NAMESPACES

4TH WEEK LECTURE

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Outline

- Namespaces
  - Functionality
  - Namespace std
  - Format
  - Examples
- Q&A

Namespaces

- To group entities under a name
  - Classes
  - Objects
  - Functions
- To divide the global scope in sub-scopes
  - Each one with its own name

Namespace std

- All the files in the C++ standard library declare all of its entities within the std namespace

```
using namespace std;
```

Format of Namespaces

```
namespace identifier
{
    entities
}
```

- where identifier is any valid identifier and entities is the set of classes, objects and functions that are included within the namespace
- Example

```
namespace myNamespace
{
    int a, b;
}
```

myNamespace::a
myNamespace::b

Examples

- To avoid redefinition errors

```
// namespaces
#include <iostream>
using namespace std;
namespace first
{
  int var = 5;
}
namespace second
{
  double var = 3.1416;
}
int main () {
  cout << first::var << endl;
  cout << second::var << endl;
  return 0;
}
```

```
5
3.1416
```

Examples Cont'd

- To introduce a name from a namespace

```
// using
#include <iostream>
using namespace std;

namespace first
{
  int x = 5;
  int y = 10;
}

namespace second
{
  double x = 3.1416;
  double y = 2.7183;
}
```

```
int main () {
  using first::x;
  using second::y;
  cout << x << endl;
  cout << y << endl;
  cout << first::y << endl;
  cout << second::x
<< endl;
  return 0;
}
```

```
5
2.7183
10
3.1416
```

Examples Cont'd

- To introduce a name from a namespace

```
// using
#include <iostream>
using namespace std;

namespace first
{
  int x = 5;
  int y = 10;
}

namespace second
{
  double x = 3.1416;
  double y = 2.7183;
}
```

```
int main () {
  using namespace first;
  cout << x << endl;
  cout << y << endl;
  cout << second::x
<< endl;
  cout << second::y
<< endl;
  return 0;
}
```

```
5
10
3.1416
2.7183
```

Examples Cont'd

- To introduce a name from a namespace

```
// using namespace example
#include <iostream>
using namespace std;

namespace first
{
  int x = 5;
}

namespace second
{
  double x = 3.1416;
}
```

```
int main () {
  {
    using namespace first;
    cout << x << endl;
  }
  {
    using namespace second;
    cout << x << endl;
  }
  return 0;
}
```

```
5
3.1416
```

Namespace Alias

- To declare alternate names for existing namespaces

```
namespace new_name = current_name;
```