

C++ Programming(Exercise) 4

- Arne Kutzner
- Hanyang University / Seoul Korea

Function

- To make a function, you should decide return type, name, and types of parameters
- Type Name (para, para) {
 Actual code}

Example

```
1
2  #include <iostream>
3  using namespace std;
4
5  int addnums(int firstnum, int secondnum) {
6      int sum;
7      sum = firstnum + secondnum;
8      return(sum)
9  }
10
11
12  int main() {
13      int y, a, b;
14
15      cout << "Enter two numbers " << endl;
16      cin >> a >> b;
17
18      y = addnums(a, b);
19
20      cout << "a is " << a << endl;
21      cout << "b is " << b << endl;
22      cout << "sum is " << y << endl;
23
24      return 0;
25  }
26
27
28
29
```

Example(Call by value)

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

void swap(int, int);

int main() {
    int a = 3, b = 5;
    char c = ',';
    cout << a << c << b << endl;
    swap(a, b);
    cout << a << c << b << endl;

    return 0;
}

void swap(int a, int b) {
    int temp;
    char c = ',';
    temp = a;
    a = b;
    b = temp;
    cout << a << c << b << endl;
}
```

Example(Call by reference)

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

void swap(int *, int *);

int main() {
    int a = 3, b = 5;
    char c = ',';
    cout << a << c << b << endl;
    swap(&a, &b);
    cout << a << c << b << endl;
    return 0;
}

void swap(int *a, int *b) {
    int temp;
    char c = ',';
    temp = *a;
    *a = *b;
    *b = temp;
    cout << *a << c << *b << endl;
}
```

C++ Arrays

- Array: A sequence of consecutive memory elements.
- Contents in a single array are all same type.
- Index of array is 0th. It means, the last one of n-elements array is n-1, so you can't access to nth array for it.

Example

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

int main() {
    int yams[3] = { 7,8,9 };
    int yamcost[3] = { 20, 30, 5 };

    cout << "Total yams = " << yams[0] + yams[1] + yams[2] << endl;
    cout << "The package with " << yams[1] << " yamcost ";
    cout << yamcost[1] << " cents per yam. " << endl;

    int total = yams[0] * yamcost[0] + yams[1] * yamcost[1]
        + yams[2] * yamcost[2];
    cout << "The total yam expense is " << total << " cents. " << endl;

    cout << "Size of yams array = " << sizeof yams;
    cout << " bytes. " << endl;
    cout << "Size of one element = " << sizeof yams[0];
    cout << " bytes. " << endl;

    return 0;
}
```

Example(array2)

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

void main() {
    const int Size = 15;
    char alpha[Size];
    char beta[Size] = "C++ Assistant";

    cout << "Hello! I'm " << beta;
    cout << "! What's your name? " << endl;
    cin >> alpha;

    cout << "Well, " << alpha << ", your name has ";
    cout << strlen(alpha)/sizeof(char) << " letters and is stored" << endl;

    cout << "in an array of " << sizeof(alpha) << " bytes, " << endl;
    cout << "Your initial is " << alpha[0] << endl;

    beta[3] = '\0';
    cout << "Here are the first 3 characters of my name: " << beta << endl;
}
```


2D array int[3][4]

	Col 0	Col 1	Col 2	Col 3
Row 0	A[0][0]	A[0][1]	A[0][2]	A[0][3]
Row 1	A[1][0]	A[1][1]	A[1][2]	A[1][3]
Row 2	A[2][0]	A[2][1]	A[2][2]	A[2][3]

Example(2-D Array)

```
#include <iostream>
using namespace std;
const int City = 3;
const int Year = 3;

int main() {
    const char* Cities[City] = { "Seoul ", "Incheon ", "Busan " };
    int maxtemps[Year][City] = {
        {35, 32, 33},
        {33, 32, 34},
        {36, 35, 35}
    };
    cout << "Maximum temperatures for 2002-2004" << endl;

    for (int city = 0; city < City; ++city) {
        cout << Cities[city] << ": ";
        for (int year = 0; year < Year; ++year)
            cout << maxtemps[year][city] << " ";
        cout << endl;
    }

    return 0;
}
```

