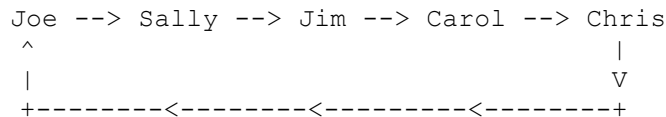


TCES 202
Advanced Computer Programming
Assignment 1 – Linked Lists
Submit a single file, assassin_list.c on Canvas.
25 Points

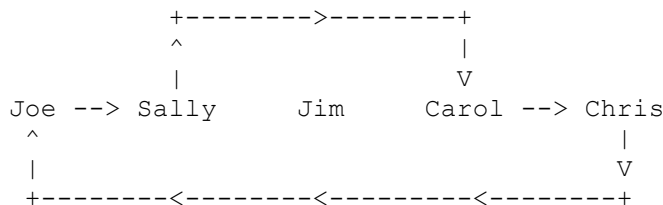
This assignment will give you practice with linked lists. You are to write the functions in the file `assassin_list.c` that allows a client to manage a game of assassin. Run the *executable* to understand the behavior of the program. Starter code (`names.txt`, `assassin_node.h`, `assassin_list.h`, `assassin_list.c`, `main.c`) is provided along with this description.

Each person playing assassin has a particular target that he/she is trying to assassinate. One of the things that makes the game more interesting to play is that initially each person knows only who they are assassinating (they don't know who is trying to assassinate them nor do they know who other people are trying to assassinate). You are working on a program for the “game administrator” who needs to keep track of who is stalking whom and the history of who killed whom.

The game of assassin is played as follows. You start out with a group of people who want to play the game. For example, let's say that we have five people playing whose names are Joe, Sally, Jim, Carol and Chris. A circular chain of assassination targets is established (what is called the “kill ring” in the sample log of execution). For example, we might decide Joe should stalk Sally, Sally should stalk Jim, Jim should stalk Carol, Carol should stalk Chris and Chris should stalk Joe.



When someone is assassinated, the chain needs to be relinked by “skipping” that person. For example, suppose that Jim is assassinated first (obviously this would have been by Sally). Sally needs a new target, so we give her Jim's target: Carol. Thus, the chain becomes:



The main program has been written for you and is called `main.c`. It reads a file of names, shuffles the names, and creates a variable of type ***alist***. The main program then asks the user for the names of the victims in order until the game is over (until there is just one player left alive), calling functions of the `assassin_list` to carry out the tasks involved in administering the game.

Your `assassin_list` will keep track of two different lists: the list of those currently alive and the list of those who are dead. Each is to be stored in a linked list. I am requiring you to use my node struct which is called `anode` (`assassin_node.h`). The ***anode*** struct has three data fields: one for the name of the person, one for the name of the killer and a “next” field to keep track of the next value in the list.

For this particular program, it can be convenient to store the kill ring in what is known as a “circular” linked list. Normally lists have the value “null” stored in the next field of the last node of the list. Such lists are known as “null terminated” lists. In a circular list, the final element stores a reference to the first element in the list. The assassin task involves a circular chain of targets, so this can be a convenient structure to use. It can also lead to infinite loops and other problems.

You will probably want to write your own testing program. When your code is in good shape, you can use the main program to make sure it works properly. A log of execution for program appears at the end of this write-up. Your program should exactly reproduce the format and general behavior demonstrated in the log, although you won’t exactly recreate this scenario because of the “shuffling” of the names that main performs.

In terms of correctness, your program must exhibit the behavior in the executable. In terms of style, I will be grading on your use of comments, good variable names, consistent indentation and good coding style to implement these operations.

Submission Instructions: Submit the code on Canvas under Assignment 1 Submission link as ***assassin_list.c***.

Log of execution (user input underlined)

Current kill ring:

```
Bobby Warner is stalking Joe Martin
Joe Martin is stalking Ruth Martin
Ruth Martin is stalking Tad Martin
Tad Martin is stalking Phoebe Wallingford
Phoebe Wallingford is stalking Erica Kane
Erica Kane is stalking Anita Santos
Anita Santos is stalking Jackson Montgomery
Jackson Montgomery is stalking Bobby Warner
```

Current graveyard:

next victim? Joe Martin

Current kill ring:

```
Bobby Warner is stalking Ruth Martin
Ruth Martin is stalking Tad Martin
Tad Martin is stalking Phoebe Wallingford
Phoebe Wallingford is stalking Erica Kane
Erica Kane is stalking Anita Santos
Anita Santos is stalking Jackson Montgomery
Jackson Montgomery is stalking Bobby Warner
```

Current graveyard:

```
Joe Martin killed by Bobby Warner
```

next victim? Joe Martin
Joe Martin is already dead.

Current kill ring:

Bobby Warner is stalking Ruth Martin
Ruth Martin is stalking Tad Martin
Tad Martin is stalking Phoebe Wallingford
Phoebe Wallingford is stalking Erica Kane
Erica Kane is stalking Anita Santos
Anita Santos is stalking Jackson Montgomery
Jackson Montgomery is stalking Bobby Warner

Current graveyard:

Joe Martin killed by Bobby Warner

next victim? Tad Martin

Current kill ring:

Bobby Warner is stalking Ruth Martin
Ruth Martin is stalking Phoebe Wallingford
Phoebe Wallingford is stalking Erica Kane
Erica Kane is stalking Anita Santos
Anita Santos is stalking Jackson Montgomery
Jackson Montgomery is stalking Bobby Warner

Current graveyard:

Tad Martin killed by Ruth Martin
Joe Martin killed by Bobby Warner

next victim? Bobby Warner

Current kill ring:

Ruth Martin is stalking Phoebe Wallingford
Phoebe Wallingford is stalking Erica Kane
Erica Kane is stalking Anita Santos
Anita Santos is stalking Jackson Montgomery
Jackson Montgomery is stalking Ruth Martin

Current graveyard:

Bobby Warner killed by Jackson Montgomery
Tad Martin killed by Ruth Martin
Joe Martin killed by Bobby Warner

next victim? Erica Kane

Current kill ring:

Ruth Martin is stalking Phoebe Wallingford
Phoebe Wallingford is stalking Anita Santos
Anita Santos is stalking Jackson Montgomery
Jackson Montgomery is stalking Ruth Martin

Current graveyard:

Erica Kane killed by Phoebe Wallingford
Bobby Warner killed by Jackson Montgomery
Tad Martin killed by Ruth Martin
Joe Martin killed by Bobby Warner

next victim? Anita Santos

Current kill ring:

Ruth Martin is stalking Phoebe Wallingford
Phoebe Wallingford is stalking Jackson Montgomery
Jackson Montgomery is stalking Ruth Martin

Current graveyard:

Anita Santos killed by Phoebe Wallingford
Erica Kane killed by Phoebe Wallingford
Bobby Warner killed by Jackson Montgomery
Tad Martin killed by Ruth Martin
Joe Martin killed by Bobby Warner

next victim? Menaka Abraham

Unknown person.

Current kill ring:

Ruth Martin is stalking Phoebe Wallingford
Phoebe Wallingford is stalking Jackson Montgomery
Jackson Montgomery is stalking Ruth Martin

Current graveyard:

Anita Santos killed by Phoebe Wallingford
Erica Kane killed by Phoebe Wallingford
Bobby Warner killed by Jackson Montgomery
Tad Martin killed by Ruth Martin
Joe Martin killed by Bobby Warner

next victim? Phoebe Wallingford

Current kill ring:

Ruth Martin is stalking Jackson Montgomery
Jackson Montgomery is stalking Ruth Martin

Current graveyard:

Phoebe Wallingford killed by Ruth Martin
Anita Santos killed by Phoebe Wallingford
Erica Kane killed by Phoebe Wallingford
Bobby Warner killed by Jackson Montgomery
Tad Martin killed by Ruth Martin
Joe Martin killed by Bobby Warner

next victim? Ruth Martin

Game was won by Jackson Montgomery

Final graveyard is as follows:

Ruth Martin killed by Jackson Montgomery
Phoebe Wallingford killed by Ruth Martin
Anita Santos killed by Phoebe Wallingford
Erica Kane killed by Phoebe Wallingford
Bobby Warner killed by Jackson Montgomery
Tad Martin killed by Ruth Martin
Joe Martin killed by Bobby Warner