Midterm Practice Exam

Write your answers to the questions below on this sheet. You may **NOT** discuss with others or lookup any information.

1.) What is wrong with the following code, if anything?

```
  .equ Exit, 0x11
  .equ Open, 0x66
  .equ Close, 0x68
  .equ Read_Int, 0x6C

  .data
filename:
  .asciz "myFile.txt"

  .text
  .global _start
_start:
  ;; open the file
  ldr r0, =filename
  mov r1, #0
  swi Open

  ;; read an integer from it
  swi Read_Int

  ;; close the file
  swi Close

  ;; exit the program
  swi Exit
  .end
```

2.) What is: 11111101 + 01000101?
Specify if the result has a carry-out set and if the result sets the overflow bit.

```
  1  1  1  1  1  1  0  1
+ 0  1  0  0  0  1  0  1
-------------------------
```

3.) What is -15 in two's complement representation?

4.) Assume that `0101 1110` encodes a number in two's complement representation. What value does this number encode, in decimal?

5.) Find the decimal representation of the following floating point number. Show all work.

```
0100 0010 1111 1111 1000 0110 0000 0000
```

6.) Convert the following Java/C-like code into ARM assembly. The names of the variables reflect which registers must be used for the ARM assembly. Do not assume any initial values for the registers. (NOTE: this would be on the lab exam in a real exam environment.)

```
if (r2 < r3 || r3 < r4) {
  r5 = r6;
} else {
  r6 = r5;
}
```


```
  .text
  .global _start
_start:
  ;; write your code below this line.  Be sure to exit the program when you're done.
```