Assignment #2
Worth: 15% of final grade

Account Ticketing System

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

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 23rd** to ensure you leave enough time to complete Milestone – 2 which must be submitted and is due **March 26th**.

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 1st member is a single character representing the account type of the author of the message (same as used in the ***Account*** type). The 2nd 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 3rd 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 <u>not allow</u> 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 <u>stored</u> as all <u>UPPERCASE</u> 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 <u>test submission</u> 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 <u>**your professors**</u> Seneca userid and replace **NAA** with your section):

   `~profName.proflastname/submit 144a2ms1/NAA_ms1 `*`<ENTER>`*

6. Follow the on-screen submission instructions.

Milestone – 2 *(Worth 20%, Due Date: March 26TH)*

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

Reminder

You will be provided with a set of generalized instructions and given more freedom to <u>create your own solution</u> 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**.

String Library

- Review <u>all your code</u> 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 3rd 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.

- <u>Note</u>: 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:

  o Account number

  o Customer's login display name *****

    *Hint: see "note" above regarding ticket construction. You may assume the 1st 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 interpretted 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 26th)

<u>Instructions</u>

- Create a text file named "**reflect.txt**" and record your answers to the questions below in this file.
- Answer each question in <u>sentence/paragraph form</u> unless otherwise instructed.
- A minimum **350** overall word count is required (does NOT include the question or any sample code) and <u>no more</u> 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 **<u>new</u>** function **prototypes** you added to <u>this milestone</u>. For <u>each new function</u>, briefly describe why you created it and include what module/library you put it in <u>and why</u>.

Reflections will be graded based on the published rubric:
https://github.com/Seneca-144100/IPC-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 **<u>your professors</u>** Seneca userid and replace **NAA** with your section):

```
~profName.proflastname/submit 144a2ms2/NAA_ms2 <ENTER>
```

5. Follow the on-screen submission instructions.

Milestone – 3 *(Worth 10%, Target Due Date: April 2nd)*

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 2nd** to ensure you leave enough time to complete Milestone – 4 which must be submitted and is due **April 9th**. 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 <u>not</u> "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 5th 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).
  <u>Note</u>: 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.
  <u>Hint</u>: 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 7th 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)
     o 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: <mark>80020</mark>


```
================================================================================
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... >> <mark>[ENTER]</mark>

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... >> <mark>[ENTER]</mark>

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 interpretted 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
```

SDDS   Winter – 2021   *School of Software Design and Data Science*

```
-----------------------------------------
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
```

SDDS   *School of Software Design and Data Science*   *Page | 52*

```
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 <u>test submission</u> 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 a2ms1.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 <u>**your professors**</u> Seneca userid and replace **NAA** with your section):

    ~profName.proflastname/submit 144a2ms3/NAA_ms3 *<ENTER>*

12. Follow the on-screen submission instructions.