第6章

数组

基本数据类型

如何表示一组数据?

声明

一维数组

数据类型 数组名[数组长度];

```
int name[7];
```

一维数组

int,float…

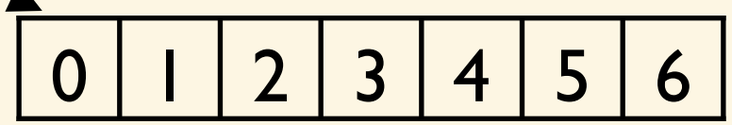
标识符

常量

数据类型 数组名[数组长度];

声明

```
int name[7];
```



```c
#define N 9

int n = 9;

int a1[9];
int a2[N];
int a3[n];
```

```c
#define N 9

int n = 9;

int a1[9]; ✓
int a2[N]; ✓
int a3[n]; ✗
```

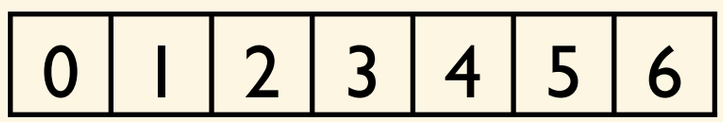
引用

```c
int name[10];

name[2] = 90;

scanf("%d", &name[4]);

printf("%d\n", name[5]);
```



初始化

```c
int array[5] = {1, 2, 3, 4, 5};

int array[] = {1, 2, 3, 4, 5};

int array[5] = {1, 2};

int array[5] = {1, 2, 3, 4, 5, 6, 7};
```

```
int array[5] = {1, 2, 3, 4, 5};
```

```
int array[] = {1, 2, 3, 4, 5};
```

array长度为5

```
int array[5] = {1, 2};
```

自动补0

```
int array[5] = {1, 2, 3, 4, 5, 6, 7};
```

输入9个数并逆序打印

```c
#include <stdio.h>

int main()
{
    int a[9], i;

    for (i = 0; i < 9; i++)
        scanf("%d", &a[i]);

    for (i = 8; i >= 0; i--)
        printf("%d ", a[i]);

    putchar('\n');

    return 0;
}
```

输入9个数找出最大值

```c
#include <stdio.h>

int main()
{
    int a[9], i, m;

    for (i = 0; i < 9; i++)
        scanf("%d", &a[i]);

    m = a[0];

    for (i = 1; i < 9; i++)
        if (a[i] > m)
            m = a[i];

    printf("%d\n", m);

    return 0;
}
```

输9个数从大到小排序

```c
#include <stdio.h>

int main()
{
    int a[9], i, j, m, t;

    for (i = 0; i < 9; i++)
        scanf("%d", &a[i]);

    for (i = 0; i < 8; i++) {
        m = i;

        for (j = i+1; j < 9; j++)
            if (a[j] > a[m])
                m = j;

        t = a[i];
        a[i] = a[m];
        a[m] = t;
    }

    for (i = 0; i < 9; i++)
        printf("%d ", a[i]);

    putchar('\n');

    return 0;
}
```

如何表示矩阵?

二维数组

二维数组

int,float…

标识符

常量

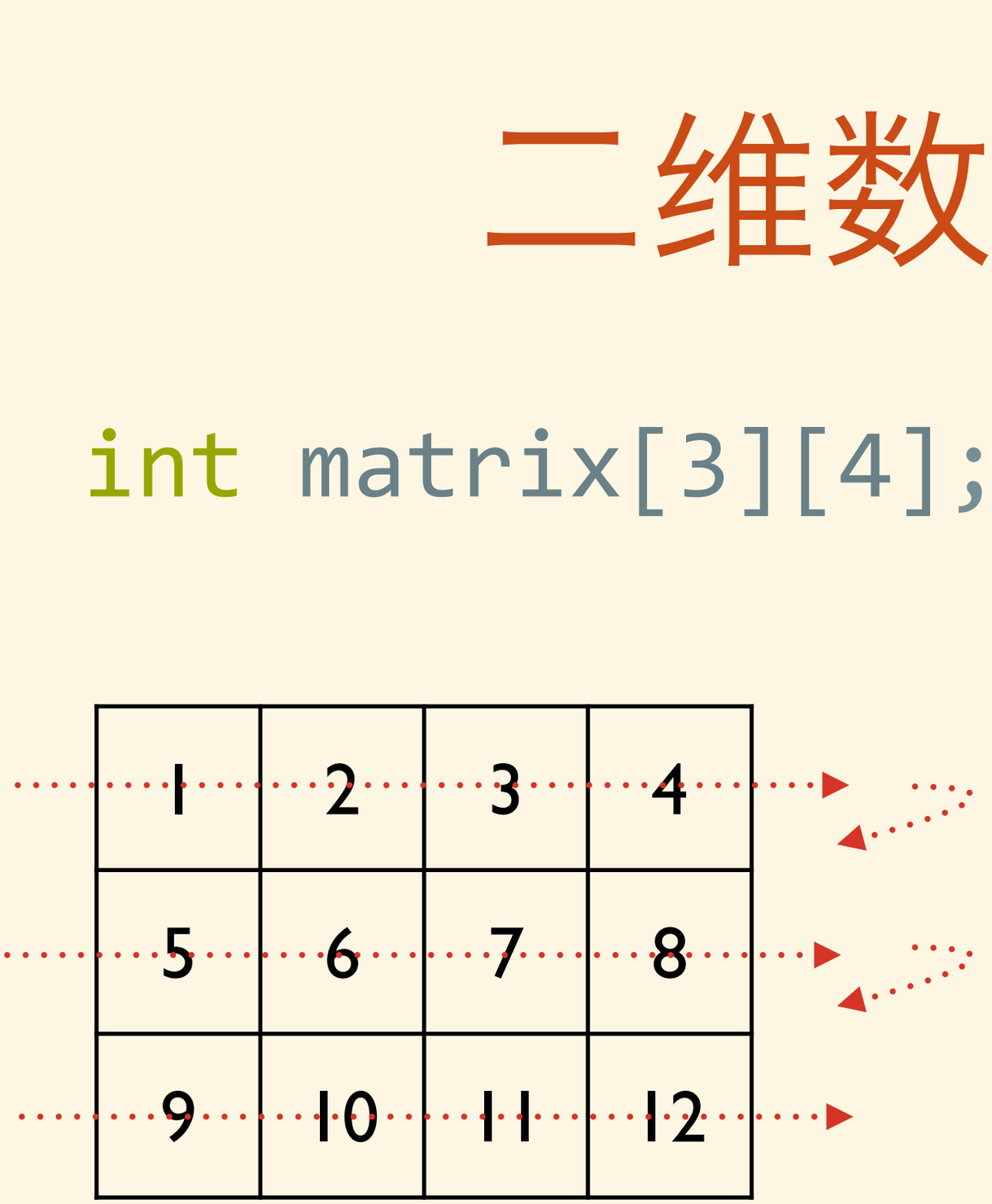
数据类型 数组名[数组行][数组列];

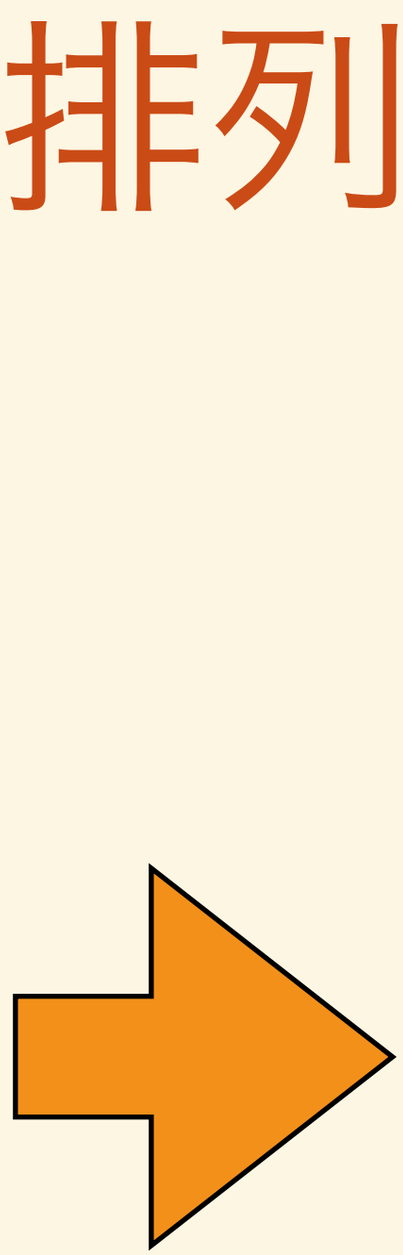
声明

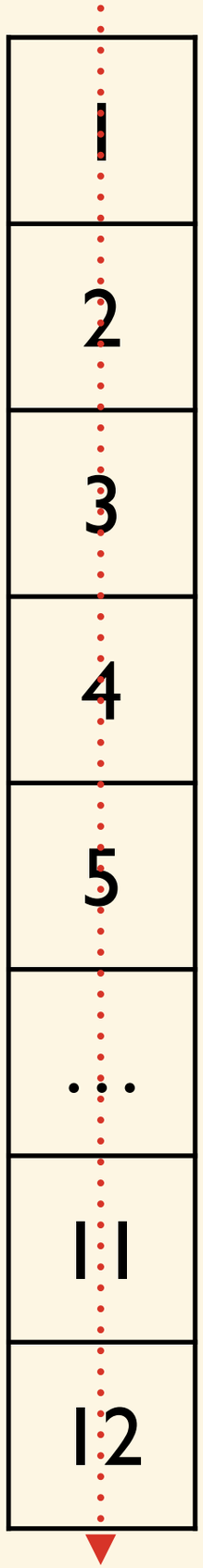
```
int matrix[3][4];
```

二维数组排列

```
int matrix[3][4];
```







初始化

```
int a[2][3] = {{1, 2, 3}, {4, 5, 6}};

int a[2][3] = {1, 2, 3, 4, 5, 6};

int a[2][3] = {{1}, {4}};

int a[][3] = {{1, 2, 3}, {4, 5, 6}};
```

打印杨辉三角

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

.....

```c
#include <stdio.h>

#define N 11

int main ()
{
    int i, j, a[N][N];
    for(i = 1; i < N; i++) {
        a[i][1] = 1;
        a[i][i] = 1;
    }
    for(i = 3; i < N; i++)
        for(j = 2; j < i; j++)
            a[i][j] = a[i-1][j-1] + a[i-1][j];

    for(i = 1; i < N; i++) {
        for(j = 1; j <= i; j++)
            printf("%6d", a[i][j]);

        printf("\n");
    }

    return 0;
}
```