Evolution of Program Abstraction
Mechanisms: Generic Programming

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Overview of Douglas C. Schmidt

C++ Generic Programming
Stack Implementation
Template Implementation in C++

- A parameterized type Stack class interface using C++

```cpp
int main() {
    try {
        // Multiple stacks that are created automatically.
        stack<int> s1(size: 10), s2(size: 100);
        int item = 0;
        while (!s1.full())
            s1.push(item++);
        while (!s1.empty()) {
            cout << "top item = " << s1.top() << endl;
            s1.pop();
        }
        s1 = s2; // No aliasing problem with copy assignment
        // s1.top_ = 10; // Access problem caught at compile-time!
        // Termination is handled automatically.
    } catch (std::out_of_range &ex) {
        cout << "caught out of range exception" << endl;
    }
}
```

See [CPlusPlus/tree/master/overview/capabilities/4-C++-templates](https://CPlusPlus/tree/master/overview/capabilities/4-C++-templates)