Lab 7 - wb 09/12/13

This week we are looking at pointers. Pointers store the address of a variable. So a bit like declaring a variable that points at another variable.

A pointer is a variable which stores the address of another variable. So here the data at address 4 is storing the address of the data stored in 2

Address	Data
1	12
2	'q'
3	5.87
4	2
5	'h'
6	'e'
7	'l'
8	'l'
9	'o'

A Simple pointer -

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

int main()
{
    int myNumber; //Here is my number
    int *myPointer; //This is what we are going to point at our number

    cout<<"Please Enter A Number : ";
    cin>>myNumber;

    myPointer = &myNumber; //Give the pointer the address of your number

    //If I want to output the address of my number I do this
    cout<<"Address: "<<myPointer <<endl;

    //To output the value at that address I do this
    cout<<"Value: "<< *myPointer;

    cin.ignore();
    cin.get();

    return 0;
}
```

A slightly more advanced pointer with arrays -

```
#include <iostream>
#include <stdlib.h>
using namespace std;

int main()
{
    int myNumbers[5]; //Declare An Array
    int *myPointer; //This is what we are going to point at our number array

    cout<<"Please Enter 5 Numbers : ";
    for( int i=0; i<5; ++i)
    {
        cin>>myNumbers[i];
    }


    myPointer = myNumbers; //Give the pointer the address of your number array (you dont need "&" here)

    //If I want to output the address of my number array I do this
    cout<<"Address: "<<myPointer <<endl;

    system("cls");

    //To output the values of the array I add 1 to the address for the next item

    for( int i=0; i<5; ++i)
    {
        cout<<"Address: "<<myPointer+i;
        cout<<" --- Value: "<<*(myPointer+i)<<endl;
    }


    cin.ignore();
    cin.get();

    return 0;
}
```

Have A Go - Test Your Knowledge!

Challenge 1

Write a simple program which makes a pointer to a **double**.

- Make two double variables and assign the pointer to the address of the first – output its address and value.
- Then assign the *same* pointer variable the address of the second – output its address and value.

Challenge 2

Using pointers, create an array and use pointer arithmetic to add all the values in the array together. Ask the user for the values.

Next Week - Christmas Time!

Enjoy the Christmas break!