

16.216: ECE Application Programming

Fall 2014

Lecture 5: Key Questions

September 12, 2014

1. **Example:** Assume you have the following variables: `int i; double d; char c;`
If your program contained each of the following calls to `scanf()`, what values would be read into the appropriate variables, given user input?
 - a. Input: 34 5.7
`scanf("%d%lf", &i, &d)`
 - b. Input: 34 5.7
`scanf("%d %lf", &i, &d)`
 - c. Input: 34 5.7
`scanf("%lf%d", &d, &i)`
 - d. Input: 34 5.7
`scanf("%d%c", &i, &c)`
 - e. Input: 34 5.7
`scanf("%d %c", &i, &c)`

2. Describe the basic elements of a flowchart.

3. Design a flowchart to solve the following:
- Prompt a user to enter four numbers on a single line, which represent the contents of a 2x2 array
 - After reading the values, your program should print the matrix represented by these values
 - For example, if the user enters “1 2 3 4”, print:
1 2
3 4
 - Assume all values have the same number of digits
 - Also, calculate the matrix discriminant and print it on a separate line
 - In the example above, discriminant = $(1 \times 4) - (2 \times 3) = 4 - 6 = -2$

4. Convert the flowchart you wrote into a C program.

5. Explain the useful features of a debugger.

Note: At this point, we'll run through the use of the Visual Studio debugger; feel free to use this space to take notes on that demonstration.