Experiment No-10: Pointers in C++.

Objectives

- Introduce the pointer variables.

- Explain the relationship between the array and pointers.

- Understand the functions with pointers as arguments.

Example 1: Write a C++ program to demonstrate the working of pointers.

```cpp
#include<iostream>
using namespace std;

int main()
{
   int* pc, c;

   c = 22;
   cout<<"Address of c: "<< &c<<endl;
   cout<<"Value of c: "<< c<<endl<<endl;

   pc = &c; // Assigning addresses to Pointers
   cout<<"Address of pointer: "<< pc<<endl;
   //Get value of thing pointed by pointers
   cout<<"Content of pointer pc: "<< *pc<<endl<<endl;

   c = 11; // Changing value pointed by pointers
   cout<<"Address of pointer: "<< pc<<endl;
   cout<<"Content of pointer pc: "<< *pc<<endl<<endl;

   *pc = 2; // Changing value pointed by pointers
   cout<<"Address of c: "<< &c<<endl;
   cout<<"Value of c: "<< c<<endl<<endl;
   return 0;
}
```

Example 2: Write a C++ program to demonstrate the relationship between arrays and pointers.

```cpp
#include<iostream>
using namespace std;

int main() {

  int i, x[6], sum = 0;

  printf("Enter 6 numbers: ");
```

```cpp
  for(i = 0; i < 6; ++i) {

 // variable name x points to the memory address of the first element

     cin>> x+i; // Equivalent to scanf("%d", &x[i]) or cin>> &x[i];

     sum += *(x+i); // Equivalent to sum += x[i]
 }

 cout<<"Sum = "<< sum<<endl;

 return 0;
}
```

Example 3: Write a C++ program to understand how the addresses can be passed as arguments to a function.

```cpp
#include <iostream>
using namespace std;

void swap(int *n1, int *n2);

int main()
{
   int num1 = 20, num2 = 40;

   // address of num1 and num2 is passed
   swap( &num1, &num2);

   cout<<"num1 = "<< num1;
   cout<<"num2 = "<< num2);
   return 0;
}

void swap(int* n1, int* n2)
{
   int temp;
   temp = *n1;
   *n1 = *n2;
   *n2 = temp;
}
```

Practice Exercise

1. Write a C++ Program to change the value of a constant integer using pointers.

2. Write a C++ program to add two numbers using pointers.

3. Write a C++ program to sort arrays using pointers and functions.

Resources (Link)

[Pointers in C]