C Programming

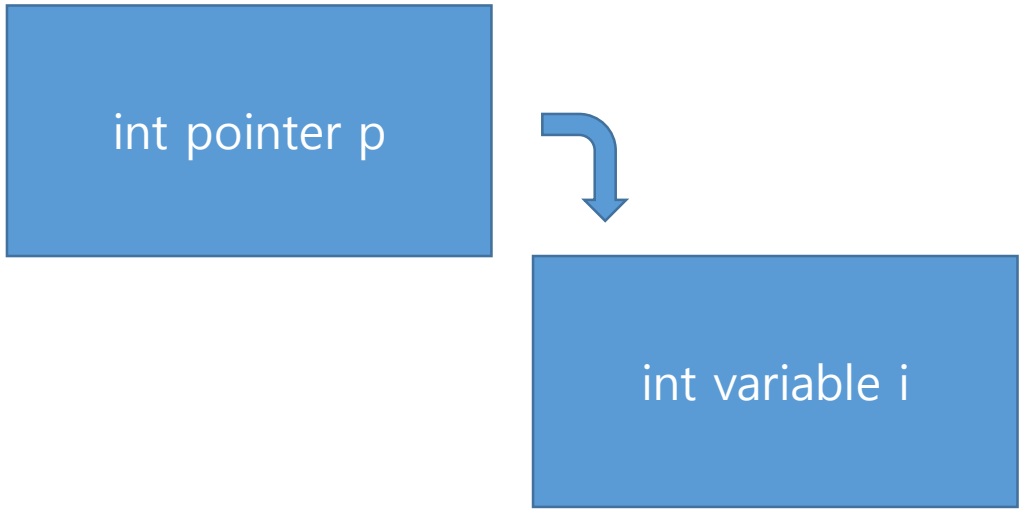
Practice 8

Pointer Declaration and Assignment

1. Size of pointer = 4 bytes
2. Save the address value

```
int i, *p;  /* p is of type "pointer to int" */

p = &i;
p = NULL;
```



Call-by-value

```c
#include<stdio.h>

void swap(int a, int b)
{
    int temp;
    temp = a;
    a = b;
    b = temp;
}

int main()
{
    int x = 5, y = 10;
    swap(x, y);
    printf("x = %d, y = %d₩n", x, y);
}
```

Result?

```
x = 5, y = 10
```

Call-by-Reference

```c
#include <stdio.h>
void  swap(int*, int*);
int main(void)
{
    int a = 3, b = 7;
    printf("%d  %d₩n", a, b);
    swap(&a, &b);

    printf("%d  %d₩n", a, b);
    return 0;
}
void  swap(int* p, int* q)
{
    int tmp;

    tmp = *p;
    *p = *q;
    *q = tmp;
}
```

3 7

7 3

Array

- Define array

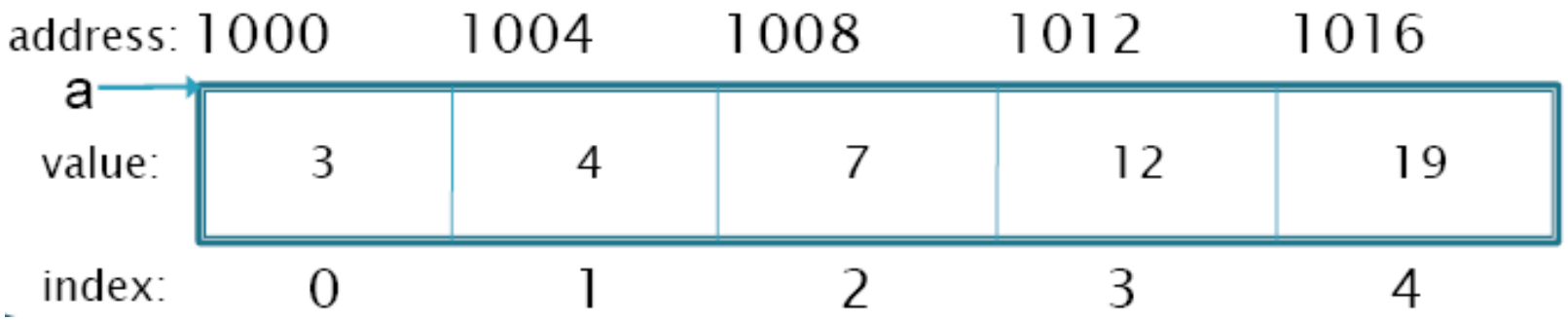
```
int grade [3];
int grade [3] = {0};
char characters[3];
```


```
int a[] = {3, 4, 5};
```

Array

- The indexing of array elements always starts at 0.

int a[5] = {3, 4, 7, 12, 19}



Array & Pointer

- a[i] <==> *(a + i)
- p[i] <==> *(p + i)

- Pointer variable can have different values, but array name is not
- p = a + i ;
- a = q ; /* error */

Two-dimensional array

- Declaration
  - int a[3][5];
- In fact, the elements are stored sequentially

	1 Column	2 Column	3 Column	4 Column	5 Column
1 Row	a[0][0]	a[0][1]	a[0][2]	a[0][3]	a[0][4]
2 Row	a[1][0]	a[1][1]	a[1][2]	a[1][3]	a[1][4]
3 Row	a[2][0]	a[2][1]	a[2][2]	a[2][3]	a[2][4]

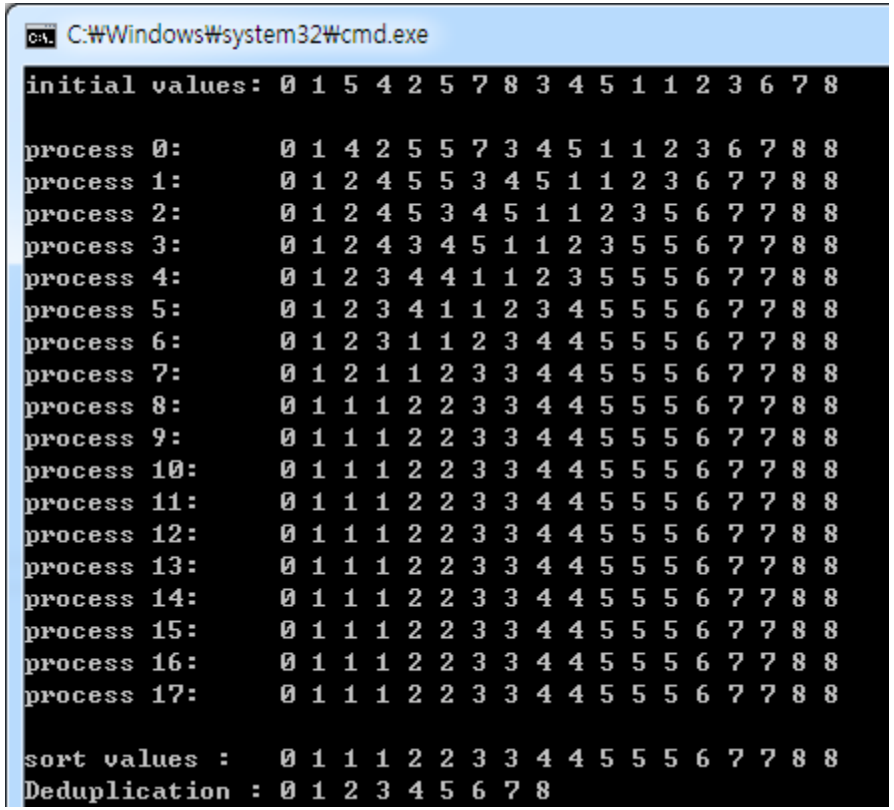
Two-dimensional array

- The same expressions as a[i][j]

1. *(a[i] + j)
2. (*(a + i)) [j]
3. *((*(a + i)) + j)

Homework 16 – Bubble sorting

- Define the array : {0, 1, 5, 4, 2, 5, 7, 8, 3, 4, 5, 1, 1, 2, 3, 6, 7, 8}
- Sort by ascending
- Deduplication
- Print process 0~17

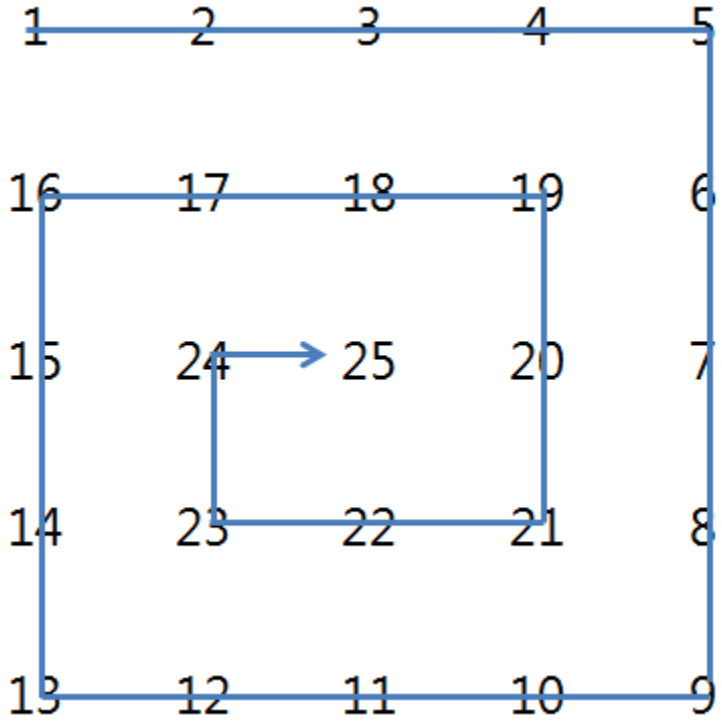


Homework 17 – NxN land snail array

- Input array size N (1~20)
- Using Two-Dimensional array

```
Input a number : 3
   1   2   3
   8   9   4
   7   6   5
```

```
Input a number : 5
   1   2   3   4   5
  16  17  18  19   6
  15  24  25  20   7
  14  23  22  21   8
  13  12  11  10   9
```



Homework form

- Homework submission e-mail:

hizorro99@naver.com

- E-mail title: day(Thursday or Friday)_name_#week
  - Ex) Friday_james_week10
  - Ex) 목요일반_장원철_10주차
- File title: student id_name_#.c
  - Ex) 2014123456_james_16.c (or .cpp)
  - Ex) 2014123456_james_17.c (or .cpp)