

EECE.2160: ECE Application Programming

Summer 2017

Lecture 14: Key Questions

June 21, 2017

1. **Example:** 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

abcdefghijklmnopqrstuvwxy

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

3. Describe the C bitwise operators.

4. Explain C bit shift operators and their uses.

5. **Example:** 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. $A \mid \sim B$

c. $A \wedge C$

d. $A \ll 4$

e. $B \gg 5$

f. $A \mid (B \ll 2)$