

# CSCI 2132

## Software Development

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### **Lecture 13:**

## **C Basic Types**

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# Previous Lecture

- C operators expressions and statements
- Operators, expressions: Java vs. C
- C control structures; comparison with Java
- Implementation-defined and unspecified behaviour
- Logic expressions
- Differences between C99 and earlier standards
- goto statement, null statement

# More about Integer Size

- C does not specify size of integers
- Unlike Java, which requires 32 bits for an integer
- Reason: Efficiency in using directly hardware architecture
- To get the range of the current machine use:  
`#include <limits.h>`
- Defines some constants, such as `INT_MIN` and `INT_MAX`
- A note about long constants: we can use suffix `L`; e.g.,  
`15L`

# Floating-Point Number Types

- Three floating-point number types:
  1. float for single-precision
  2. double for double precision
  3. long double for extended-precision
- implementation-defined
- most compilers follow IEEE standard 754

# Character Types

- `char` is character type, stored in 8 bits, or 1 byte
  - unlike Java, which uses 16 bits

- Example:

```
char ch = 'a';
```

- C treats characters as small integers (usually signed integers)
- For example, take a look at the following code:

```
if ('a' <= ch && ch <= 'z')  
    ch = ch - 'a' + 'A';
```

- What does it do?