#### Templates

- One of the most powerful features of C++ is templates
- There are two types of templates:
  - Class templates
  - Function templates

### **Function Templates**

\* How would you write a program that contains functions to return the largest of three arguments? int num1, num2, num3; cout << "Enter three integers: "; cin >> num1 >> num3; cout << "The largest number is: " << largest(num1, num2, num3); double num4, num5, num6; cout << "Enter three doubles: "; cin >> num4 >> num5 >> num6; cout << "The largest number is: " << largest(num4, num5, num6); char c1, c2, c3; cout << "Ther three characters: "; cin >> c1 >> c2 >> c3; cout << "The largest character is: " << largest(c1, c2, c3);</pre>

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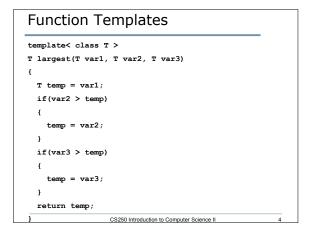
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### **Function Templates**

- All three functions that we have written do exactly the same thing
- The only differing thing is the data type of the arguments being used
- We can use templates that will allow the function to be called with different arguments

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## Your Turn

- Write a generic function that searches an array for a specified value. If the value is found, return the index of where it was found; otherwise, return -1
- Write a main function that tests the generic function search for both integers and reals in the same program

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# Problem

- Write a template function **swap** that will swap the values of two variables
- How would you test this template function?
- Discuss in detail whether the following code is legal or not. If not, why not. If so, what is actually going on for this to work.

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string s1 = "ab", s2 = "cd"; swap (s1, s2); cout << s1 << " " << s2 << endl;</pre>