

MA122 - Computer Programming and Applications

Indian Institute of Space Science and Technology

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Lecture 21

MA122 -
Computer
Programming
and
Applications

Function
template
string

1 Function template

2 string

example

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Function
template

string

```
1 #include <iostream>
2 // function template prototype
3 template <typename T> void Swap(T &a, T &b);
4 int main()
5 {
6     using namespace std;
7     int i = 10;
8     int j = 20;
9     cout << "i, j = " << i << ", " << j << ".\n";
10    cout << "Using compiler-generated int swapper:\n";
11
12    Swap(i,j); // generates void Swap(int &, int &)
13    cout << "Now i, j = " << i << ", " << j << ".\n";
14
15    double x = 24.5;
16    double y = 81.7;
```

example

```
1  cout << "x, y = " << x << ", " << y << ".\n";
2  cout << "Using compiler-generated double swapper:";
3  Swap(x,y); //generates void Swap(double &, double &)
4  cout << "Now x, y = " << x << ", " << y << ".\n";
5
6  return 0;
7  }
8
9  template <typename T>
10 void Swap(T &a, T &b)
11 {
12     T temp;
13     temp = a;
14     a = b;
15     b = temp;
16 }
```

example

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```
1  #include <iostream>
2  using namespace std;
3
4  // template function
5  template <class T>
6  T Large(T n1, T n2)
7  {
8      return (n1 > n2) ? n1 : n2;
9  }
10
11 int main()
12 {
13     int i1, i2;
14     float f1, f2;
15     char c1, c2;
```

example

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```
1  cout << "Enter two integers:\n";
2  cin >> i1 >> i2;
3  cout << Large(i1, i2) << " is larger." << endl;
4
5  cout << "\nEnter two floating-point numbers:\n";
6  cin >> f1 >> f2;
7  cout << Large(f1, f2) << " is larger." << endl;
8
9  cout << "\nEnter two characters:\n";
10 cin >> c1 >> c2;
11 cout << Large(c1, c2) << " has larger ASCII value.";
12
13 return 0;
14 }
```

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```
1 #include <iostream>
2 #include <string>
3
4 using namespace std;
5
6 int main () {
7     string str1 = "Hello";
8     string str2 = "World";
9     string str3;
10    int len ;
```

example

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Function
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```
1 // copy str1 into str3
2 str3 = str1;
3 cout << "str3 : " << str3 << endl;
4
5 // concatenates str1 and str2
6 str3 = str1 + str2;
7 cout << "str1 + str2 : " << str3 << endl;
8
9 // total length of str3 after concatenation
10 len = str3.size();
11 cout << "str3.size() : " << len << endl;
12
13 return 0;
14 }
```

another xample

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Function
template

string

```
1 #include <iostream>
2 #include <string>
3
4 int main ()
5 {
6     std::string name;
7
8     std::cout << "Please, enter your full name: ";
9     std::getline (std::cin,name);
10    std::cout << "Hello, " << name << "!\n";
11
12    return 0;
13 }
```