字元陣列

C-String

Ya-Chun Hsu @ Taipei Municipal Jianguo High School

字元陣列 C-string

[0]	[1]	[2]	[3]	[4]	[5]
'H'	'A'	'P'	'P'	'Y'	'\0'

NULL字元

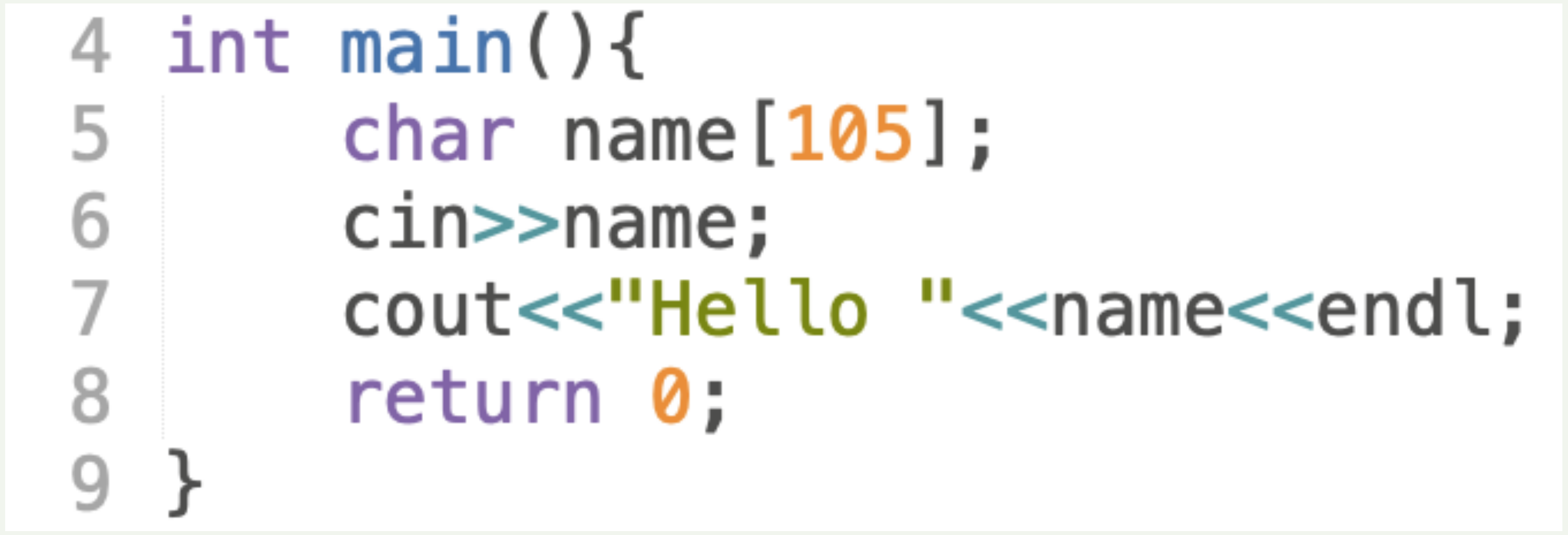
NULL字元 NULL Character

'\0'

- 紀錄字串的結尾位置
- 字元陣列必須宣告「字串長度+1」才夠用

字元陣列 輸入與輸出

- 需事先宣告所要使用的陣列大小



```
int main(){
        char name[105];
        cin>>name;
        cout<<"Hello "<<name<<endl;
        return 0;
}
```

字元陣列 cin

```cpp
#include <iostream>
#include <cstring>
using namespace std;

int main(){
	char str[105];
	cout<<"Please input a name...>";
	cin>>str;
	cout<<"Hello "<<str<<"."<<endl;
	return 0;
}
```

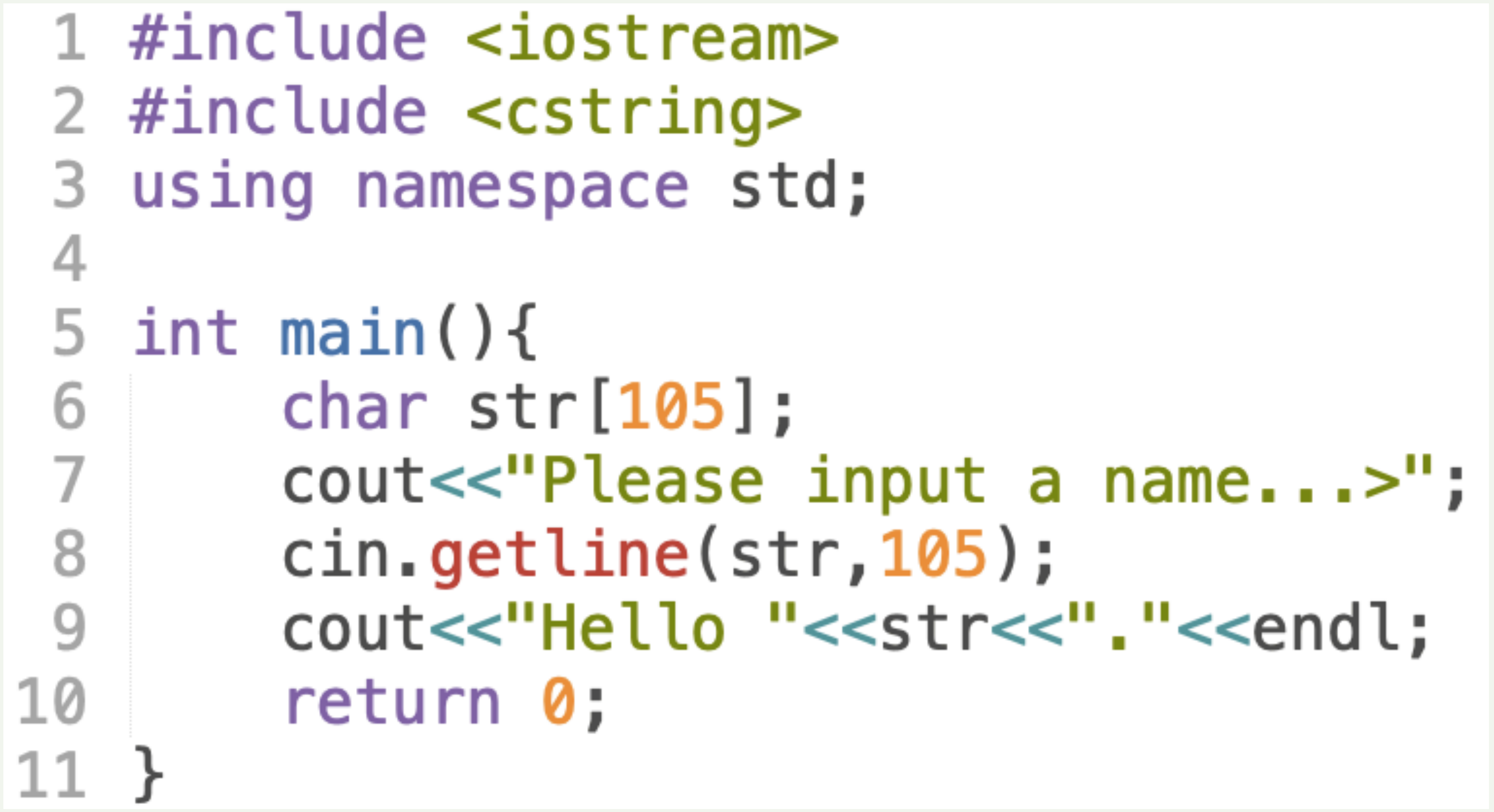
Input

```
Tony Stark
```

Output

```
Hello Tony.
```

字元陣列 cin.getline()

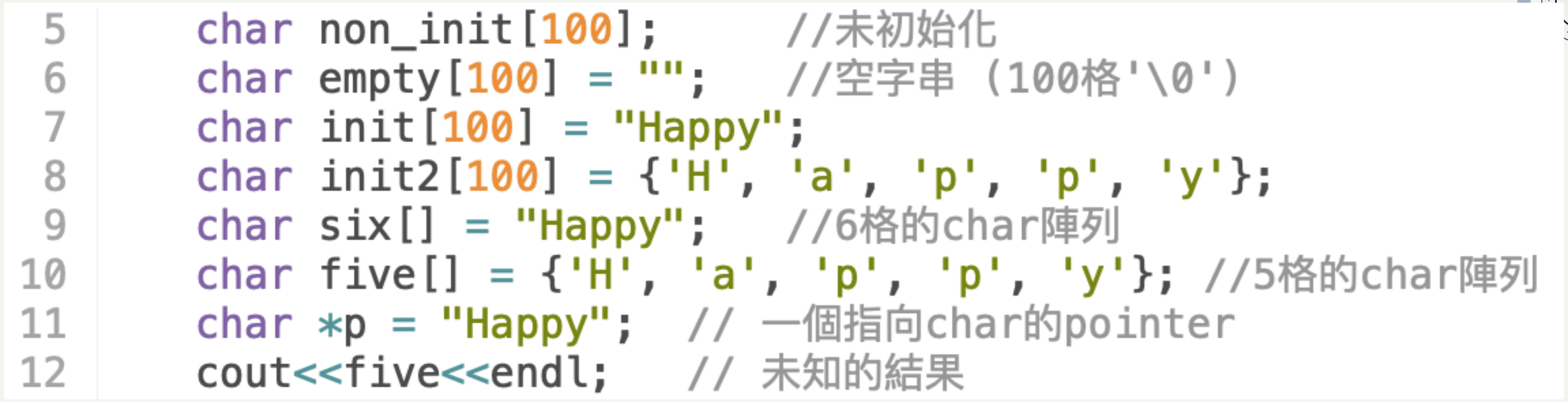


```cpp
#include <iostream>
#include <cstring>
using namespace std;

int main(){
	char str[105];
	cout<<"Please input a name...>";
	cin.getline(str,105);
	cout<<"Hello "<<str<<"."<<endl;
	return 0;
}
```

Input	Output
Tony Stark	Hello Tony Stark.

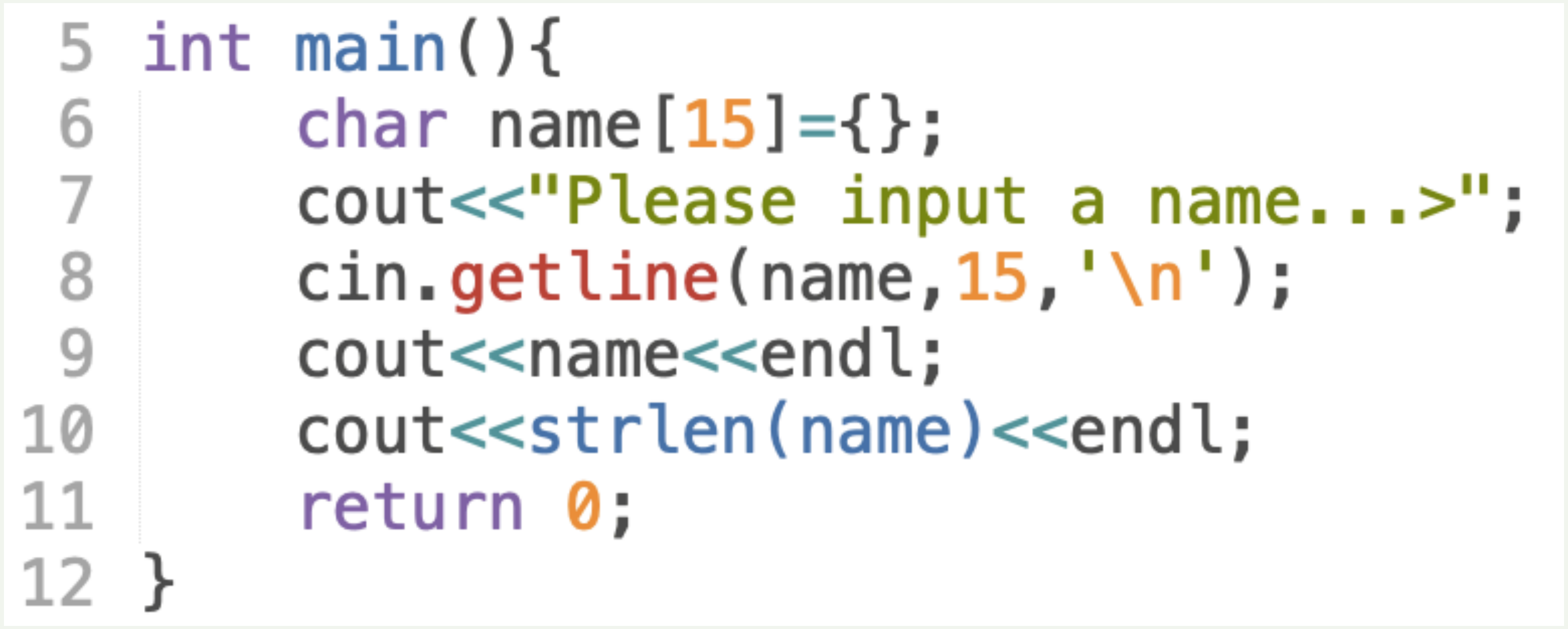
字元陣列 初始化



```cpp
char non_init[100];     //未初始化
char empty[100] = "";   //空字串（100格'\0'）
char init[100] = "Happy";
char init2[100] = {'H', 'a', 'p', 'p', 'y'};
char six[] = "Happy";   //6格的char陣列
char five[] = {'H', 'a', 'p', 'p', 'y'}; //5格的char陣列
char *p = "Happy";  // 一個指向char的pointer
cout<<five<<endl;   // 未知的結果
```

字串長度 strlen()

```
size_t strlen ( const char * str );
```



```
int main(){
	char name[15]={};
	cout<<"Please input a name...>";
	cin.getline(name,15,'\n');
	cout<<name<<endl;
	cout<<strlen(name)<<endl;
	return 0;
}
```

Input

```
Tony Stark
```

Output

```
Tony Stark
10
```

複製字串 strcpy()

```
char * strcpy ( char * destination, const char * source );
```

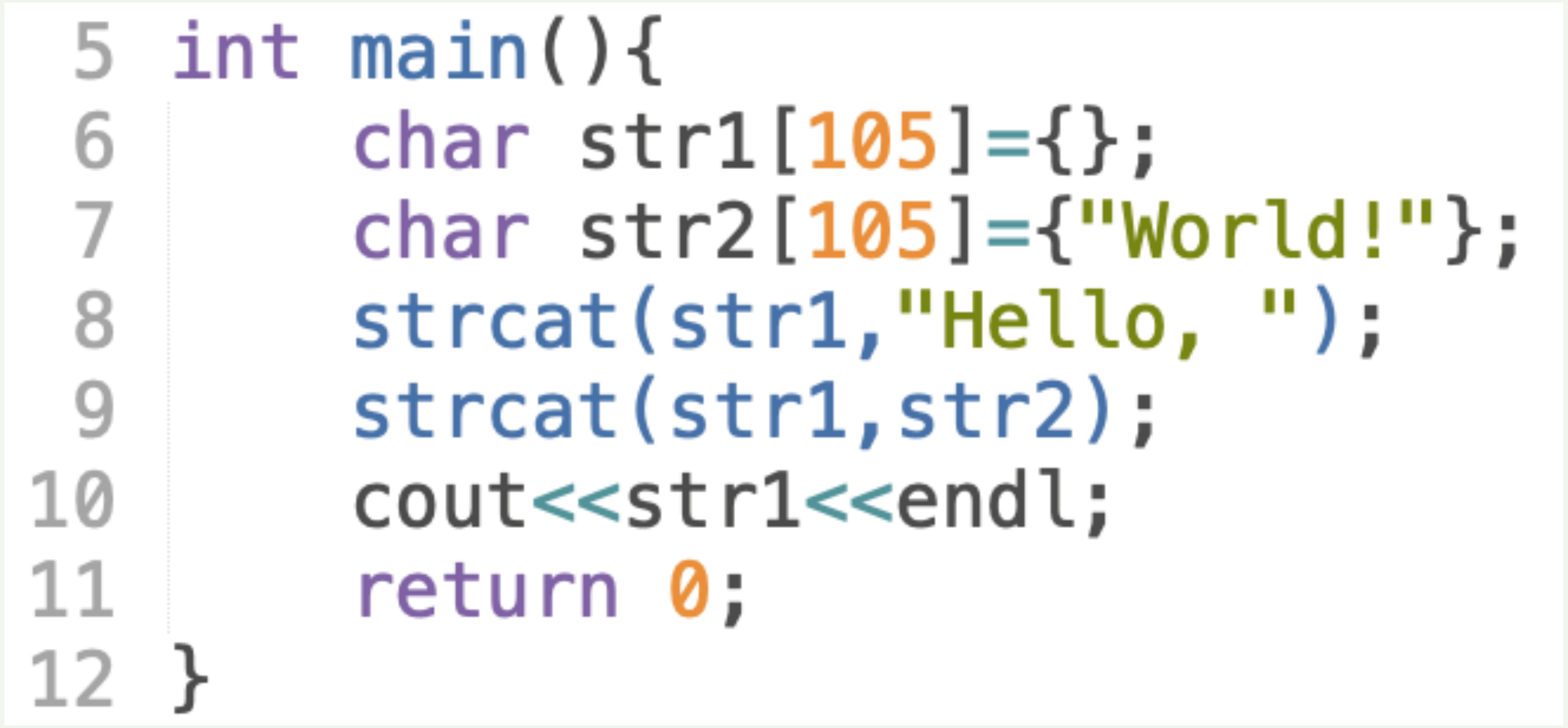
```cpp
int main(){
	char source[]="Hello, World!";
	char destination[40];
	strcpy(destination,source);
	cout<<destination<<endl;
	return 0;
}
```

Output

```
Hello, World!
```

連接字串 strcat()

```
char * strcat ( char * destination, const char * source );
```



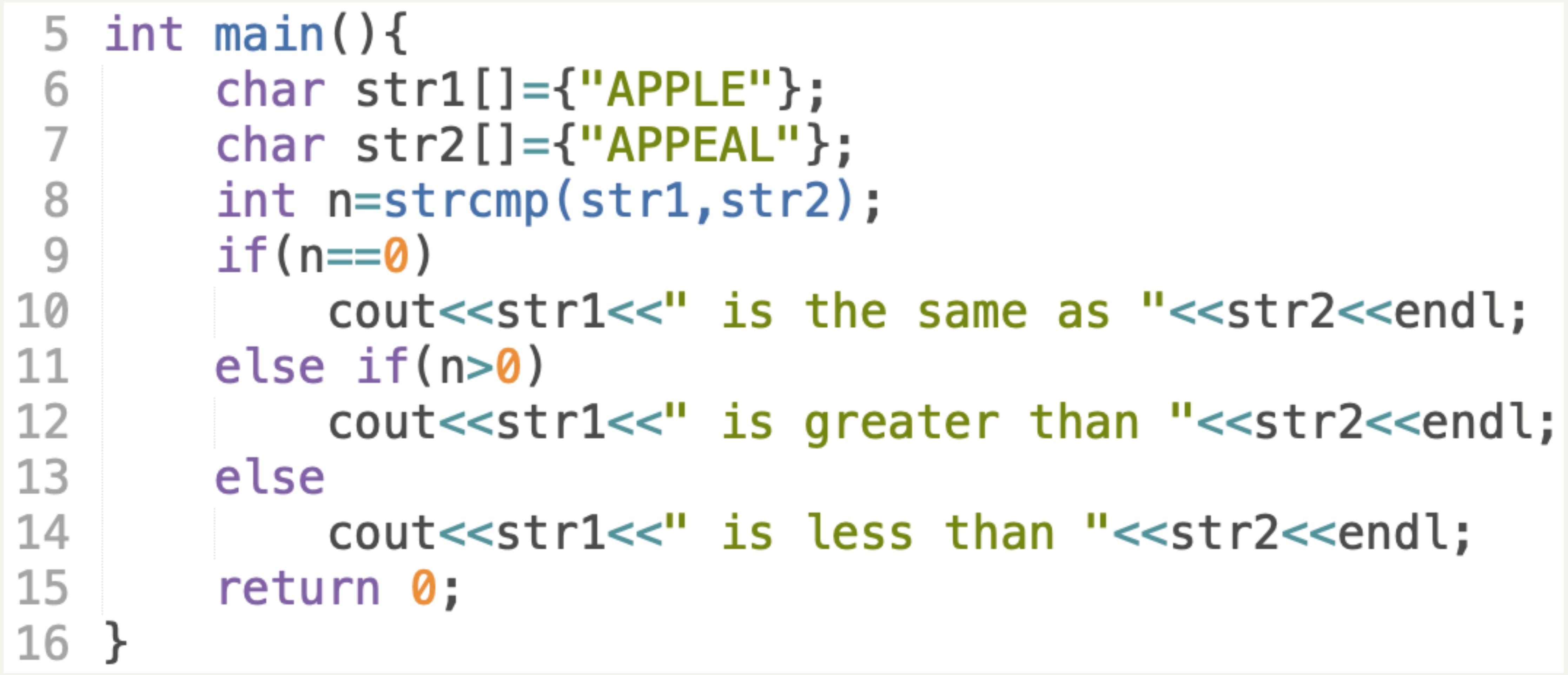
```
int main(){
    char str1[105]={};
    char str2[105]={"World!"};
    strcat(str1,"Hello, ");
    strcat(str1,str2);
    cout<<str1<<endl;
    return 0;
}
```

Output

```
Hello, World!
```

比較字串 strcmp()

```
int strcmp ( const char * str1, const char * str2 );
```



```
int main(){
	char str1[]={"APPLE"};
	char str2[]={"APPEAL"};
	int n=strcmp(str1,str2);
	if(n==0)
		cout<<str1<<" is the same as "<<str2<<endl;
	else if(n>0)
		cout<<str1<<" is greater than "<<str2<<endl;
	else
		cout<<str1<<" is less than "<<str2<<endl;
	return 0;
}
```

Output

```
APPLE is greater than APPEAL
```

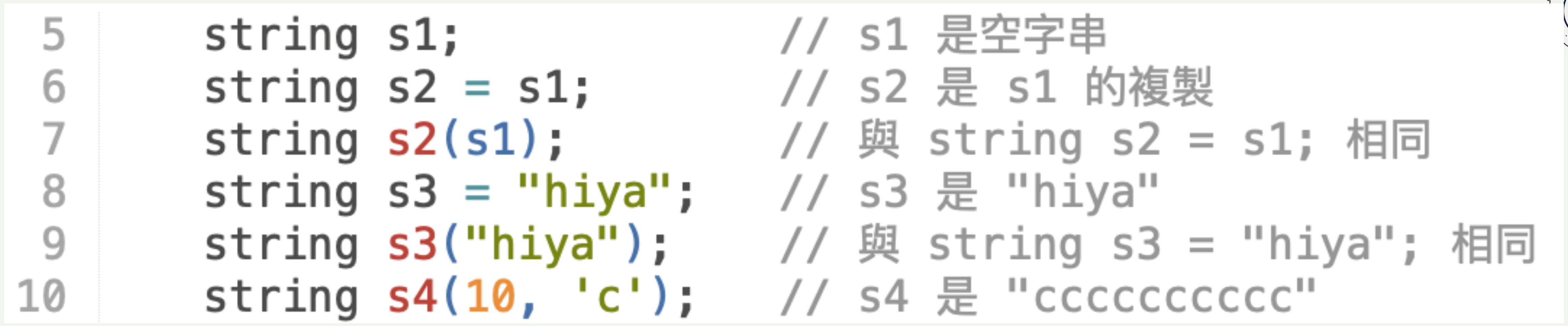
字串

String

字串 string

- string 是一個長度可變之字元序列
- 若要使用string型態，必須加入cstring的標頭檔

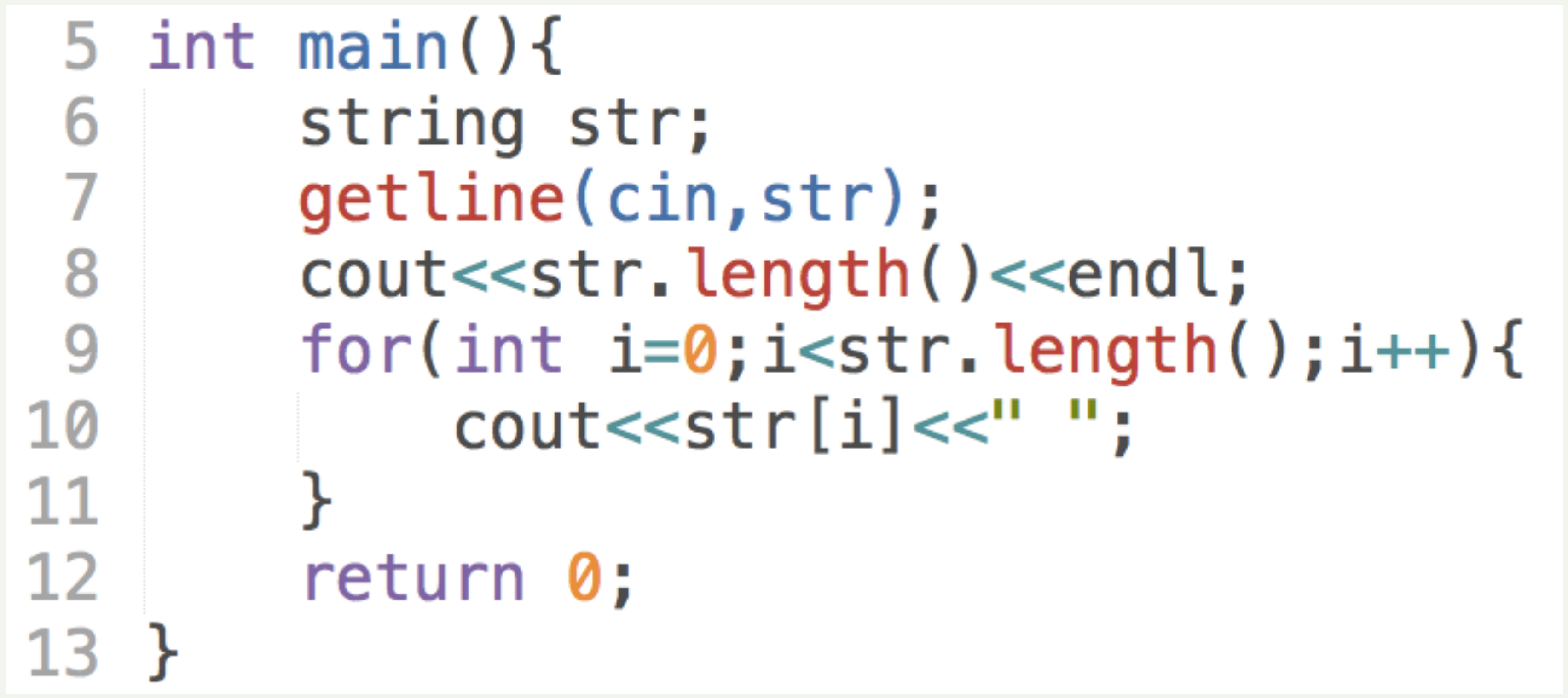
字串 宣告與初始化



```
    string s1;                // s1 是空字串
    string s2 = s1;           // s2 是 s1 的複製
    string s2(s1);            // 與 string s2 = s1; 相同
    string s3 = "hiya";       // s3 是 "hiya"
    string s3("hiya");        // 與 string s3 = "hiya"; 相同
    string s4(10, 'c');       // s4 是 "cccccccccc"
```

字串長度 length()

```
size_t length() const;
```



```cpp
int main(){
    string str;
    getline(cin,str);
    cout<<str.length()<<endl;
    for(int i=0;i<str.length();i++){
        cout<<str[i]<<" ";
    }
    return 0;
}
```

Input

```
Tony Stark
```

Output

```
10
T o n y   S t a r k
```

複製字串

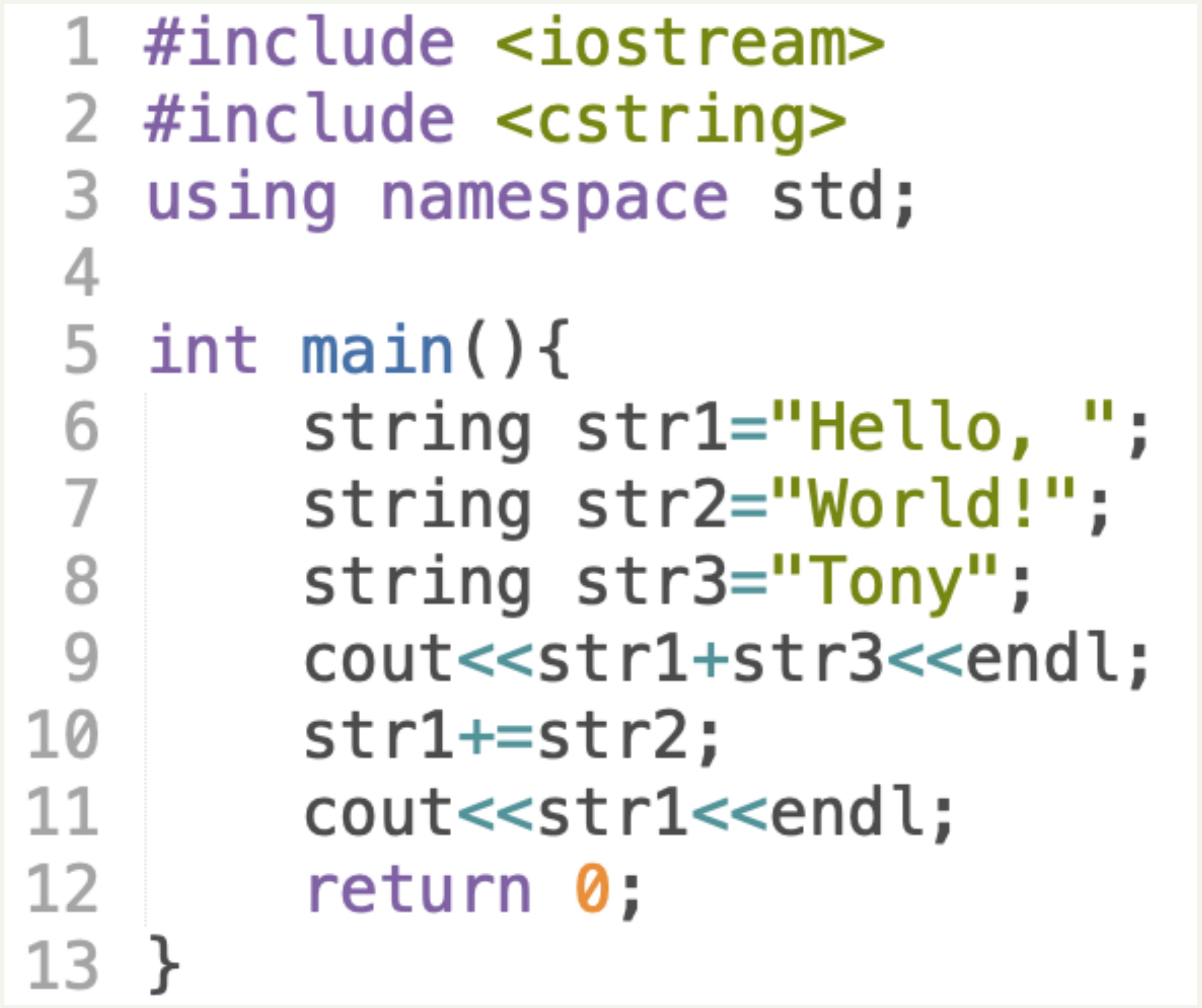
```cpp
#include <iostream>
#include <cstring>
using namespace std;

int main(){
	string source="Hello, World!";
	string destination;
	destination=source;
	cout<<destination<<endl;
	return 0;
}
```

Output

```
Hello, World!
```

連接字串



```cpp
#include <iostream>
#include <cstring>
using namespace std;

int main(){
	string str1="Hello, ";
	string str2="World!";
	string str3="Tony";
	cout<<str1+str3<<endl;
	str1+=str2;
	cout<<str1<<endl;
	return 0;
}
```

Output

```
Hello, Tony
Hello, World!
```

比較字串 >, ==, <

```cpp
#include <iostream>
#include <cstring>
using namespace std;

int main(){
	string s1="APPLE",s2="APPEAL";
	if(s1==s2)
		cout<<s1<<" is the same as "<<s2<<endl;
	else if(s1>s2)
		cout<<s1<<" is greater than "<<s2<<endl;
	else
		cout<<s1<<" is less than "<<s2<<endl;
	return 0;
}
```

Output

```
APPLE is greater than APPEAL
```