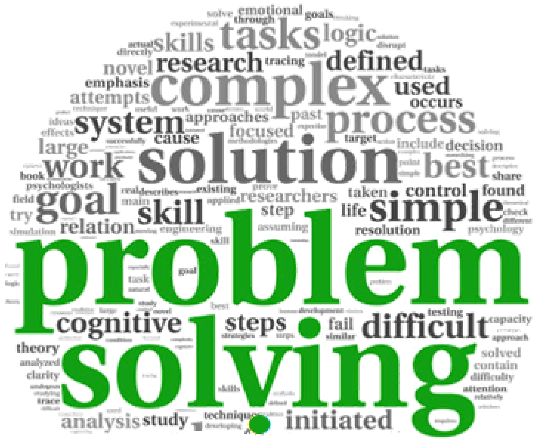
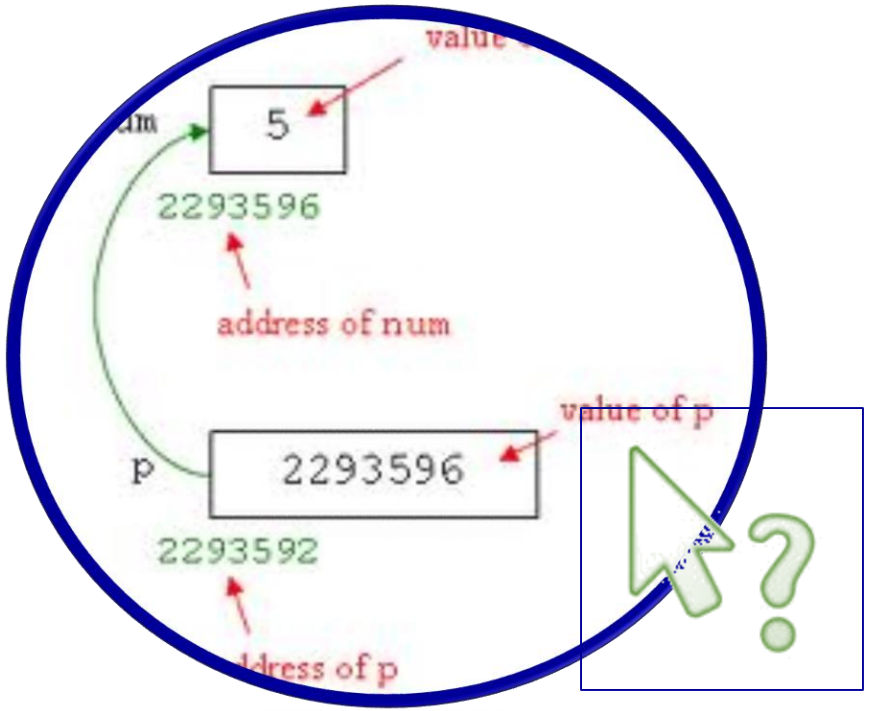


problem solving using computers

CSE 1051



Pointers S16-1

Objectives

- To learn and appreciate the following concepts:
    - Accessing the variable using address-of operator

Session outcome

- At the end of session one will be able to:
    - Access the variable using address-of operator

Pointers Concept

- **The Address-of Operator &**
  - To find the address occupied by a variable

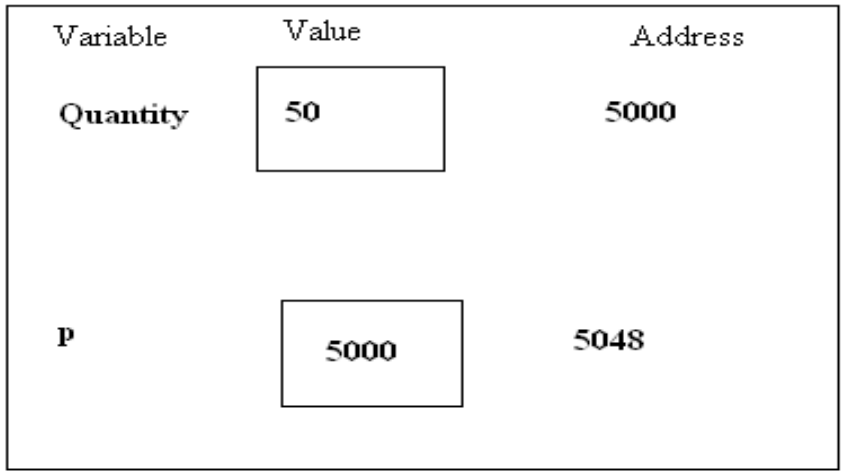
Accessing the address of a variable

int Quantity=50 ;

To assign the address 5000 (the location of quantity) to a variable p, we can write:

int *p = &Quantity ;

Such variables that hold memory addresses are called Pointer Variables.



Program to illustrate the address of operator

```
#include <stdio.h>
int main()
{
     int var1 = 11;
   int var2 = 22;
   int var3 = 33;
//print the addresses of these variables
    printf("%x",&var1);
    printf("%x",&var2);
    printf("%x",&var3);
    return 0;
}
```

Output:

```
0x29feec
0x29fee8
0x29fee4
```

Declaring and initializing pointers

Example:

```
int *p;  //declares a variable p as a pointer variable
                that points to an integer data type.

float *x;  //declares x as a pointer to floating point
                variable.
```

Once a pointer variable has been declared, it can be made to point to a variable using an assignment statement :

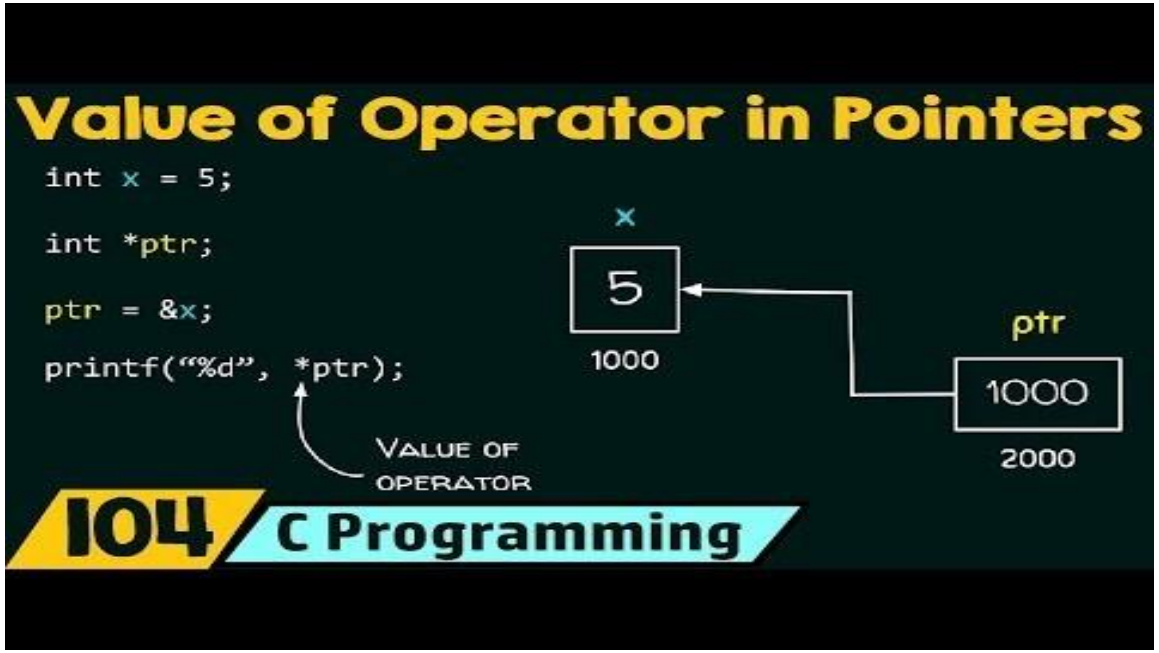
```
int quantity = 10;
p = &quantity; // p now contains the address of quantity. This is known as pointer initialization.
```

Go to posts/chat box for the link to the question **PQn. S16.1**

submit your solution in next 2 minutes

The session will resume in 3 minutes

Understanding pointers better



https://www.youtube.com/watch?v=xlt_bEqfnxg

Summary till now …

```
int v;    //defines variable v of type int
int* p;  //defines p as a pointer to int

p = &v;   //assigns address of variable v to  pointer p

Now…
   v = 3;            //assigns 3 to v
```

To be taken care …

Before a pointer is initialized, it should not be used.

We must ensure that the pointer variables always point to the corresponding type of data.

Assigning an absolute address to a pointer variable is prohibited. i.e p=5000

A pointer variable can be initialized in its declaration itself.

Example:

```
int x, *p=&x;   //declares  x as an integer
                          variable and then initializes
                          p to the address of x.
```

To be taken care …

The statement

int *p = & x, x; not valid.

i.e target variable ‘x’ must be declared first.

Summary

- Accessing the address of a variable using & operator