

Lab 4 - wb 18/11/13

This week will cover Arrays and using them. Follow the demos below to cover this.

Arrays - How we declare and use them

The following demo declares an array and then sets some values into the array, then outputs them.

```
//Arrays are a way of storing many variables without having to individually declare them all

#include <iostream>

using namespace std;

int main()
{
    int MyArray[5]; //Declare an array
    // For an array of size 5 the index starts at 0 and finishes at 4

    MyArray[0] = 5; //Store something in the array
    MyArray[1] = 4;
    MyArray[2] = 3;
    MyArray[3] = 2;
    MyArray[4] = 1;

    cout<<MyArray[0]<<"", "<<MyArray[1]<<"", "<<MyArray[2]<<"", "<<MyArray[3]<<"", "<<MyArray[4];

    cin.ignore();//Clear the buffer
    cin.get();//Wait for keypress before exiting

    return 0;
}
```

Arrays and Loops

Using arrays with a loop.

```
#include <iostream>
#include <stdlib.h>

using namespace std;

int main()
{
    int MyArray[10];
    cout<<"Input 10 numbers and I will remember them!"<<endl;

    for (int i=0; i<10; ++i)
    {
        cin>>MyArray[i]; //store the users input at the index of whatever point in the loop we are on
    }

    system("cls");//Clear the console screen

    cout<<"Your numbers where: ";

    for (int i=0; i<10; ++i)
    {
        cout<<MyArray[i]<<" ";
    }

    int total =0;

    for (int i=0; i<10; ++i)
    {
        total = MyArray[i] + total; //keep a running total
    }

    cout<<endl<<"Your numbers added together make "<<total<<"!";

    cin.ignore();//Clear the buffer
    cin.get();//Wait for keypress before exiting

    return 0;
}
```

Have A Go - Test Your Knowledge!

Challenge 1

Create an array of greetings/jokes/insults. Create a program that outputs a random greeting/joke/insult until the user quits

TIP

To generate a random number include time.h and stdlib.h at the top of your program (#include <stdlib.h>)
(#include <time.h>)

Then do the following in your main function to generate a number between 1 and 100

```
int random_number;  
// initialize random seed - You don't need to know too much about this  
srand (time(NULL));  
  
// generate secret number between 1 and 100  
random_number = rand() % 100 + 1;
```

```
#include <iostream>  
#include <stdlib.h>  
#include <time.h>  
  
using namespace std;  
  
int main()  
{  
    int random_number;  
    // initialize random seed - You don't need to know too much about this  
    srand (time(NULL));  
  
    // generate secret number between 1 and 100  
    random_number = rand() % 100 + 1;  
  
    cout<<random_number;  
    cin.get();  
    main();  
    return 0;  
}
```

Challenge 2

Ask the user to input a string. Using loops and an array, analyse the string to see how many occurrences of a vowel there are and then output the results. Use an array to store the counters for the vowels.

TIP

To get a string length you can use

```
String_length = variable_name.size();
```

To reference an individual character in a string you can use the string like an array.

```
First_char = variable_name[0];
```