1) What is the command to compile the files with extra symbols that are useful for GDB?
   gcc -ggdb blowfish.c blowfish.h GDBassign.c
2) What's the address of stuff?
   0x7FFFFFFFC270
3) What's the address of stuff[0]?
   0x7FFFFFFFC270
4) Do we expect these to be the same? Why? Explain what the [] operator does in C.
   a. Yes.
   b. Calling an array returns its starting memory location. Using index 0 is adding no offset since the variable we're asking for is at the starting point, hence, the same address.
   c. The [] operator acts as an offset for a type. For example, if we had an unsigned int array, every index we use in-between the [] operator will be multiplied by 4 as an unsigned int has 4 bytes and so, everything stored in this array will be expected to have 4 bytes.
5) In Blowfish_Init(), what is the value of key?
   0x401D60
6) What command(s) did you type in order to learn this?
   b Blowfish_Init
   print key
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];
}
```

   i = 4
   j = 256
8) What command(s) did you type in order to learn this?
   b Blowfish_Init
   b 677 (Break after the code above is done)
   print i
   print j
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):
   a. Hex – Value: 0x20656874 … Command: p/a stuff[3]
   b. Binary – 10000001100101011010000111010 0 … Command: p/t stuff[3]
   c. Float – Value: 1.94316151e-19 … Command: p/f stuff[3]
   d. 4 Chars – "the " … Command: p (char[4]) stuff[3]

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?
    a. Oh, who are the people in your neighborhood?
    In your neighborhood?
    In your neighborhood?
    Say, who are the people in your neighborhood?
    The people that you meet each day

    [Anything Muppet #1: Don't you like Christmas?]
    [Bob: Oh, I love Christmas. But you could be the postman.]
    [Anything Muppet #1: A postman, hmmmm ...]
    b. printf "%s", stuff
11) What is the value of x the first time that the function F() in Blowfish.c is called?
    1753098189
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.
    a.

```
#0  F (ctx=0x7fffffffd8f0, x=1753098189) at blowfish.c:544
#1  0x00000000004006ce in Blowfish_Encrypt (ctx=0x7fffffffd8f0, xl=0x7f
ffffffc220, xr=0x7fffffffc224) at blowfish.c:590
#2  0x0000000000400917 in Blowfish_Init (ctx=0x7fffffffd8f0, key=0x401d
60 "LAME_KEY", keyLen=8) at blowfish.c:709
#3  0x0000000000400b33 in main () at GDBassign.c:383
```

    b. It's a call-hierarchy. It shows where the call to the current function you're backtracing originated from.