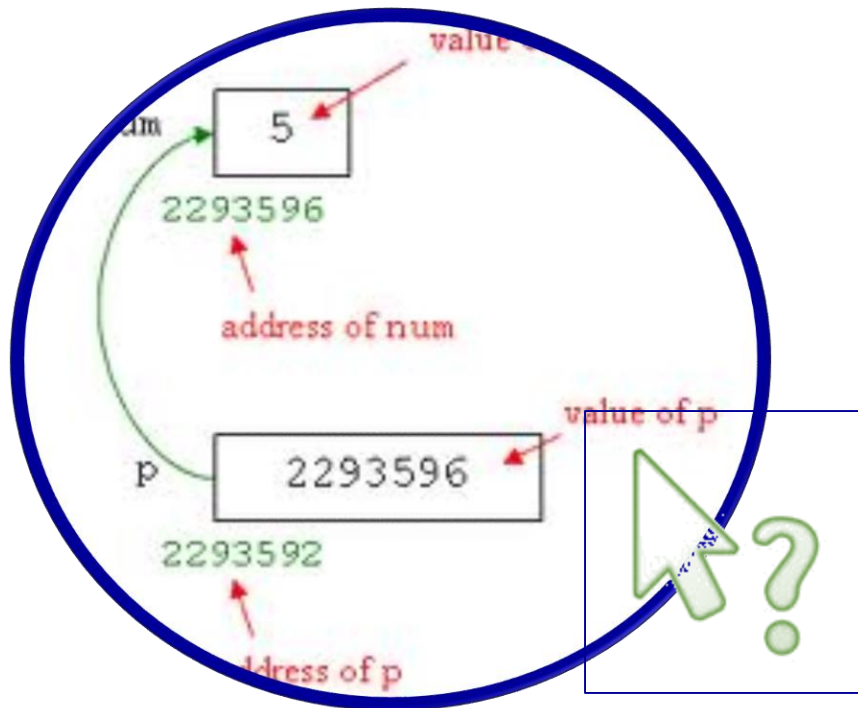


[illegible]



# Pointers S15 - 2



# Objectives

- To learn and appreciate the following concepts:
  - Concept of Basic Pointers – declaration and initialization



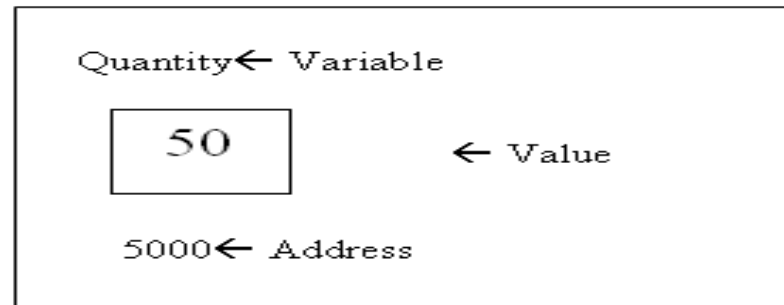
# Session outcome

- At the end of session one will be able to:
  - Understand the concept of Basic Pointers



# Pointers - Concept

- Consider the following statement  
`int Quantity = 50;`
- Compiler will allocate a memory location for Quantity and places the value in that location. Suppose the address of that location is 5000, then





# Pointers - Concept

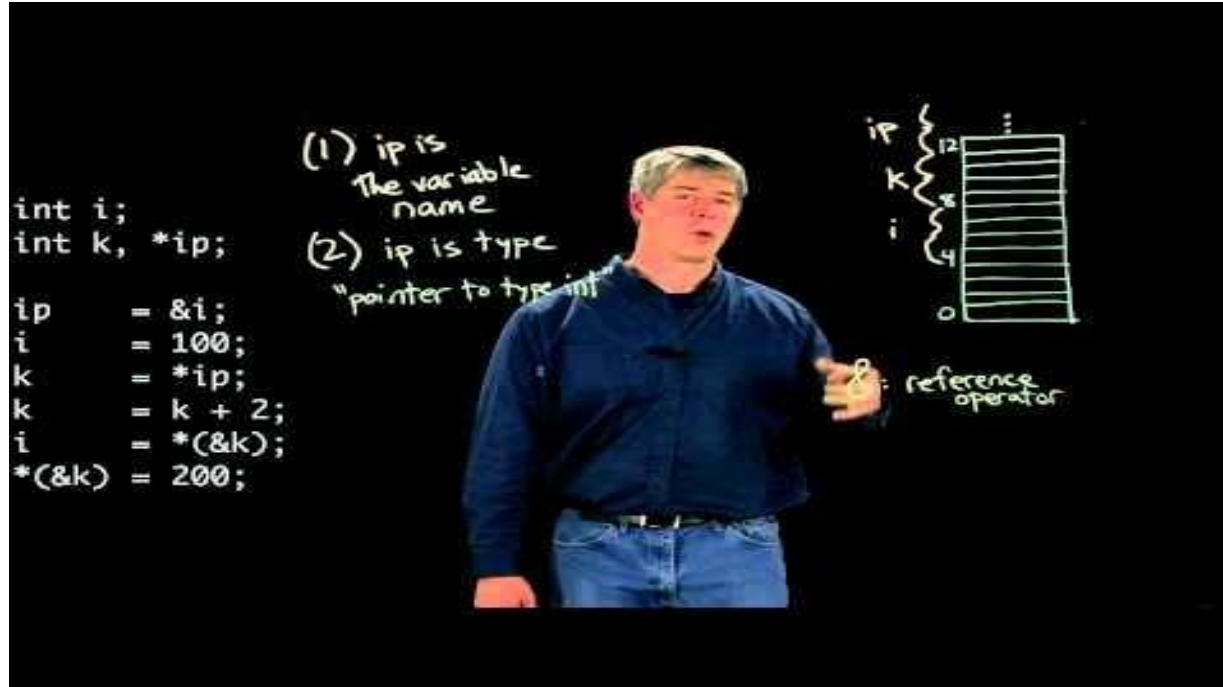
- During Execution of the program, the system always associates the name quantity with the address 5000.
- We may have access to the value 50 by using either the name of the variable quantity or the address 5000.
- Since memory addresses are simply numbers, they can be assigned to some variables which can be stored in memory, like any other variable.



# Pointer

- A memory location or a variable which stores the address of another variable in memory
- Commonly used in C than in many other languages (such as BASIC, Pascal, and certainly Java, which has no pointers).

# Basics of Pointer



The blackboard content includes the following C code on the left:

```
int i;  
int k, *ip;  
  
ip = &i;  
i = 100;  
k = *ip;  
k = k + 2;  
i = *(&k);  
*(&k) = 200;
```

Handwritten notes in the center:

- (1) ip is The variable name
- (2) ip is type "pointer to type int"

On the right, a memory diagram shows a vertical stack of memory cells. The address 12 is written next to the top cell, and the address 0 is at the bottom. Wavy lines connect the labels 'ip', 'k', and 'i' to specific cells in the memory stack. Below the diagram, the text '&' is written with the note 'reference operator'.

<https://www.youtube.com/watch?v=47IS8VtAM9E>





Go to posts/chat box for the link to the question **PQn. S15.2**

**submit your solution in next 2 minutes**

**The session will resume in 3 minutes**



# Declaring and initializing pointers

- Syntax:

`data_type * pt_name;`

- This tells the compiler 3 things about the `pt_name`:
  - The asterisk(\*) tells the variable `pt_name` is a pointer variable.
  - `pt_name` needs a memory location.
  - `pt_name` points to a variable of type `data_type`



# Summary

- Pointers – declaration and initialization