

Two-dimensional Arrays

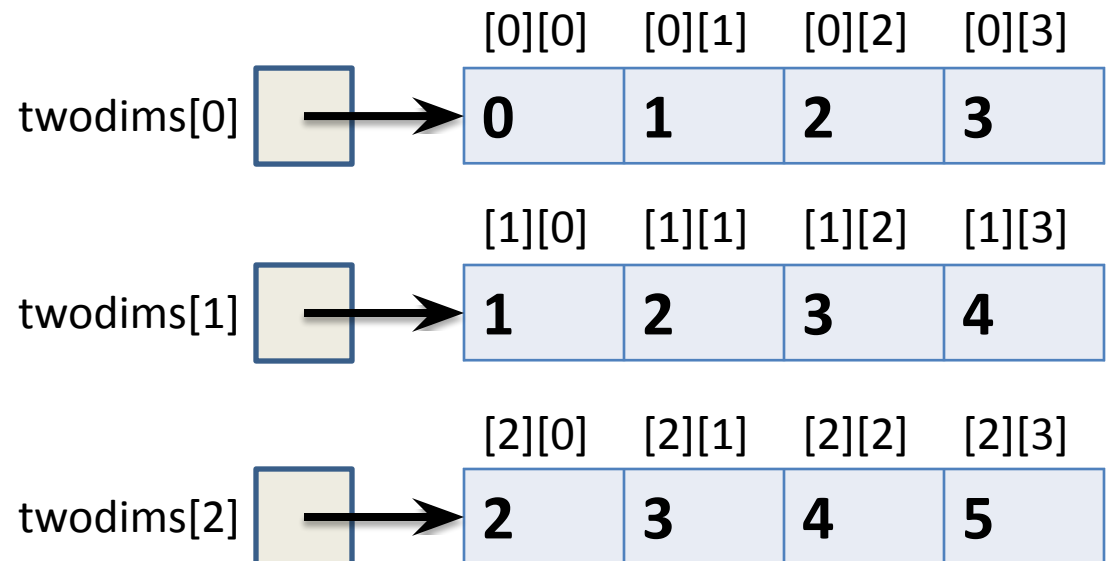
- Why stop at an array of ints?
How about an array of arrays of ints?

```
int twodims[3][4];
```

- “Give me three sets of four integers.”

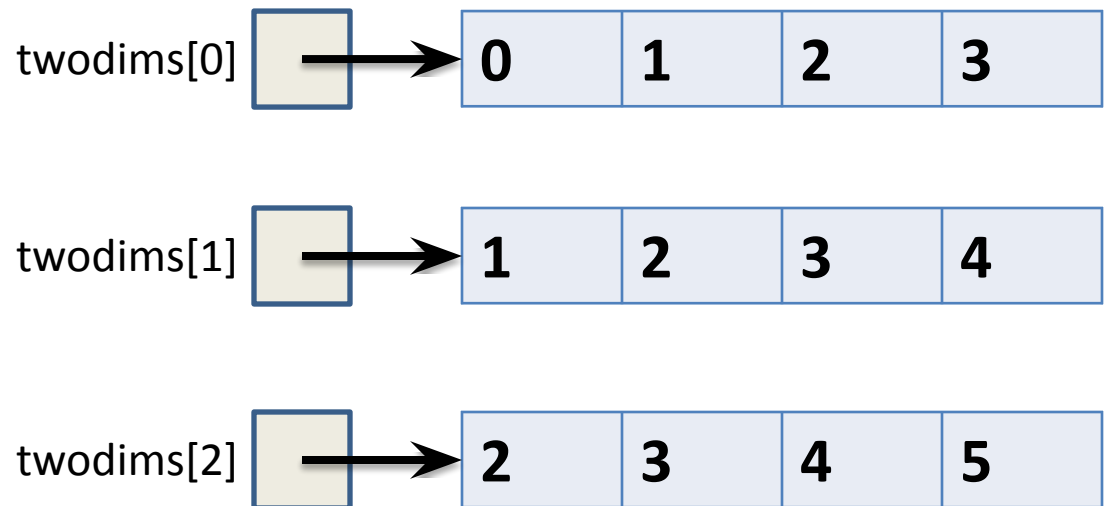
Two-dimensional Arrays

```
int twodims[3][4];  
for(i=0; i<3; i++) {  
    for(j=0; j<4; j++) {  
        twodims[i][j] = i+j;  
    }  
}
```



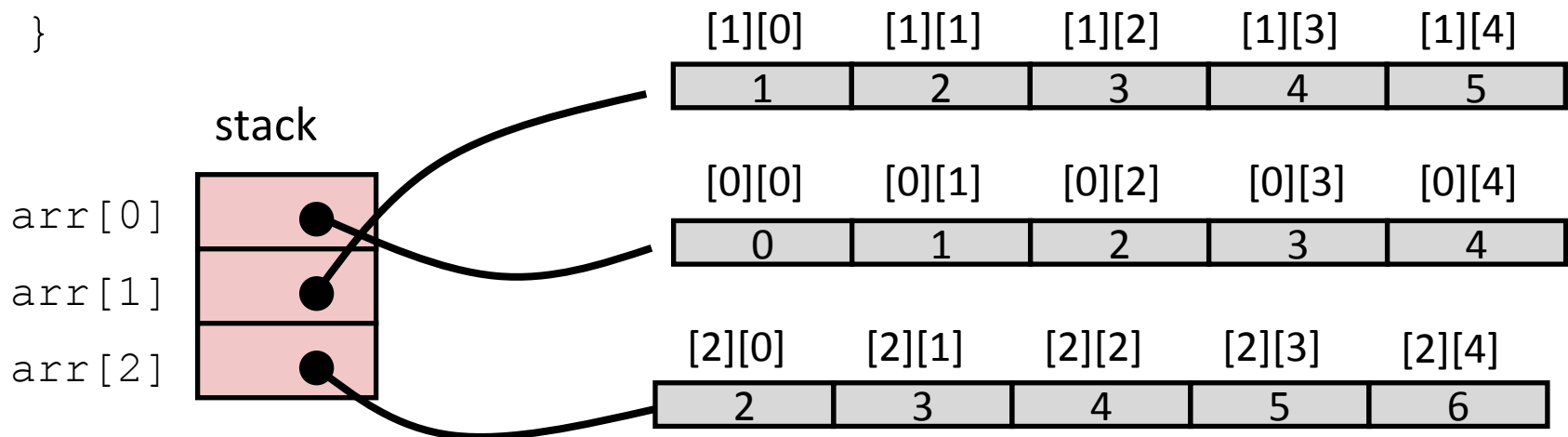
Two-dimensional Arrays: Matrix

```
int twodims[3][4];  
for(i=0; i<3; i++) {  
    for(j=0; j<4; j++) {  
        twodims[i][j] = i+j;  
    }  
}
```



Dynamic 2D Array

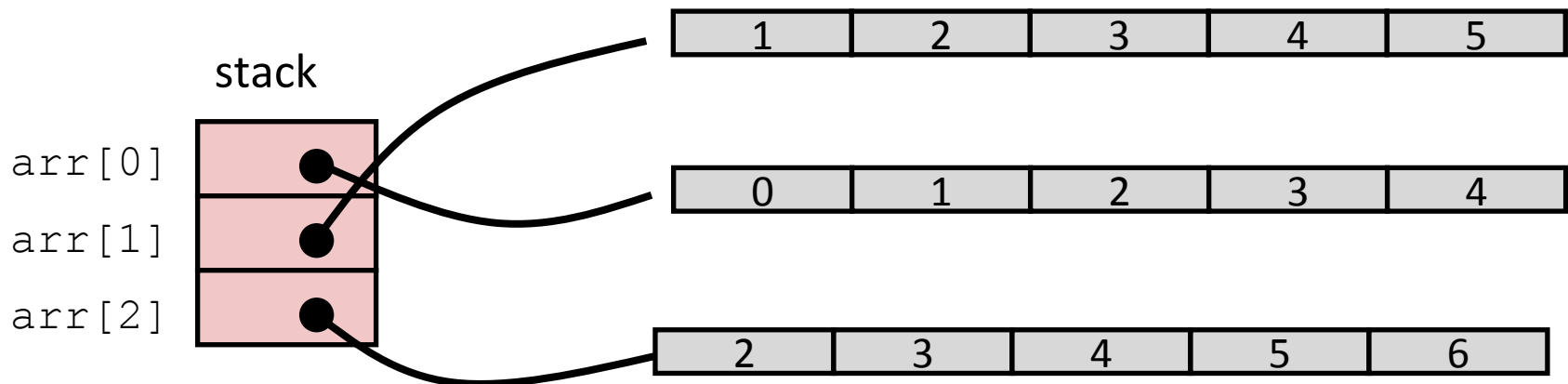
```
char** arr; // points to a char*  
arr = new char*[3]; // dynamic array of char*  
for(i=0; i<3; i++) {  
    arr[i] = new char[5]; // arr[i] is of type char*  
    for(j=0; j<5; j++) {  
        arr[i][j] = i+j;  
    }  
}
```



Dynamic 2D Array

black: type of content of 2D array
red: for 1D array of content
blue: for 2D array of content

```
char** arr; // points to a char*
arr = new char*[3]; // dynamic array of char*
for(i=0; i<3; i++) {
    arr[i] = new char[5]; // arr[i] is of type char*
    for(j=0; j<5; j++) {
        arr[i][j] = i+j;
    }
}
```



Remember Lab02?

We had an array of `Media*`. What if we wanted to have a dynamic 2D array of `Media*`?

black: type of content of 2D array

red: for 1D array of content

blue: for 2D array of content

```
Media*** arr;
arr = new Media**[3]; // dynamic array of Media**
for(i=0; i<3; i++) {
    arr[i] = new Media*[5]; // arr[i] is of type Media**
    for(j=0; j<5; j++) {
        arr[i][j] = new Text(/* blah blah */);
    }
}
```

Dynamic 2D Array Another Way

```
char *arr;  
arr = new char[ROWS*COLS];  
for(i=0; i< ROWS; i++) {  
    for(j=0; j< COLS; j++) {  
        arr[i*COLS+j] = i+j;  
    }  
}
```

