EECE.2160: ECE Application Programming

Summer 2018

Lecture 13: Key Questions
June 25, 2018

QUESTIONS:

1. Describe the functions used for character I/O.

2. Describe the functions used for line I/O.

3. Describe how to represent decimal values in binary (base 2) and hexadecimal (base 16) and how to convert between those bases.

4. Describe the C bitwise operators.

5. Explain C bit shift operators and their uses.

EXAMPLES:

1. Show the output of each of the following short program.

a. Input: **`Test Input 1 23 4 5`**

```
void main() {
   char c;
   char buffer[50];
   int i, n;
   i = 0;
   while ((c = fgetc(stdin)) != '\n') {
      if (c != ' ') {
           buffer[i++] = c;
      }
   }
   buffer[i] = '\0';
   fputs(buffer, stdout);
}
```

b. Input:

```
Test1
Test 2
abcdefghijklmnopqrstuvwxyz
This is a test of the fgets() function
```

```
void main() {
   char str[25];
   int i;
   for (i = 0; i < 5; i++) {
      fgets(str, 24, stdin);
      strcat(str, "\n");
      fputs(str, stdout);
   }
}
```

c. Input:

```
1024Some other stuff
```

```
void main() {
   char c;
   char buffer[50];
   int n = 0;

   // isdigit in <ctype.h>
   while (isdigit(c = getchar())) {
      n = n * 10 + (c - 48);   // Hint: '0' = 48   }
      // (ASCII value)
   ungetc(c, stdin);
   fgets(buffer, 50, stdin);

   printf("n = %d, n * 2 = %d\n", n, n * 2);
   printf("buffer = %s\n", buffer);
}
```

2. Evaluate each of the following expressions if you have the following `unsigned int` variables: `A = 7, B = 10, and C = 0xFFFFFFFF`

a. `A & B`

b. `A | ~B`

c. `A ^ C`

d. `A << 4`

e. `B >> 5`

f. `A | (B << 2)`