# Topic 7: Pointers

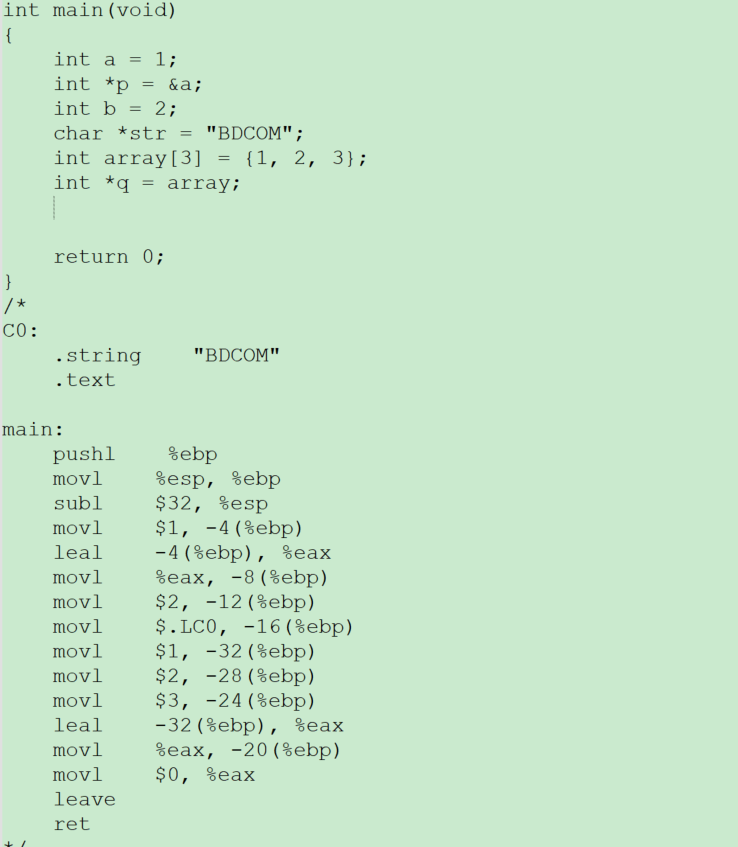
## Basic Knowledge

### Guidance

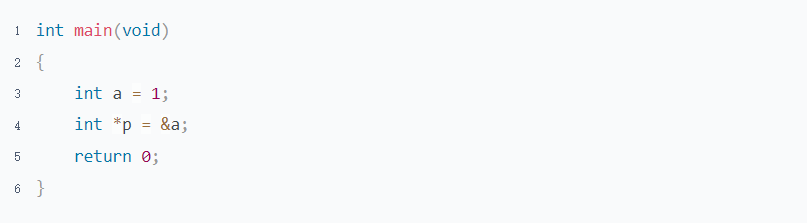
Pointers On C.pdf chapter 6.1-6.8

### Practice

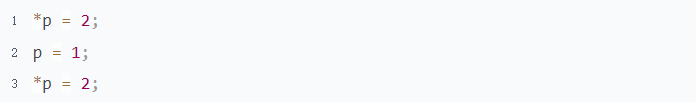
1. What can you get from the following program? (From the perspective of variable content). Write the corresponding C code next to the assembly instruction



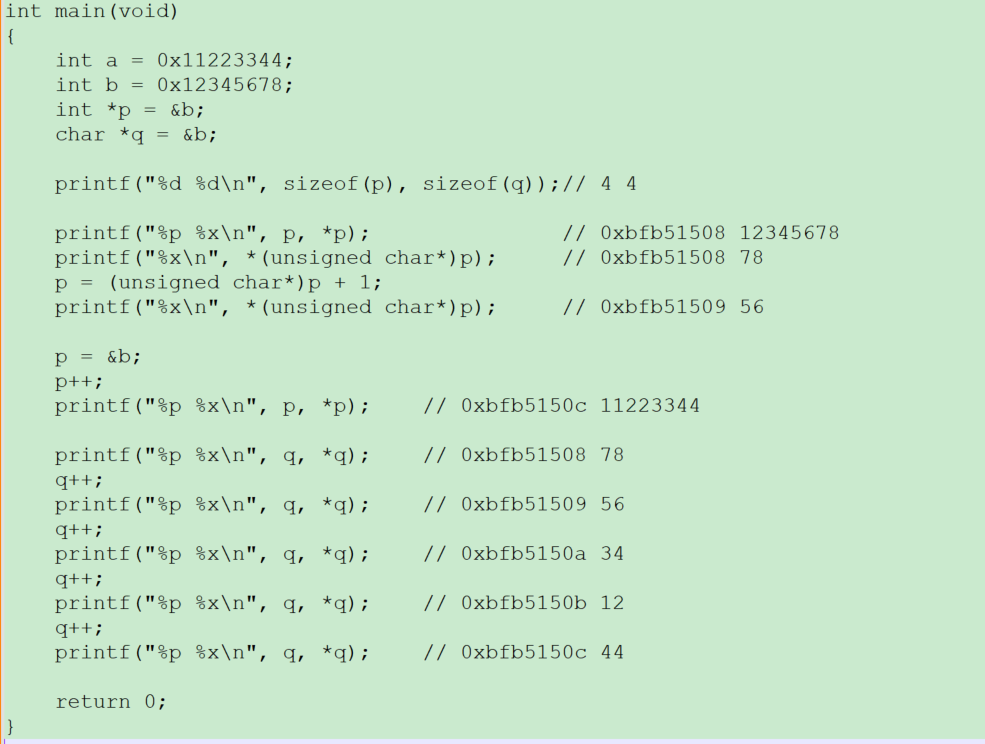
1. There is a program, for p, \*p and &p, Answer following questions



* 1. What are the meaning of them? Draw a picture to illustrate
  2. Which one can be used as the l-value?
  3. What does each line in the following program mean? Based on last program



1. What can you get from the following program? (From the perspective of pointer data type)



1. What is a wild pointer? Illustration
2. What is dangling pointer? Illustration
3. Pointers On C.pdf 6.17 question 7

## Pointer & Struct

### Guidance

Pointers On C.pdf chapter 11 12

### Practice

1. What are the benefits of using pointer for struct? Make a list of all the scenarios you can think of
2. Redo the question 7 of topic "Struct Bit Fields & Alignment" using struct pointer.(Do not need draw any picture, only program)
3. Seat Management & Reservation System

Requirement

* There is no platform restriction, but you need to give comment at the beginning of your program
* Arrays are not allowed to be used
* Default empty seat is 3. Which did not booked by any customer.
* The number of seat is limited to 10.
* Do not need to distinguish between first name and last name. All we need is a name
* A customer can only reserve 1 seat. The identification of a customer is the person id. Different person can have the same name





## Pointer & Array

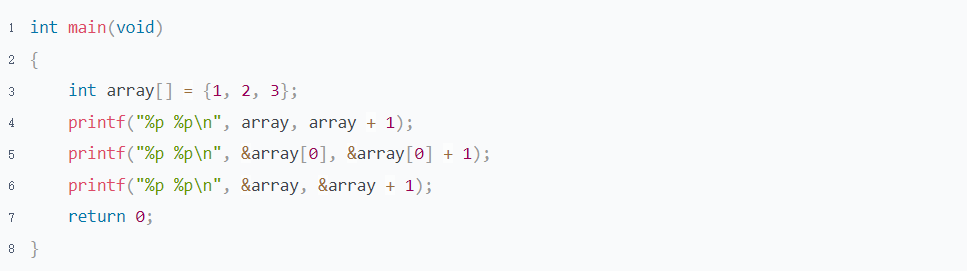
### Guidance

Pointers On C.pdf 6.13.1 8.1

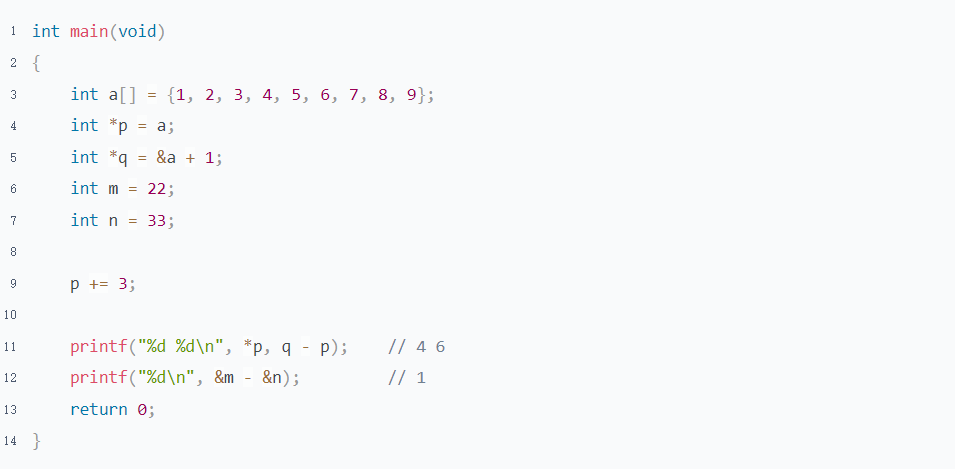
1. What is the difference between array, &array[0] and &array
2. array initialization
3. What happens when an array is the argument to a function?

### Practice

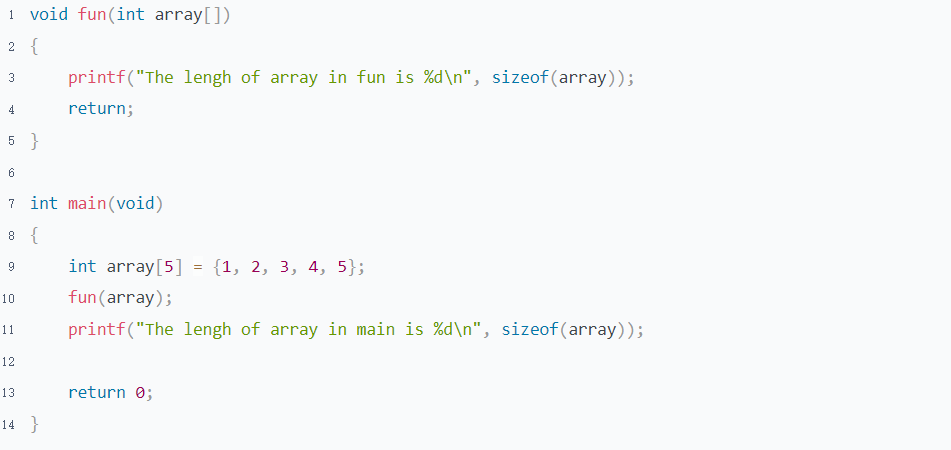
1. What can you get from the following program? Think about it. Why is it designed that way



1. Why does the following program have such an output? Does it make sense?



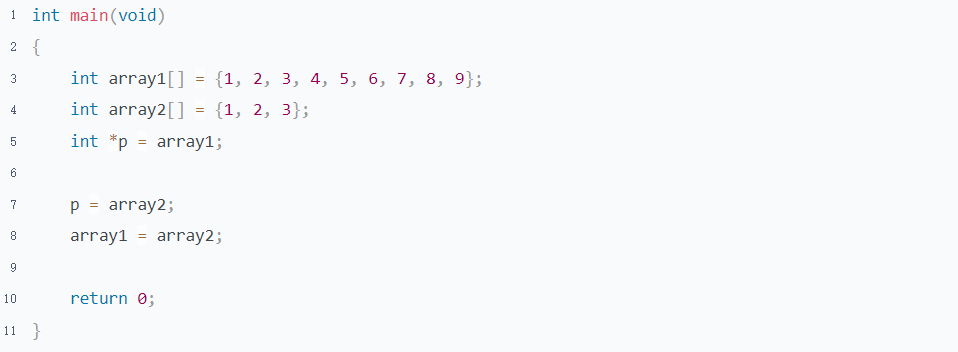
1. Why does the following program have such an output?



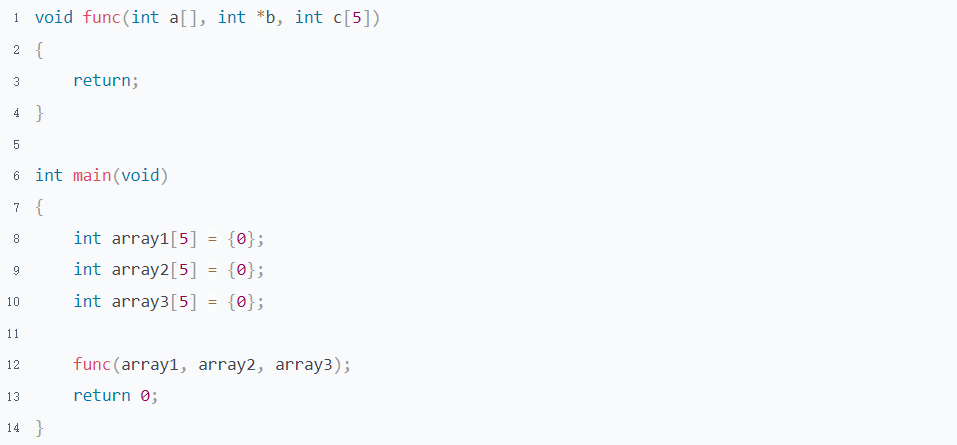
1. Why does the following program have such an output?



1. Why can not array be assigned just like pointer?



1. What is the difference between a, b and c？



1. Do experiment on Linux for each step of 8.1.4 on “Pointers On C.pdf”