
 4) List accounts: summary view
 5) List accounts: detailed view
-----
 6) List new tickets
 7) List active tickets
 8) List closed tickets
 9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout

Selection: 1

ERROR: Account listing is FULL, call ITS Support!

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
 1) Add a new account
 2) Modify an existing account
 3) Remove an account
 4) List accounts: summary view
 5) List accounts: detailed view
-----
 6) List new tickets
 7) List active tickets
 8) List closed tickets
 9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout
```

```

Selection: 3

Enter the account#: 34063
Acct# Acct.Type Birth Income      Country   Disp.Name      Login      Password
-----
34063 CUSTOMER    1989 $   27746.17 SRI LANKA   Jeffrey Gills Kibo        N*9*s*&*

Are you sure you want to remove this record? ([Y]es|[N]o): y
ERROR: Character must be one of [YN]: Y

*** Account Removed! ***

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
 1) Add a new account
 2) Modify an existing account
 3) Remove an account
 4) List accounts: summary view
 5) List accounts: detailed view
-----
 6) List new tickets
 7) List active tickets
 8) List closed tickets
 9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout

Selection: 1

New Account Data (Account#:82043)
-----
Enter the account type (A=Agent | C=Customer): C

User Login Data Input
-----
Enter user login (10 chars max): NobodyWillKnowMe
ERROR: String length must be no more than 10 chars: Nobody Will Know Me
ERROR: String length must be no more than 10 chars: No Body
ERROR: The user login must NOT contain whitespace characters.
Enter user login (10 chars max): HarryHorse
Enter the display name (30 chars max): Horse and goat and donkey get along
ERROR: String length must be no more than 30 chars: Nay to Hay
Enter the password (must be 8 chars in length): abcdefg
ERROR: String length must be exactly 8 chars: aaJJ88$#a
ERROR: String length must be exactly 8 chars: aJJ77$#J
SECURITY: Password must contain 2 of each:
    Digit: 0-9
    UPPERCASE character
    lowercase character
    symbol character: !@#$$%^&*

```

```
Enter the password (must be 8 chars in length): aaJ99$c
SECURITY: Password must contain 2 of each:
    Digit: 0-9
    UPPERCASE character
    lowercase character
    symbol character: !@#$%^&*
Enter the password (must be 8 chars in length): aaJJ8$#@
SECURITY: Password must contain 2 of each:
    Digit: 0-9
    UPPERCASE character
    lowercase character
    symbol character: !@#$%^&*
Enter the password (must be 8 chars in length): aaJJ77*(
SECURITY: Password must contain 2 of each:
    Digit: 0-9
    UPPERCASE character
    lowercase character
    symbol character: !@#$%^&*
Enter the password (must be 8 chars in length): aaJJ88$#

Demographic Data Input
-----
Enter birth year (current age must be between 18 and 110): 2004
ERROR: Value must be between 1911 and 2003 inclusive: 1910
ERROR: Value must be between 1911 and 2003 inclusive: 2003
Enter the household Income: $asdf
ERROR: Value must be a double floating-point number: -8.22
ERROR: Value must be a positive double floating-point number: 0.00
ERROR: Value must be a positive double floating-point number: 125000.12
Enter the country (30 chars max.): Not all countries get along unfortunately
ERROR: String length must be no more than 30 chars: u.s.a.

*** New account added! ***

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout

Selection: 2
```



Enter the account#: **53070**

Account: 53070 - Update Options

-----  
1) Update account type (current value: A)  
2) Login  
3) Demographics  
0) Done  
Selection: **1**

Enter the account type (A=Agent | C=Customer): **c**

ERROR: Character must be one of [AC]: **C**

Account: 53070 - Update Options

-----  
1) Update account type (current value: C)  
2) Login  
3) Demographics  
0) Done  
Selection: **2**

User Login: Lara - Update Options

-----  
1) Display name (current value: Wylie Pollard)  
2) Password  
0) Done  
Selection: **1**

Enter the display name (30 chars max): **Wylie Coyote**

User Login: Lara - Update Options

-----  
1) Display name (current value: Wylie Coyote)  
2) Password  
0) Done  
Selection: **2**

Enter the password (must be 8 chars in length): **dd99@\$FF**

User Login: Lara - Update Options

-----  
1) Display name (current value: Wylie Coyote)  
2) Password  
0) Done  
Selection: **0**

Account: 53070 - Update Options

-----  
1) Update account type (current value: C)  
2) Login  
3) Demographics  
0) Done  
Selection: **3**

Demographic Update Options

-----  
1) Household Income (current value: \$61384.65)  
2) Country (current value: ALBANIA)

0) Done

Selection: 1

Enter the household Income: \$0

ERROR: Value must be a positive double floating-point number: 180222.22

Demographic Update Options

1) Household Income (current value: \$180222.22)

2) Country (current value: ALBANIA)

0) Done

Selection: 2

Enter the country (30 chars max.): canada

Demographic Update Options

1) Household Income (current value: \$180222.22)

2) Country (current value: CANADA)

0) Done

Selection: 0

Account: 53070 - Update Options

1) Update account type (current value: C)

2) Login

3) Demographics

0) Done

Selection: 0

AGENT: Will Smith (50008)

Account Ticketing System - Agent Menu

1) Add a new account

2) Modify an existing account

3) Remove an account

4) List accounts: summary view

5) List accounts: detailed view

6) List new tickets

7) List active tickets

8) List closed tickets

9) Manage a ticket

10) Archive closed tickets

11) View archived account statistics

12) View archived tickets statistics

0) Logout

Selection: 5

| Acct# | Acct.Type | Birth | Income       | Country | Disp.Name       | Login  | Password  |
|-------|-----------|-------|--------------|---------|-----------------|--------|-----------|
| 30001 | CUSTOMER  | 1990  | \$ 150000.10 | CANADA  | Silly Sally     | cust1  | A*1*3*D*  |
| 50599 | AGENT     | 1972  | \$2250400.22 | AFRICA  | Fred Flintstone | agent1 | y*b*##*@* |
| 30004 | CUSTOMER  | 1978  | \$ 250800.74 | INDIA   | Betty Boop      | cust2  | 7***F*a*  |

|       |          |      |              |          |                |            |           |
|-------|----------|------|--------------|----------|----------------|------------|-----------|
| 50008 | AGENT    | 1952 | \$2350600.82 | U.S.A.   | Will Smith     | agentJ     | T***2*t*  |
| 20020 | CUSTOMER | 2000 | \$ 350500.35 | KOREA    | Shrimpy Shrimp | cust3      | 8*3*J*m*  |
| 34000 | AGENT    | 1991 | \$ 61907.58  | GREECE   | Xyla Yates     | Cherokee   | E*1*d*&*  |
| 53007 | CUSTOMER | 1963 | \$ 22288.09  | SLOVENIA | Chaney Kinney  | Demetria   | Y*0*j*&*  |
| 30014 | AGENT    | 1999 | \$ 35403.36  | SPAIN    | Hanae Horn     | Keiko      | R*5*r*&*  |
| 70021 | AGENT    | 1951 | \$ 77711.60  | PORTUGAL | Kane Lancaster | Benjamin   | H*8*z*&*  |
| 35035 | CUSTOMER | 1999 | \$ 83024.91  | HONDURAS | Honorato Banks | Kimberly   | C*7*o*&*  |
| 82042 | CUSTOMER | 1932 | \$ 40187.20  | GUAM     | Dexter Martin  | Isabelle   | H*2*k*&*  |
| 35049 | CUSTOMER | 1990 | \$ 60494.16  | LESOTHO  | Buck Odom      | Aidan      | B*6*s*&*  |
| 54056 | CUSTOMER | 1961 | \$ 91914.61  | BAHAMAS  | Craig Mcknight | Fredericka | 0*8*e*&*  |
| 82043 | CUSTOMER | 2003 | \$ 125000.12 | U.S.A.   | Nay to Hay     | HarryHorse | a*J*8*\$* |
| 53070 | CUSTOMER | 1990 | \$ 180222.22 | CANADA   | Wylie Coyote   | Lara       | d*9*@*F*  |

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

-----

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

-----

- 11) View archived account statistics
- 12) View archived tickets statistics

-----

0) Logout

Selection: 6

| Ticket | Acct# | Display Name   | Status | Subject                   | Messages |
|--------|-------|----------------|--------|---------------------------|----------|
| 080599 | 20020 | Shrimpy Shrimp | ACTIVE | No power/does not turn on | 1        |
| 040599 | 30049 | Buck Odom      | ACTIVE | Power Issue               | 1        |

Enter the ticket number to view the messages or

0 to return to previous menu: 80599

=====

080599 (ACTIVE) Re: No power/does not turn on

=====

CUSTOMER (Shrimpy Shrimp):

The unit won't turn on - please help.

<< ENTER key to Continue... >> [ENTER]

| Ticket | Acct# | Display Name | Status | Subject | Messages |
|--------|-------|--------------|--------|---------|----------|
|--------|-------|--------------|--------|---------|----------|

```

-----
080599 20020 Shrimpy Shrimp ACTIVE No power/does not turn on 1
040599 30049 Buck Odom ACTIVE Power Issue 1
-----

```

Enter the ticket number to view the messages or  
 0 to return to previous menu: 0

AGENT: Will Smith (50008)

Account Ticketing System - Agent Menu

- ```

=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----

```

- ```

6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----

```

- ```

11) View archived account statistics
12) View archived tickets statistics
-----

```

0) Logout

Selection: 7

```

-----
Ticket Acct# Display Name Status Subject Messages
-----
080599 20020 Shrimpy Shrimp ACTIVE No power/does not turn on 1
080004 20020 Shrimpy Shrimp ACTIVE My head hurts! 3
070533 30004 Betty Boop ACTIVE Nothing happens... 20
080020 30004 Betty Boop ACTIVE Double broken! 20
080204 30001 Silly Sally ACTIVE It's very messy! 2
040599 30049 Buck Odom ACTIVE Power Issue 1
040001 30021 Kane Lancaster ACTIVE Connectivity Problem 5
040530 30021 Kane Lancaster ACTIVE Not doing what it's told... 20
040004 30049 Buck Odom ACTIVE Causes bodily harm! 3
040533 30021 Kane Lancaster ACTIVE Doesn't respond... 20
040020 30021 Kane Lancaster ACTIVE Damaged and in pieces 19
040204 53070 Wylie Pollard ACTIVE It's very messy! 2
-----

```

Enter the ticket number to view the messages or  
 0 to return to previous menu: 70533

```

=====
070533 (ACTIVE) Re: Nothing happens...
=====

```

CUSTOMER (Betty Boop):

Instructions state to 'say yes' to the prompts - but nothing happens.

AGENT (Fred Flintstone):

Is this when setting up the unit for the first time?

CUSTOMER (Betty Boop):

Yes - it asks me if I'm ready to start and I tell it 'yes' nothing happens.

AGENT (Fred Flintstone):

Are you pressing the 'yes' button on the unit?

CUSTOMER (Betty Boop):

No, instructions state to say yes - not press any buttons.

<< ENTER key to Continue... >> [ENTER]

AGENT (Will Smith):

'say' was meant to be interpreted as press the 'yes' button.

CUSTOMER (Betty Boop):

But the instructions don't mention any buttons.

AGENT (Will Smith):

Agreed, it isn't very clear, but you must press the yes button.

CUSTOMER (Betty Boop):

There's no button in the instruction booklet.

AGENT (Will Smith):

The button isn't in the instructions, it will be on the device.

<< ENTER key to Continue... >> [ENTER]

CUSTOMER (Betty Boop):

Oh I get it that now makes sense.

CUSTOMER (Betty Boop):

Wait... I get further now, but it stops after pressing the yes button.

AGENT (Will Smith):

What is the problem now?

CUSTOMER (Betty Boop):

The instructions state to 'say no' if I have health issues.

AGENT (Will Smith):

Do you have health issues?

<< ENTER key to Continue... >> [ENTER]

CUSTOMER (Betty Boop):

No.

AGENT (Will Smith):

Then what is the problem exactly?

CUSTOMER (Betty Boop):

It doesn't do anything when I say No.

AGENT (Will Smith):

Again, you don't 'say' no, you must press the no button.

CUSTOMER (Betty Boop):

Oh I get it now - thanks!

<< ENTER key to Continue... >> [ENTER]

Ticket	Acct#	Display Name	Status	Subject	Messages
080599	20020	Shrimpy Shrimp	ACTIVE	No power/does not turn on	1
080004	20020	Shrimpy Shrimp	ACTIVE	My head hurts!	3
070533	30004	Betty Boop	ACTIVE	Nothing happens...	20
080020	30004	Betty Boop	ACTIVE	Double broken!	20
080204	30001	Silly Sally	ACTIVE	It's very messy!	2
040599	30049	Buck Odom	ACTIVE	Power Issue	1
040001	30021	Kane Lancaster	ACTIVE	Connectivity Problem	5
040530	30021	Kane Lancaster	ACTIVE	Not doing what it's told...	20
040004	30049	Buck Odom	ACTIVE	Causes bodily harm!	3
040533	30021	Kane Lancaster	ACTIVE	Doesn't respond...	20
040020	30021	Kane Lancaster	ACTIVE	Damaged and in pieces	19
040204	53070	Wylie Pollard	ACTIVE	It's very messy!	2

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

AGENT: Will Smith (50008)

Account Ticketing System - Agent Menu

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view
- 
- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets
- 
- 11) View archived account statistics
- 12) View archived tickets statistics
- 
- 0) Logout

Selection: 8

Ticket	Acct#	Display Name	Status	Subject	Messages
060001	30004	Betty Boop	CLOSED	Frequent Disconnects	5
064611	20020	Shrimpy Shrimp	CLOSED	It gets hot and smokes	4
030530	30004	Betty Boop	CLOSED	Does not respond to command...	20
044611	30049	Buck Odom	CLOSED	Unit is burning up	4
080600	30004	Betty Boop	CLOSED	Funny Noise!	2

Enter the ticket number to view the messages or  
0 to return to previous menu: **64611**

=====

064611 (CLOSED) Re: It gets hot and smokes

=====

CUSTOMER (Shrimpy Shrimp):

When I put it in the oven, it gets hot and starts smoking.

AGENT (Will Smith):

It is not designed to be put in the oven - your warranty is now void.

CUSTOMER (Shrimpy Shrimp):

So you won't fix it?

AGENT (Will Smith):

No - you will have to purchase another.

<< ENTER key to Continue... >> **[ENTER]**

Ticket	Acct#	Display Name	Status	Subject	Messages
060001	30004	Betty Boop	CLOSED	Frequent Disconnects	5
064611	20020	Shrimpy Shrimp	CLOSED	It gets hot and smokes	4
030530	30004	Betty Boop	CLOSED	Does not respond to command...	20
044611	30049	Buck Odom	CLOSED	Unit is burning up	4
080600	30004	Betty Boop	CLOSED	Funny Noise!	2

-----

Enter the ticket number to view the messages or  
0 to return to previous menu: **0**

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
  - 2) Modify an existing account
  - 3) Remove an account
  - 4) List accounts: summary view
  - 5) List accounts: detailed view
- 

- 6) List new tickets
  - 7) List active tickets
  - 8) List closed tickets
  - 9) Manage a ticket
  - 10) Archive closed tickets
- 

- 11) View archived account statistics
  - 12) View archived tickets statistics
- 

0) Logout

Selection: **3**

Enter the account#: **20020**

Acct#	Acct.Type	Birth	Income	Country	Disp.Name	Login	Password
20020	CUSTOMER	2000	\$ 350500.35	KOREA	Shrimpy Shrimp	cust3	8*3*J*m*

Are you sure you want to remove this record? ([Y]es|[N]o): **Y**

\*\*\* Account Removed! \*\*\*

<< ENTER key to Continue... >> **[ENTER]**

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 
- 6) List new tickets
  - 7) List active tickets
  - 8) List closed tickets
  - 9) Manage a ticket
  - 10) Archive closed tickets

- 
- 11) View archived account statistics
  - 12) View archived tickets statistics
- 

0) Logout

Selection: **4**

Acct#	Acct.Type	Birth
30001	CUSTOMER	1990
50599	AGENT	1972
30004	CUSTOMER	1978
50008	AGENT	1952
34000	AGENT	1991
53007	CUSTOMER	1963
30014	AGENT	1999
70021	AGENT	1951
35035	CUSTOMER	1999
82042	CUSTOMER	1932
35049	CUSTOMER	1990
54056	CUSTOMER	1961
82043	CUSTOMER	2003
53070	CUSTOMER	1990

<< ENTER key to Continue... >> **[ENTER]**

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

- 1) Add a new account
- 2) Modify an existing account



- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

- 11) View archived account statistics
- 12) View archived tickets statistics

0) Logout

Selection: **5**

Acct#	Acct.Type	Birth	Income	Country	Disp.Name	Login	Password
30001	CUSTOMER	1990	\$ 150000.10	CANADA	Silly Sally	cust1	A*1*3*D*
50599	AGENT	1972	\$2250400.22	AFRICA	Fred Flintstone	agent1	y*b*##@*
30004	CUSTOMER	1978	\$ 250800.74	INDIA	Betty Boop	cust2	7***F*a*
50008	AGENT	1952	\$2350600.82	U.S.A.	Will Smith	agentJ	T***2*t*
34000	AGENT	1991	\$ 61907.58	GREECE	Xyla Yates	Cherokee	E*1*d*&*
53007	CUSTOMER	1963	\$ 22288.09	SLOVENIA	Chaney Kinney	Demetria	Y*0*j*&*
30014	AGENT	1999	\$ 35403.36	SPAIN	Hanae Horn	Keiko	R*5*r*&*
70021	AGENT	1951	\$ 77711.60	PORTUGAL	Kane Lancaster	Benjamin	H*8*z*&*
35035	CUSTOMER	1999	\$ 83024.91	HONDURAS	Honorato Banks	Kimberly	C*7*o*&*
82042	CUSTOMER	1932	\$ 40187.20	GUAM	Dexter Martin	Isabelle	H*2*k*&*
35049	CUSTOMER	1990	\$ 60494.16	LESOTHO	Buck Odom	Aidan	B*6*s*&*
54056	CUSTOMER	1961	\$ 91914.61	BAHAMAS	Craig Mcknight	Fredericka	0*8*e*&*
82043	CUSTOMER	2003	\$ 125000.12	U.S.A.	Nay to Hay	HarryHorse	a*J*8*\$*
53070	CUSTOMER	1990	\$ 180222.22	CANADA	Wylie Coyote	Lara	d*9*@*F*

<< ENTER key to Continue... >> **[ENTER]**

AGENT: Will Smith (50008)

Account Ticketing System - Agent Menu

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

- 11) View archived account statistics
- 12) View archived tickets statistics

0) Logout

Selection: **7**

Ticket	Acct#	Display Name	Status	Subject	Messages
070533	30004	Betty Boop	ACTIVE	Nothing happens...	20
080020	30004	Betty Boop	ACTIVE	Double broken!	20
080204	30001	Silly Sally	ACTIVE	It's very messy!	2
040599	30049	Buck Odom	ACTIVE	Power Issue	1
040001	30021	Kane Lancaster	ACTIVE	Connectivity Problem	5
040530	30021	Kane Lancaster	ACTIVE	Not doing what it's told...	20
040004	30049	Buck Odom	ACTIVE	Causes bodily harm!	3
040533	30021	Kane Lancaster	ACTIVE	Doesn't respond...	20
040020	30021	Kane Lancaster	ACTIVE	Damaged and in pieces	19
040204	53070	Wylie Pollard	ACTIVE	It's very messy!	2

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

- 1) Add a new account
  - 2) Modify an existing account
  - 3) Remove an account
  - 4) List accounts: summary view
  - 5) List accounts: detailed view
- 
- 6) List new tickets
  - 7) List active tickets
  - 8) List closed tickets
  - 9) Manage a ticket
  - 10) Archive closed tickets
- 
- 11) View archived account statistics
  - 12) View archived tickets statistics
- 
- 0) Logout

Selection: 8

Ticket	Acct#	Display Name	Status	Subject	Messages
060001	30004	Betty Boop	CLOSED	Frequent Disconnects	5
030530	30004	Betty Boop	CLOSED	Does not respond to command...	20
044611	30049	Buck Odom	CLOSED	Unit is burning up	4
080600	30004	Betty Boop	CLOSED	Funny Noise!	2

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

```
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout

Selection: 1

New Account Data (Account#:82044)
-----
Enter the account type (A=Agent | C=Customer): C

User Login Data Input
-----
Enter user login (10 chars max): CrazyCamel
Enter the display name (30 chars max): Sandy Sand
Enter the password (must be 8 chars in length): 12RR!@jj

Demographic Data Input
-----
Enter birth year (current age must be between 18 and 110): 1911
Enter the household Income: $54321.22
Enter the country (30 chars max.): Australia

*** New account added! ***

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
```

0) Logout

Selection: 5

Acct#	Acct.Type	Birth	Income	Country	Disp.Name	Login	Password
30001	CUSTOMER	1990	\$ 150000.10	CANADA	Silly Sally	cust1	A*1*3*D*
50599	AGENT	1972	\$2250400.22	AFRICA	Fred Flintstone	agent1	y*b*#*@*
30004	CUSTOMER	1978	\$ 250800.74	INDIA	Betty Boop	cust2	7***F*a*
50008	AGENT	1952	\$2350600.82	U.S.A.	Will Smith	agentJ	T***2*t*
82044	CUSTOMER	1911	\$ 54321.22	AUSTRALIA	Sandy Sand	CrazyCamel	1*R*!*j*
34000	AGENT	1991	\$ 61907.58	GREECE	Xyla Yates	Cherokee	E*1*d*&*
53007	CUSTOMER	1963	\$ 22288.09	SLOVENIA	Chaney Kinney	Demetria	Y*0*j*&*
30014	AGENT	1999	\$ 35403.36	SPAIN	Hanae Horn	Keiko	R*5*r*&*
70021	AGENT	1951	\$ 77711.60	PORTUGAL	Kane Lancaster	Benjamin	H*8*z*&*
35035	CUSTOMER	1999	\$ 83024.91	HONDURAS	Honorato Banks	Kimberly	C*7*o*&*
82042	CUSTOMER	1932	\$ 40187.20	GUAM	Dexter Martin	Isabelle	H*2*k*&*
35049	CUSTOMER	1990	\$ 60494.16	LESOTHO	Buck Odom	Aidan	B*6*s*&*
54056	CUSTOMER	1961	\$ 91914.61	BAHAMAS	Craig Mcknight	Fredericka	O*8*e*&*
82043	CUSTOMER	2003	\$ 125000.12	U.S.A.	Nay to Hay	HarryHorse	a*J*8*\$*
53070	CUSTOMER	1990	\$ 180222.22	CANADA	Wylie Coyote	Lara	d*9*@*F*

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)

Account Ticketing System - Agent Menu

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view
- 
- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets
- 
- 11) View archived account statistics
- 12) View archived tickets statistics
- 

0) Logout

Selection: 9

Enter ticket number: 80600

Ticket 080600 - Update Options

Status : CLOSED  
 Subject : Funny Noise!  
 Acct# : 30004  
 Customer: Betty Boop

- 1) Add a message

```
2) Close ticket
3) Re-open ticket
0) Done
Selection: 1
```

ERROR: Ticket is closed - new messages are not permitted.

```
-----
Ticket 080600 - Update Options
-----
```

```
Status  : CLOSED
Subject : Funny Noise!
Acct#   : 30004
Customer: Betty Boop
-----
```

```
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 2
```

ERROR: Ticket is already closed!

```
-----
Ticket 080600 - Update Options
-----
```

```
Status  : CLOSED
Subject : Funny Noise!
Acct#   : 30004
Customer: Betty Boop
-----
```

```
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 3
```

Are you sure you RE-OPEN this closed ticket? ([Y]es|[N]o): N

```
-----
Ticket 080600 - Update Options
-----
```

```
Status  : CLOSED
Subject : Funny Noise!
Acct#   : 30004
Customer: Betty Boop
-----
```

```
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 0
```

AGENT: Will Smith (50008)

```
=====
Account Ticketing System - Agent Menu
=====
```

```
1) Add a new account
```

- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

- 11) View archived account statistics
- 12) View archived tickets statistics

0) Logout

Selection: 8

Ticket	Acct#	Display Name	Status	Subject	Messages
060001	30004	Betty Boop	CLOSED	Frequent Disconnects	5
030530	30004	Betty Boop	CLOSED	Does not respond to command...	20
044611	30049	Buck Odom	CLOSED	Unit is burning up	4
080600	30004	Betty Boop	CLOSED	Funny Noise!	2

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

AGENT: Will Smith (50008)

Account Ticketing System - Agent Menu

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

- 11) View archived account statistics
- 12) View archived tickets statistics

0) Logout

Selection: 9

Enter ticket number: 80600

Ticket 080600 - Update Options

```
Status : CLOSED
Subject : Funny Noise!
Acct#   : 30004
Customer: Betty Boop
-----
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 3

Are you sure you RE-OPEN this closed ticket? ([Y]es|[N]o): Y

*** Ticket re-opened! ***

-----
Ticket 080600 - Update Options
-----
Status : ACTIVE
Subject : Funny Noise!
Acct#   : 30004
Customer: Betty Boop
-----
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 1

Enter the ticket message details (150 chars. maximum). Press the ENTER key to submit:
Enjoy your purchase!

-----
Ticket 080600 - Update Options
-----
Status : ACTIVE
Subject : Funny Noise!
Acct#   : 30004
Customer: Betty Boop
-----
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 2

Are you sure you CLOSE this ticket? ([Y]es|[N]o): Y

Do you want to leave a closing message? ([Y]es|[N]o): Y

Enter the ticket message details (150 chars. maximum). Press the ENTER key to submit:
Ticket is now closed.

*** Ticket closed! ***

-----
Ticket 080600 - Update Options
-----
```

Status : CLOSED  
 Subject : Funny Noise!  
 Acct# : 30004  
 Customer: Betty Boop

-----  
 1) Add a message  
 2) Close ticket  
 3) Re-open ticket  
 0) Done  
 Selection: 0

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

1) Add a new account  
 2) Modify an existing account  
 3) Remove an account  
 4) List accounts: summary view  
 5) List accounts: detailed view

-----  
 6) List new tickets  
 7) List active tickets  
 8) List closed tickets  
 9) Manage a ticket  
 10) Archive closed tickets

-----  
 11) View archived account statistics  
 12) View archived tickets statistics

-----  
 0) Logout

Selection: 8

Ticket	Acct#	Display Name	Status	Subject	Messages
060001	30004	Betty Boop	CLOSED	Frequent Disconnects	5
030530	30004	Betty Boop	CLOSED	Does not respond to command...	20
044611	30049	Buck Odom	CLOSED	Unit is burning up	4
080600	30004	Betty Boop	CLOSED	Funny Noise!	4

-----

Enter the ticket number to view the messages or  
 0 to return to previous menu: 80600

=====

080600 (CLOSED) Re: Funny Noise!

=====

CUSTOMER (Betty Boop):

When it turns on it screams at me and it's quite offending.

CUSTOMER (Betty Boop):

Never mind, I oiled it and all is fine now.

AGENT (Will Smith):

Enjoy your purchase!



AGENT (Will Smith):

Ticket is now closed.

<< ENTER key to Continue... >> [ENTER]

Ticket	Acct#	Display Name	Status	Subject	Messages
060001	30004	Betty Boop	CLOSED	Frequent Disconnects	5
030530	30004	Betty Boop	CLOSED	Does not respond to command...	20
044611	30049	Buck Odom	CLOSED	Unit is burning up	4
080600	30004	Betty Boop	CLOSED	Funny Noise!	4

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu

- =====  
1) Add a new account  
2) Modify an existing account  
3) Remove an account  
4) List accounts: summary view  
5) List accounts: detailed view  
-----  
6) List new tickets  
7) List active tickets  
8) List closed tickets  
9) Manage a ticket  
10) Archive closed tickets  
-----  
11) View archived account statistics  
12) View archived tickets statistics  
-----  
0) Logout

Selection: 9

Enter ticket number: 70533

-----  
Ticket 070533 - Update Options  
-----

Status : ACTIVE  
Subject : Nothing happens...  
Acct# : 30004  
Customer: Betty Boop  
-----

- 1) Add a message  
2) Close ticket  
3) Re-open ticket  
0) Done

Selection: 1

ERROR: Message limit has been reached, call ITS Support!

-----  
Ticket 070533 - Update Options  
-----

Status : ACTIVE  
Subject : Nothing happens...  
Acct# : 30004  
Customer: Betty Boop  
-----

1) Add a message  
2) Close ticket  
3) Re-open ticket  
0) Done  
Selection: 0

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

1) Add a new account  
2) Modify an existing account  
3) Remove an account  
4) List accounts: summary view  
5) List accounts: detailed view  
-----

6) List new tickets  
7) List active tickets  
8) List closed tickets  
9) Manage a ticket  
10) Archive closed tickets  
-----

11) View archived account statistics  
12) View archived tickets statistics  
-----

0) Logout

Selection: 9

Enter ticket number: 80204

-----  
Ticket 080204 - Update Options  
-----

Status : ACTIVE  
Subject : It's very messy!  
Acct# : 30001  
Customer: Silly Sally  
-----

1) Add a message  
2) Close ticket  
3) Re-open ticket  
0) Done  
Selection: 2

Are you sure you CLOSE this ticket? ([Y]es|[N]o): Y

Do you want to leave a closing message? ([Y]es|[N]o): N

\*\*\* Ticket closed! \*\*\*

-----  
Ticket 080204 - Update Options  
-----

Status : CLOSED  
Subject : It's very messy!  
Acct# : 30001  
Customer: Silly Sally  
-----

1) Add a message  
2) Close ticket  
3) Re-open ticket  
0) Done  
Selection: 0

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

1) Add a new account  
2) Modify an existing account  
3) Remove an account  
4) List accounts: summary view  
5) List accounts: detailed view  
-----

6) List new tickets  
7) List active tickets  
8) List closed tickets  
9) Manage a ticket  
10) Archive closed tickets  
-----

11) View archived account statistics  
12) View archived tickets statistics  
-----

0) Logout

Selection: 9

Enter ticket number: 80020

-----  
Ticket 080020 - Update Options  
-----

Status : ACTIVE  
Subject : Double broken!  
Acct# : 30004  
Customer: Betty Boop  
-----

1) Add a message  
2) Close ticket  
3) Re-open ticket  
0) Done  
Selection: 2

Are you sure you CLOSE this ticket? ([Y]es|[N]o): Y

\*\*\* Ticket closed! \*\*\*

-----  
Ticket 080020 - Update Options  
-----

Status : CLOSED  
Subject : Double broken!  
Acct# : 30004  
Customer: Betty Boop  
-----

1) Add a message  
2) Close ticket  
3) Re-open ticket  
0) Done  
Selection: 0

AGENT: Will Smith (50008)

=====  
Account Ticketing System - Agent Menu  
=====

1) Add a new account  
2) Modify an existing account  
3) Remove an account  
4) List accounts: summary view  
5) List accounts: detailed view  
-----

6) List new tickets  
7) List active tickets  
8) List closed tickets  
9) Manage a ticket  
10) Archive closed tickets  
-----

11) View archived account statistics  
12) View archived tickets statistics  
-----

0) Logout

Selection: 9

Enter ticket number: 70533

-----  
Ticket 070533 - Update Options  
-----

Status : ACTIVE  
Subject : Nothing happens...  
Acct# : 30004  
Customer: Betty Boop  
-----

1) Add a message  
2) Close ticket  
3) Re-open ticket  
0) Done  
Selection: 3

ERROR: Ticket is already active!

-----  
Ticket 070533 - Update Options  
-----

```
Status : ACTIVE
Subject : Nothing happens...
Acct#   : 30004
Customer: Betty Boop
```

```
-----
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 0
```

```
AGENT: Will Smith (50008)
```

```
=====
Account Ticketing System - Agent Menu
```

```
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
```

```
-----
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
```

```
-----
11) View archived account statistics
12) View archived tickets statistics
```

```
-----
0) Logout
```

```
Selection: 9
```

```
Enter ticket number: 60001
```

```
-----
Ticket 060001 - Update Options
```

```
-----
Status : CLOSED
Subject : Frequent Disconnects
Acct#   : 30004
Customer: Betty Boop
```

```
-----
1) Add a message
2) Close ticket
3) Re-open ticket
0) Done
Selection: 3
```

```
Are you sure you RE-OPEN this closed ticket? ([Y]es|[N]o): N
```

```
-----
Ticket 060001 - Update Options
```

```
-----
Status : CLOSED
Subject : Frequent Disconnects
Acct#   : 30004
```

Customer: Betty Boop

- 
- 1) Add a message
  - 2) Close ticket
  - 3) Re-open ticket
  - 0) Done

Selection: 3

Are you sure you RE-OPEN this closed ticket? ([Y]es|[N]o): Y

\*\*\* Ticket re-opened! \*\*\*

-----

Ticket 060001 - Update Options

-----

Status : ACTIVE  
Subject : Frequent Disconnects  
Acct# : 30004  
Customer: Betty Boop

-----

- 1) Add a message
- 2) Close ticket
- 3) Re-open ticket
- 0) Done

Selection: 0

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
  - 2) Modify an existing account
  - 3) Remove an account
  - 4) List accounts: summary view
  - 5) List accounts: detailed view
- 

- 6) List new tickets
  - 7) List active tickets
  - 8) List closed tickets
  - 9) Manage a ticket
  - 10) Archive closed tickets
- 

- 11) View archived account statistics
  - 12) View archived tickets statistics
- 

0) Logout

Selection: 7

-----

Ticket	Acct#	Display Name	Status	Subject	Messages
060001	30004	Betty Boop	ACTIVE	Frequent Disconnects	5
070533	30004	Betty Boop	ACTIVE	Nothing happens...	20
040599	30049	Buck Odom	ACTIVE	Power Issue	1
040001	30021	Kane Lancaster	ACTIVE	Connectivity Problem	5
040530	30021	Kane Lancaster	ACTIVE	Not doing what it's told...	20
040004	30049	Buck Odom	ACTIVE	Causes bodily harm!	3

-----

```
040533 30021 Kane Lancaster ACTIVE Doesn't respond... 20
040020 30021 Kane Lancaster ACTIVE Damaged and in pieces 19
040204 53070 Wylie Pollard ACTIVE It's very messy! 2
-----
```

Enter the ticket number to view the messages or  
0 to return to previous menu: 60001

=====

060001 (ACTIVE) Re: Frequent Disconnects

=====

CUSTOMER (Betty Boop):

Every time I go near the microwave the unit disconnects.

AGENT (Will Smith):

Don't go near the microwave.

AGENT (Will Smith):

It will radiate waves which will interrupt the unit.

CUSTOMER (Betty Boop):

But I use the microwave a lot.

AGENT (Will Smith):

You cook too much!

<< ENTER key to Continue... >> [ENTER]

```
-----
Ticket Acct# Display Name Status Subject Messages
-----
060001 30004 Betty Boop ACTIVE Frequent Disconnects 5
070533 30004 Betty Boop ACTIVE Nothing happens... 20
040599 30049 Buck Odom ACTIVE Power Issue 1
040001 30021 Kane Lancaster ACTIVE Connectivity Problem 5
040530 30021 Kane Lancaster ACTIVE Not doing what it's told... 20
040004 30049 Buck Odom ACTIVE Causes bodily harm! 3
040533 30021 Kane Lancaster ACTIVE Doesn't respond... 20
040020 30021 Kane Lancaster ACTIVE Damaged and in pieces 19
040204 53070 Wylie Pollard ACTIVE It's very messy! 2
-----
```

Enter the ticket number to view the messages or  
0 to return to previous menu: 0

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

- 
- 6) List new tickets
  - 7) List active tickets
  - 8) List closed tickets

```
9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout

Selection: 10

Are you sure? This action cannot be reversed. ([Y]es|[N]o): Y

*** 5 tickets archived ***

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout

Selection: 3

Enter the account#: 30001
Acct# Acct.Type Birth Income Country Disp.Name Login Password
-----
30001 CUSTOMER 1990 $ 150000.10 CANADA Silly Sally cust1 A*1*3*D*

Are you sure you want to remove this record? ([Y]es|[N]o): Y

*** Account Removed! ***

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
```



```
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout

Selection: 3

Enter the account#: 50599
Acct# Acct.Type Birth Income      Country   Disp.Name      Login      Password
-----
50599 AGENT      1972 $2250400.22 AFRICA      Fred Flintstone agent1      y*b*##@*

Are you sure you want to remove this record? ([Y]es|[N]o): Y

*** Account Removed! ***

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout

Selection: 3

Enter the account#: 30004
Acct# Acct.Type Birth Income      Country   Disp.Name      Login      Password
-----
30004 CUSTOMER   1978 $ 250800.74 INDIA      Betty Boop      cust2      7***F*a*

Are you sure you want to remove this record? ([Y]es|[N]o): Y

*** Account Removed! ***
```

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

-----

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

-----

- 11) View archived account statistics
- 12) View archived tickets statistics

-----

0) Logout

Selection: 3

Enter the account#: 34000

Acct#	Acct.Type	Birth	Income	Country	Disp.Name	Login	Password
34000	AGENT	1991	\$ 61907.58	GREECE	Xyla Yates	Cherokee	E*1*d*&*

Are you sure you want to remove this record? ([Y]es|[N]o): Y

\*\*\* Account Removed! \*\*\*

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

-----

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

-----

- 11) View archived account statistics
- 12) View archived tickets statistics

-----

0) Logout

Selection: 3

```
Enter the account#: 53007
Acct# Acct.Type Birth Income      Country  Disp.Name      Login      Password
-----
53007 CUSTOMER    1963 $   22288.09 SLOVENIA  Chaney Kinney  Demetria    Y*0*j*&*

Are you sure you want to remove this record? ([Y]es|[N]o): Y

*** Account Removed! ***

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
 1) Add a new account
 2) Modify an existing account
 3) Remove an account
 4) List accounts: summary view
 5) List accounts: detailed view
-----
 6) List new tickets
 7) List active tickets
 8) List closed tickets
 9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout

Selection: 3

Enter the account#: 30014
Acct# Acct.Type Birth Income      Country  Disp.Name      Login      Password
-----
30014 AGENT       1999 $   35403.36 SPAIN      Hanae Horn    Keiko       R*5*r*&*

Are you sure you want to remove this record? ([Y]es|[N]o): Y

*** Account Removed! ***

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
 1) Add a new account
 2) Modify an existing account
 3) Remove an account
 4) List accounts: summary view
 5) List accounts: detailed view
-----
 6) List new tickets
 7) List active tickets
```

```
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout

Selection: 3

Enter the account#: 70021
Acct# Acct.Type Birth Income          Country   Disp.Name      Login      Password
-----
70021 AGENT      1951 $   77711.60 PORTUGAL   Kane Lancaster Benjamin  H*8*z*&*

Are you sure you want to remove this record? ([Y]es|[N]o): Y

*** Account Removed! ***

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout

Selection: 3

Enter the account#: 35035
Acct# Acct.Type Birth Income          Country   Disp.Name      Login      Password
-----
35035 CUSTOMER   1999 $   83024.91 HONDURAS   Honorato Banks Kimberly  C*7*o*&*

Are you sure you want to remove this record? ([Y]es|[N]o): Y

*** Account Removed! ***

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
```

## Account Ticketing System - Agent Menu

```
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout
```

Selection: 3

Enter the account#: 82042

Acct#	Acct.Type	Birth	Income	Country	Disp.Name	Login	Password
82042	CUSTOMER	1932	\$ 40187.20	GUAM	Dexter Martin	Isabelle	H*2*k*&*

Are you sure you want to remove this record? ([Y]es|[N]o): Y

\*\*\* Account Removed! \*\*\*

&lt;&lt; ENTER key to Continue... &gt;&gt; [ENTER]

AGENT: Will Smith (50008)

## Account Ticketing System - Agent Menu

```
=====
1) Add a new account
2) Modify an existing account
3) Remove an account
4) List accounts: summary view
5) List accounts: detailed view
-----
6) List new tickets
7) List active tickets
8) List closed tickets
9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout
```

Selection: 3

Enter the account#: 35049

Acct#	Acct.Type	Birth	Income	Country	Disp.Name	Login	Password
-------	-----------	-------	--------	---------	-----------	-------	----------

35049 CUSTOMER 1990 \$ 60494.16 LESOTHO Buck Odom Aidan B\*6\*S\*&\*

Are you sure you want to remove this record? ([Y]es|[N]o): Y

\*\*\* Account Removed! \*\*\*

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

-----

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

-----

- 11) View archived account statistics
- 12) View archived tickets statistics

-----

0) Logout

Selection: 3

Enter the account#: 54056

Acct#	Acct.Type	Birth	Income	Country	Disp.Name	Login	Password
54056	CUSTOMER	1961	\$ 91914.61	BAHAMAS	Craig Mcknight	Fredericka	0*8*e*&*

Are you sure you want to remove this record? ([Y]es|[N]o): Y

\*\*\* Account Removed! \*\*\*

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

- 1) Add a new account
- 2) Modify an existing account
- 3) Remove an account
- 4) List accounts: summary view
- 5) List accounts: detailed view

-----

- 6) List new tickets
- 7) List active tickets
- 8) List closed tickets
- 9) Manage a ticket
- 10) Archive closed tickets

-----

11) View archived account statistics  
 12) View archived tickets statistics  
 -----

0) Logout

Selection: **5**

Acct#	Acct.Type	Birth	Income	Country	Disp.Name	Login	Password
50008	AGENT	1952	\$2350600.82	U.S.A.	Will Smith	agentJ	T***2*t*
82044	CUSTOMER	1911	\$ 54321.22	AUSTRALIA	Sandy Sand	CrazyCamel	1*R*!*j*
82043	CUSTOMER	2003	\$ 125000.12	U.S.A.	Nay to Hay	HarryHorse	a*J*8*\$*
53070	CUSTOMER	1990	\$ 180222.22	CANADA	Wylie Coyote	Lara	d*9*@*F*

<< ENTER key to Continue... >> **[ENTER]**

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

1) Add a new account  
 2) Modify an existing account  
 3) Remove an account  
 4) List accounts: summary view  
 5) List accounts: detailed view  
 -----

6) List new tickets  
 7) List active tickets  
 8) List closed tickets  
 9) Manage a ticket  
 10) Archive closed tickets  
 -----

11) View archived account statistics  
 12) View archived tickets statistics  
 -----

0) Logout

Selection: **11**

There are 13 account(s) currently archived.

<< ENTER key to Continue... >> **[ENTER]**

AGENT: Will Smith (50008)

=====

Account Ticketing System - Agent Menu

=====

1) Add a new account  
 2) Modify an existing account  
 3) Remove an account  
 4) List accounts: summary view  
 5) List accounts: detailed view  
 -----

6) List new tickets  
 7) List active tickets  
 8) List closed tickets  
 9) Manage a ticket  
 10) Archive closed tickets

```
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout

Selection: 12

There are 6 ticket(s) and a total of 54 message(s) archived.

<< ENTER key to Continue... >> [ENTER]

AGENT: Will Smith (50008)
=====
Account Ticketing System - Agent Menu
=====
 1) Add a new account
 2) Modify an existing account
 3) Remove an account
 4) List accounts: summary view
 5) List accounts: detailed view
-----
 6) List new tickets
 7) List active tickets
 8) List closed tickets
 9) Manage a ticket
10) Archive closed tickets
-----
11) View archived account statistics
12) View archived tickets statistics
-----
0) Logout

Selection: 0

Saving session modifications...
  4 account saved.
  7 tickets saved.
### LOGGED OUT ###

=====
Account Ticketing System - Login
=====
 1) Login to the system
 0) Exit application
-----

Selection: 0

Are you sure you want to exit? ([Y]es|[N]o): y

=====
Account Ticketing System - Terminated
=====
```



## **Reflection (Worth 20%, Due Date: April 9<sup>th</sup>)**

---

### **Academic Integrity**

It is a violation of academic policy to copy content from the course notes or any other published source (including websites, work from another student, or sharing your work with others).

Failure to adhere to this policy will result in the filing of a violation report to the Academic Integrity Committee.

---

### **Instructions**

- Create a text file named “**reflect.txt**” and record your answers to the questions below in this file.
  - Answer each question in sentence/paragraph form unless otherwise instructed.
1. NOT including the mandatory functions stated in the specifications from Assignments 1 and 2, **LIST all** the functions (use the prototypes) **you** created. Categorize them by module/library in the following sequence (if you did not create any functions for a given module/library, simply state “***None developed***”):
    - a) commonHelpers.h
    - b) account.h
    - c) ticket.h
    - d) accountTicketingUI.h
  2. Identify **two (2) major components** (features) from the assignment that you **enjoyed** developing and detail why you found it enjoyable. Your answer must be at least 200 words but no more than 300.
  3. Identify **two(2)** major components (features) from the assignment that you **disliked** developing and detail why you found it so unlikable. Your answer must be at least 200 words but no more than 300.

---

**NOTE:** The submission testing process cannot be one of those reasons!

---

**Reflections will be graded based on the published rubric:**

<https://github.com/Seneca-144100/BTP-Project/tree/master/Reflection%20Rubric.pdf>

## **Milestone – 4 Submission**

1. Upload (file transfer) your all header and source files including your reflection:
  - **a2ms4.c**
  - **account.c**
  - **account.h**
  - **accountTicketingUI.c**
  - **accountTicketingUI.h**
  - **commonHelpers.c**

- **commonHelpers.h**
- **ticket.h**
- **ticket.c**
- **accounts.txt**
- **tickets.txt**
- **reflect.txt**

2. Login to matrix in an SSH terminal and change directory to where you placed your source code.
3. Manually compile and run your program to make sure everything works properly:

```
gcc -Wall a2ms4.c account.c accountTicketingUI.c commonHelpers.c ticket.c  
-o ms4 <ENTER>
```

*If there are no error/warnings are generated, execute it: **ms4** <ENTER>*

4. Run the submission command below (replace **profname.proflastname** with **your professors** Seneca userid and replace **NAA** with your section):

```
~profName.proflastname/submit 100a2ms4/NAA_ms4 <ENTER>
```

5. Follow the on-screen submission instructions.