

Arrays and Pointers

Department of CSE
Amrita Vishwa VidyaPeetham



Arrays and pointers

When one dimensional arrays are declared, they get **contiguous memory locations** assigned to their elements. From below diagram we can understand how a array is created in memory when it is declared.

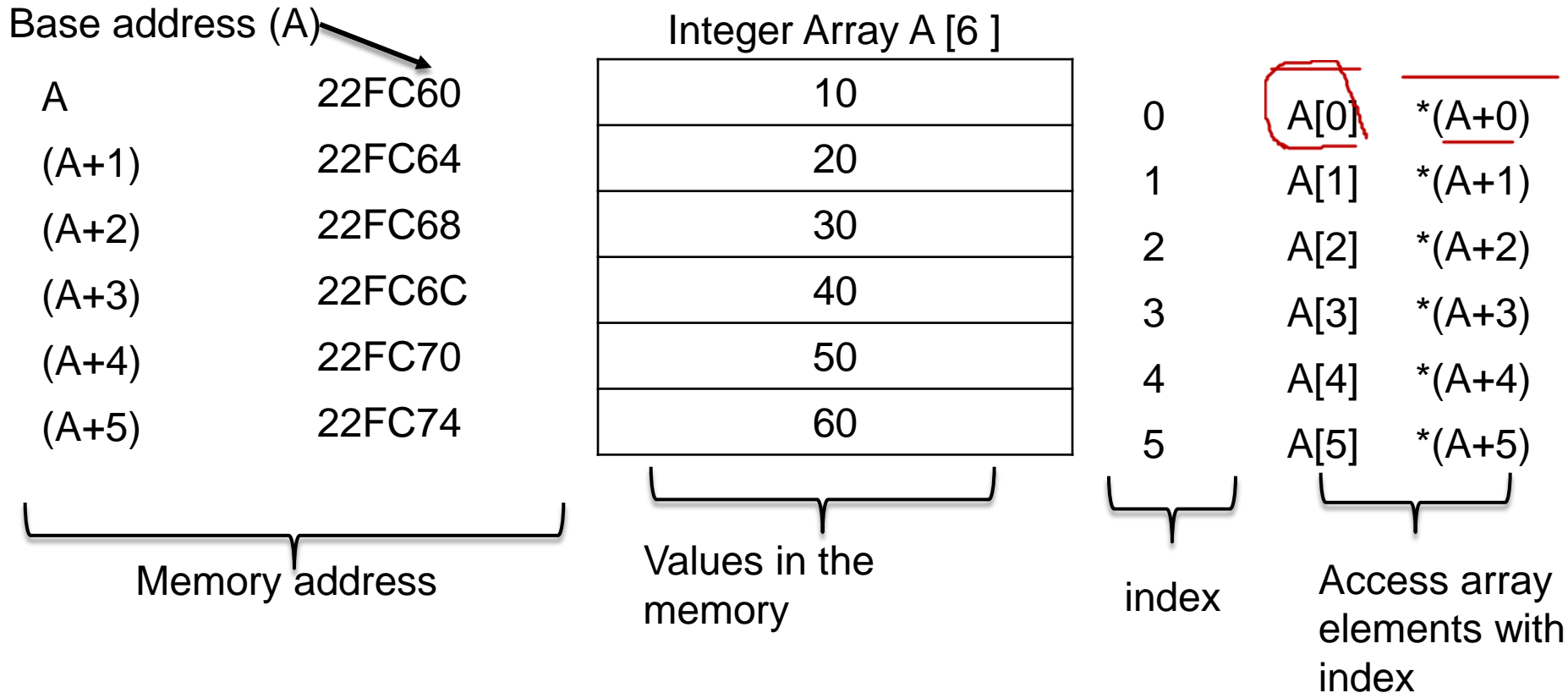
| int intArray[6] ; | | char charArray[6] ; | |
|-------------------|-------------|---------------------|--------------|
| 22FC60 | intArray[0] | 22FC60 | charArray[0] |
| 22FC64 | intArray[1] | 22FC61 | charArray[1] |
| 22FC68 | intArray[2] | 22FC62 | charArray[2] |
| 22FC6C | intArray[3] | 22FC63 | charArray[3] |
| 22FC70 | intArray[4] | 22FC64 | charArray[4] |
| 22FC74 | intArray[5] | 22FC65 | charArray[5] |

First element of the array occupies 4 bytes of space as the element is of integer type which requires 4 bytes to store the data. **Next element in the array gets the memory allocated after 4 bytes** i.e.; memory address 22FC60, plus4 and so on.
In case of charArray it is 1 byte each

This means **contiguous memory is allocated** to its elements.



Arrays and pointers(cont.)



Array name A will give base address
printf("%p\n",A) output 22FC60



Array program

```
□ int x[100];  
□ //Read the array  
□ for (int i=0;i<5;i++)  
□ {  
□     scanf("%d",x+i);  
□  
□ }  
□ //print the array  
□ printf("Updated Array\n");  
□ for (int i=0;i<5;i++)  
□ {  
□     printf("%d ",*(x+i));  
□  
□ }
```



Namah Shivaya!

