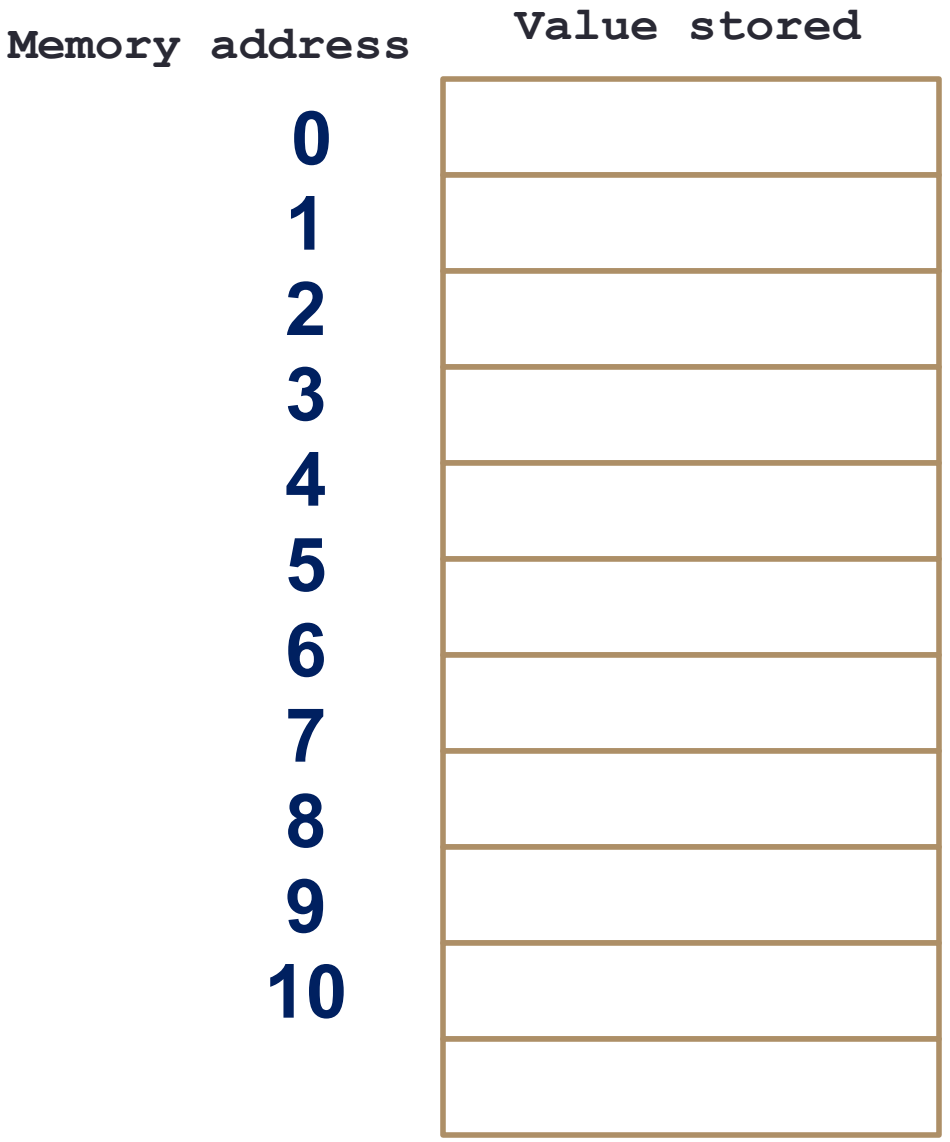
C++ ARRAYS

Problem Solving with Computers-I

General model of memory

- Sequence of adjacent cells
- Each cell has 1-byte stored in it
- Each cell has an address (memory location)



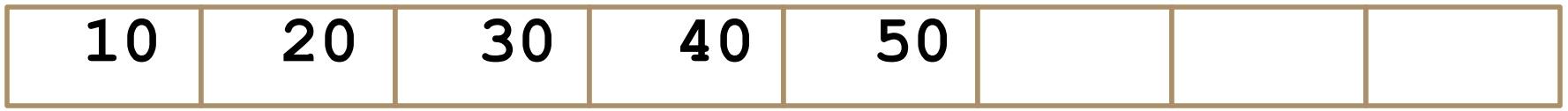
Storing sequences in programs

Write a program to take a sequence of midterm scores (out of 100) and compute the average of the midterm

C++ Arrays

A C++ array is a **list of elements** that share the same name, have the same data type and are located adjacent to each other in memory

scores



Declare:

Exercise: Reassign each value to 60


```
int scores[]={20,10,50}; // declare an initialize
//Access each element and reassign its value to 60
```

Exercise: Increment each element by 10


```
int scores[]={20,10,50}; // declare an initialize
//Increment each element by 10
```

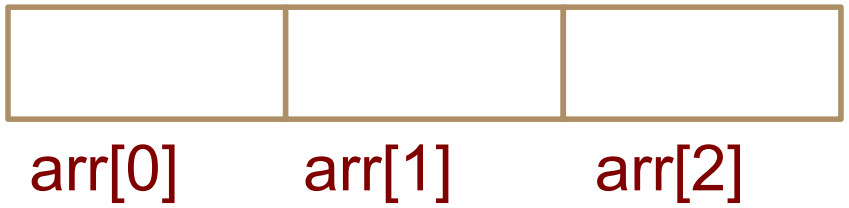
Most common array pitfall- out of bound access

scores[0] scores[1] scores[2]

```
int arr[]={20,10,50}; // declare an initialize
for(int i=0; i<=3; i++)
    scores[i] = scores[i]+10;
```

Demo: Passing arrays to functions

Tracing code involving arrays

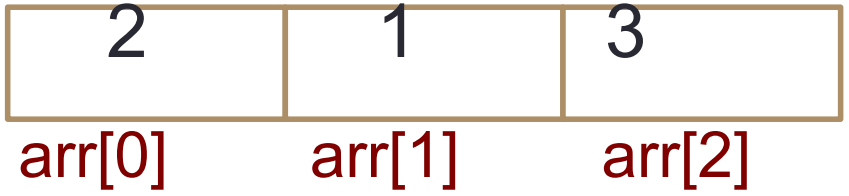



```
int arr[]={1,2,3};
int tmp = arr[0];
arr[0] = arr[2];
arr[2] = tmp;
```

Choose the resulting array after the code is executed

A.

B.



C.

D. None of the above

What is the memory location of each element?


```
int scores[]={10, 20, 30, 40, 50};
```

If the starting location of the array is 0x200, what is memory location of element at index 2?

A. 0x201

B. 0x202

C. 0x204

D. 0x208