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FACULTY OF ENGINEERING & TECHNOLOGY

CSPS103: Object Oriented Programming

Lecture-32

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OBJECTIVES

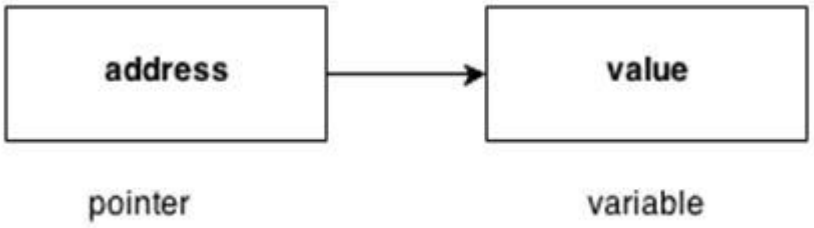
In this lecture, you will learn to:

- ❖Pointer
- ❖Advantage of pointer
- ❖Use pointer
- ❖Object Pointers

POINTER

- A pointer is a variable that contains a memory address.
- Very often this address is the location of another object, such as a variable.
- For example, if x contains the address of y, then x is said to “point to” y.
- Pointer variables must be declared as such.
- The general form of a pointer variable declaration is

type *var-name;



ADVANTAGE OF POINTER

1) Pointer reduces the code and improves the performance, it is used to retrieving strings, trees etc. and used with arrays, structures and functions.

2) We can return multiple values from function using pointer.

3) It makes you able to access any memory location in the computer's memory.

USE POINTER

- We define a pointer variable.
- Assign the address of a variable to a pointer.
- Finally access the value at the address available in the pointer variable. This is done by using unary operator * that returns the value of the variable located at the address specified by its operand.

Example:

```
int a=10; //normal variable

int*p; //declare pointer

p = &a; // Assign the address of a variable “a” to a pointer “p”

cout<<”a=”<<*p; //prints a=10
```

OBJECT POINTERS

- We have been accessing members of an object by using the dot operator.
- However, it is also possible to access a member of an object via a pointer to that object.
- When a pointer is used, the arrow operator (->) rather than the dot operator is employed.
- We can declare an object pointer just as a pointer to any other type of variable is declared.
- Specify its class name, and then precede the variable name with an asterisk.
- To obtain the address of an object, precede the object with the & operator, just as you do when taking the address of any other type of variable.

EXAMPLE : POINTERS

```
#include< iostream>
#include<conio.h>
class myclass {
int a;
public:
myclass(int x); //constructor
int get( );
};
myclass :: myclass(int x) {
a=x;
}
int myclass :: get( ) {
return a;
}
int main( ) {
myclass ob(120); //create object
myclass *p; //create pointer to object
p=&ob; //put address of ob into p
cout <<"value using object: " <<ob.get( );
cout <<"\n";
cout <<"value using pointer: " <<p->get( );
return0;
}
```

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Multiple Choice Question:

Q1. What does the following statement mean?

int (*fp)(char*)

a) pointer to a pointer

b) pointer to an array of chars

c) pointer to function taking a char* argument and returns an int

d) function taking a char* argument and returning a pointer to int

Multiple Choice Question:

Q2. The operator used for dereferencing or indirection is ____

a) *

b) &

c) ->

d) –>>

Multiple Choice Question:

Q3. Choose the right option.

string* x, y;

a) x is a pointer to a string, y is a string

b) y is a pointer to a string, x is a string

c) both x and y are pointers to string types

d) y is a pointer to a string

Multiple Choice Question:

Q4. Which one of the following is not a possible state for a pointer.

a) hold the address of the specific object

b) point one past the end of an object

c) zero

d) point to a type

Multiple Choice Question:

Q5. Which of the following is illegal?

a) int *ip;

b) string s, *sp = 0;

c) int i; double* dp = &i;

d) int *pi = 0;

Summary

In this lecture, you learned that:

- The pointer in C++ language is a variable, it is also known as locator or indicator that points to an address of a value.