```
Start Program
      |
      v
Authentication
      |
      v
   Menu
      |
      v
 End Program
```

Begin Authentication

This function is designed to prevent the user from proceeding without having proper authentication, which is done via a username and password

Output: Please Enter Username

Input: username

Output: Please Enter Password

Input: password

This loop will prevent the user from going any further in the program

Output: Error, Invalid Username

Does username = usr

No

Yes

logins.txt

Ouput: Error, Invalid Password

Does password = pwd

No

Yes

End Function

Ending the function allows the user to advance to 'Menu' (see Program)

This function is
designed to aid the
user's navigation

Start Menu

Output:
Error, Invalid
Choice.
Please try
again.

Output:
A. Search For Text
B. Add New Text
C. Add New User
D. Exit

Input: choice

This is done so that
'a' becomes 'A',
meaning the user
does not need to
worry about casing

choice =
upper.choice

No   else

Does choice = D ←No— Does choice = C ←No— Does choice = B ←No— Does choice = A

Yes   Yes   Yes   Yes

End Program   Verify   Verify   Search

Add User   Add Text

Flowchart:

Begin Search

Output: Please enter the reading age of the text you would like

Input: choice

Search for "Reading Age: choice" ← Database.txt

Output: x entries found, would you like to search keywords?

Input: choice

does choice = Y ?

No → Output texts

Yes → Output: Please enter the keywords of the text you would like

Input: choice

Search for "Keyword: choice" ← Database.txt

Output texts

repeat?

No → Menu

Yes → Begin Search

This function is designed to search the database for a text, based off of the users search requirements

```
                    ┌──────────────┐
                    │  Begin Add   │          This function is
                    └──────┬───────┘          designed to add a
                           │                  new text to the
                    ╱──────────────╲          database
                   ╱ Output: Please ╲
                   ╲ enter the name ╱
                    ╲  of the text ╱
                     └─────┬──────┘
                    ╱──────────────╲
                   ╱ Input: text_title╲
                    ╲──────┬───────╱
                    ╱──────────────╲
                   ╱   Output:      ╲
                   ╲ Please enter   ╱
                    ╲   the text    ╱
                     └─────┬──────┘
                    ╱──────────────╲
                   ╱  Input: text   ╲
                    ╲──────┬───────╱
                    ╱──────────────╲
                   ╱ Output: Please ╲
                   ╱   enter the     ╲
                   ╲   estimated     ╱
                   ╲  reading age of ╱
                    ╲   the text    ╱
                     └─────┬──────┘
                    ╱──────────────╲
                   ╱   Input:        ╲
                   ╲   est_age       ╱
                    ╲──────┬───────╱
                  ┌──────────────────┐
                  │ age = [ARI FORMULA] │
                  └────────┬─────────┘
                  ┌──────────────────┐
                  │  Age = ceil.age   │
                  └────────┬─────────┘
                    ╱──────────────╲
                   ╱ Output: How    ╲
                   ╲    many         ╱
                   ╲  keywords?      ╱
                    ╲──────┬───────╱
                    ╱──────────────╲                         ┌─────────┐
                   ╱   Input: i     ╲                        │ I = i-1 │
                    ╲──────┬───────╱                         └────┬────┘
                           │                                      │       This loop will
                      ◇─────────◇                                 │       repeat the user
                     ╱           ╲        ┌─────────────┐  ┌──────────────┐   inserting a value
                    ◇  does i=0?  ◇──No──▶│   Input:    │─▶│ Add keyword to │   into 'keyword' and
                     ╲           ╱        │  keyword    │  │ keywords array │   then adding it to an
                      ◇─────────◇         └─────────────┘  └──────────────┘   array. This saves
                           │                                                  program from
                          Yes                                                 having too many
                           │                                                  variables, by
                  ┌──────────────────┐                                        reusing the same
                  │ Store text_title, text,│                                  one.
                  │  age, in data array │
                  └────────┬─────────┘
                  ┌──────────────────┐
                  │ Store data in file │
                  └────────┬─────────┘
                     ╲──────────────╱
                      ╲   Menu     ╱
                       ╲──────────╱
                        ╲        ╱
                         ▼
```

```
                                    ┌──────────────────┐
                                    │   Begin Add User  │
                                    └──────────────────┘

This function is
designed to add a
new user to the
system, that can be
used for login
during the
Authentication
function

                              ╱─────────────────╲
                             ╱  Output:           ╲
                            ╱   Please Enter        ╲
                             ╲  Username           ╱
                              ╲─────────────────╱

                              ╱─────────────────╲
                             ╱  Input:            ╲
                            ╱   new_userna         ╲
                             ╲  me                ╱
                              ╲─────────────────╱

                              ╱─────────────────╲
                             ╱  Output:           ╲
                            ╱   Please Enter        ╲
                             ╲  Password           ╱
                              ╲─────────────────╱

                              ╱─────────────────╲
                             ╱  Input:            ╲
                            ╱   new_passwo         ╲
                             ╲  rd1               ╱
                              ╲─────────────────╱

                              ╱─────────────────╲
                             ╱  Input:            ╲
                            ╱   new_passwo         ╲
                             ╲  rd2               ╱
                              ╲─────────────────╱
```

Does new_password1 = new_password2

Output: Error, Passwords do not match   No

Yes

This is done to
ensure the
password is the
correct version,
and the user has
not made any
errors

Store new_username and new_password1   →   logins.txt

Menu

```
                                        Begin
                                     Authentication

                                                              This function is
                                                            designed to check
                                                            that user wants to
                                        Output: Are        proceed with what
                                        you sure you        they are doing, to
                                        want to              prevent them
                                        continue?           entering the next
                                                             function by
                                                               accident

                                        Input: choice


                                                            This is done so that
         Ouput: Error,                                       'y' becomes 'Y',
          Invalid                        choice =           meaning the user
         Password                      upper.choice         does not need to
                                                            worry about casing


                              No
         Does choice = N          No      Does choice = Y

              Yes                              Yes

             Menu                          End Program
```

Begin Breaker

Output:
=*78
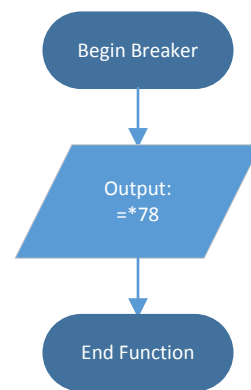
End Function

The purpose of this function is simply to print a line of '=' to make the GUI more user friendly