CIS2107_Lab07: Mini-GDB

100 points

Description

Good debuggers can be valuable tools. In this short assignment, you'll get some practice with the debugger GDB.

There's a very short *GDB quick-reference* attached to this Lab link on BB. Some former students have suggested Beej's Guide. For way more detail than you'll probably ever want, the full manual can be found here.

You might also want to take a look at this video Quick Intro to GDB. And here a nice playlist (Debugging C with GDB) as well. Here are things discussed that might not needed for the assignment, but you might find the video useful.

Download the following reference files to answer the questions:

- blowfish.h
- blowfish.c
- GDBassign.c

Remember that to compile and link several separate files at the command line using gcc, you'd list all of the .c files on the same line. For example, if we were to compile these files without including the debugging information, we'd type:

```
gcc -o GDBassign GDBassign.c blowfish.c
```

Questions

1. What is the command to compile the files with extra symbols that are useful for GDB?
2. What's the address of `stuff`?
3. What's the address of `stuff[0]`?
4. Do we expect these to be the same? Why? Explain what the `[ ]` operator does in C.
5. In `Blowfish_Init( )`, what is the value of `key`?
6. What command(s) did you type in order to learn this?
7. In `Blowfish_Init( )`, what are the values of i and j after the nested for loops have finished? i.e., after:

```
for (i = 0; i < 4; i++) {
  for (j = 0; j < 256; j++)
    ctx->S[i][j] = ORIG_S[i][j];
}
```

8. What command(s) did you type in order to learn this?
9. Before the `Blowfish_Encrypt` function is called, what is the value of `stuff[3]` (for each, print the value, and the command used to obtain the value):
   - in hex?
   - in binary?
   - as a float?
   - as 4 chars?
10. Before the `Blowfish_Encrypt` function is called, what is the value of `stuff` if we treat it as a string? (You don't have to write the whole string. Just describe what's there.) What was the command typed in order to obtain this value?
11. What is the value of x the first time that the function `F( )` in `Blowfish.c` is called?
12. What is the output if we run GDB's `backtrace` (abbreviated "bt") command inside the function `F( )` in `Blowfish.c` the first time `F( )` is called? Briefly explain the output of the command in your own words.

Deliverables

Please upload through Canvas a single document file (.doc, .docx) that has all questions followed by your answers.