ECE 2220: System Programming Concepts **Fall 2016**
Problem Set 1 **Due: in class, Monday, September 5**

Assigned reading: Hoover, Chapters 2. Each problem is worth 10 points

From Chapter 2, starting on page 69

1. Number 2.
2. Number 8
3. Number 9
4. Number 10
5. Number 11
6. Number 12
7. Number 13
8. Number 14
9. Write code that performs the conversion from the ASCII bit representation for an input string to create the magnitude-only bit representation. You may assume that the user enters exactly three digits for the input. Use the following code as a template. Do not use `sscanf()` or `atoi()` or any other function.

```
int main(void)
{
  char c[80];
  int n=0;
  printf("Enter a three-digit nonnegative number: ");
  fgets(c, sizeof(c), stdin);
.
.
.
  printf("The number is %d\n", n);
}
```

10. In a two's complement number system, `x &= (x - 1)` deletes the rightmost 1-bit in `x`. Explain why. Use this observation to write a faster version of `bitcount`.

```
// bitcount: count 1 bits in x
int bitcount(unsigned x)
{
      int bits;
      for (bits = 0; x != 0; x >>= 1)
            if (x & 01)
                  bits++;
      return bits;
}
```

Turn in a paper copy of your solutions in class. Do not submit electronically. While we have a policy for late submission of programming assignments, late submission of homework assignments will not be accepted.