EECE.2160: ECE Application Programming

Spring 2018

Lecture 24: Key Questions
April 2, 2018

1. **Example:** What does the following program print?

```
int main() {
   char s1[15];
   int n1;
   char s2[10] = ".216";
   int n;

   strncpy(s1, "16", 15);
   n1 = strlen(s1);
   printf("s1 = %s\n", s1);
   printf("Length of s1 = %d\n\n", n1);

   printf("%c\n\n", s1[1]);

   strncat(s1,s2,10);
   n1 = strlen(s1);
   printf("s1 = %s\n", s1);
   printf("Length of s1 = %d\n\n", n1);

   // Assume user inputs: ABC ABD
   printf("Enter two strings:");
   scanf("%s%s", s1, s2);
   n = strncmp(s1, s2, 15);
   if (n > 0)
      printf("%s > %s\n", s1, s2);
   else if (n < 0)
      printf("%s < %s\n", s1, s2);
   else
      printf("%s == %s\n", s1, s2);
   return 0;
}
```

2. Describe what a structure is in C, and how structures can be useful.

3. Explain how we can essentially declare our own types using structures.

4. Show how variables of a given structure type can be declared and initialized.

5. Show how elements within a structure can be accessed.

6. **Example:** What does the following program print?

```
#include <stdio.h>

typedef struct {
     double real;
     double imag;
} Complex;

int main() {
     Complex a = {1, 2};
     Complex b = {3.4, 5.6};
     Complex c, d, e;

     printf("A = %.2lf + %.2lfi\n", a.real, a.imag);
     printf("B = %.2lf + %.2lfi\n", b.real, b.imag);

     c = a;
     d.real = a.real + b.real;
     d.imag = a.imag + b.imag;
     e.real = a.real - b.real;
     e.imag = a.imag - b.imag;

     printf("C = %.2lf + %.2lfi\n", c.real, c.imag);
     printf("D = %.2lf + %.2lfi\n", d.real, d.imag);
     printf("E = %.2lf + %.2lfi\n", e.real, e.imag);

     return 0;
}
```