Lesson 21 2D Array

If we have 20 values representing test scores, we can use an array of size 20 to store them.

```
int x[20];
```

Instead, if we have 4 groups of 5 students each, we won't be able to determine which group each student belongs to unless we use three arrays. As a result, we store them in a 2D array.

- How to declare a 2D array?

```
int x[4][5];
```

	0	1	2	3	4
0	[0][0] = 30;	x[0][1] = 40;	[0][2] = 35;	[0][3] = 20;	x[0][4] = 47;
1	[1][0] = 42;	x[1][1] = 49;	[1][2] = 42;	[1][3] = 32;	x[1][4] = 48;
2	[2][0] = 38;	x[2][1] = 25;	[2][2] = 49;	[2][3] = 36;	x[2][4] = 48;
3	[3][0] = 23;	x[3][1] = 28;	[3][2] = 46;	[3][3] = 47;	x[3][4] = 58;

30	40	35	20	47
42	49	42	32	48
38	25	49	36	48

23	28	46	47	58

- - > Each line is a group of five elements.

- **How to scan a list of integers?**

```
int i, j, x[4][5];
for (i = 0; i < 4; i++)
        for (j = 0; j < 5; j++)
                scanf("%d", &x[i][j]);
```

- **How to print the elements of a 2D array?**

```
for (i = 0; i < 4; i++) {
        for (j = 0; j < 5; j++)
                printf("%d ", x[i][j]);
        printf("\n");
}
```