Workshop 1 - By Jack Horsburgh

Setting up coding environment

Choose whatever coding environment suits you. I am just going to show you one. But by all means, use whatever you feel comfortable using or would like to use.

1. You can download Visual Studio Code(VSC) here
2. https://code.visualstudio.com/docs/languages/cpp follow this guide to setup VSC for your operating system of choice. (No point in reinventing the wheel). Stop at the "Configuring IntelliSense" header
3. This is useful to help you get the basics of the editor: https://code.visualstudio.com/docs/editor/codebasics

The configuration should be done. If not hit us up.

Now for the moment, you have all been waiting for… the "hello world".....
Copy this into your editor of choice and run it by clicking the play button on the top right of the VSC screen.

Install code runner in visual studio code

```
#include <iostream>
using namespace std;
int main() {
   cout << "hello, world" << endl;
   return 0;
}
```

If you want to check out last year's repo it's here, ask us questions about it if you want and we will do our best to answer them.

The aim of this workshop is so that you can learn C++ and Oriented Programming (OOP). We will give you tasks to focus your learning towards the types of things we could be using

this year. It's also a great way to work with and bond with your fellow teammates, ask questions and help each other out.

To start off with we will be learning the basics of C++. Here is a link to a useful website that will help you learn the syntax and also has some example code. Feel free to ask any questions. We are here to help.

Below are a few exercises we would like you to complete. The link above should help you with any syntax related problems you may experience and will also teach you the basics for C++.

Exercise 1 - Grading

Requires:
variables, data types, and numerical operators
basic input/output
logic (if statements, switch statements)

1. Write a program that allows the user to enter the grade scored in a programming class (0-100). If the user scored a 100 then notify the user that they got a perfect score.
2. Modify the program so that if the user scored a 90-100 it informs the user that they scored an A
3. Modify the program so that it will notify the user of their letter grade 0-59 F 60-69 D 70-79 C 80-89 B 90-100 A
4. Modify the program so that if they input an incorrect number, print out, "Error! mark was not valid"

Exercise 2 - While(user == gullible)

Requires:
variables, data types, and numerical operators
basic input/output
logic (if statements, switch statements)
loops (for, while, do-while)

1. Write a program that continues to ask the user to enter any number other than 5 until the user enters the number 5. Then tell the user "Hey! you weren't supposed to enter 5!" and exit the program.
2. Modify the program so that after 10 iterations if the user still hasn't entered 5 will tell the user "Wow, you're more patient than I am, you win." and exit.

Exercise 3 - Pancake Gluttony

Requires:
variables, data types, and numerical operators
basic input/output
logic (if statements, switch statements)
loops (for, while, do-while)
arrays

1. Write a program that asks the user to enter the number of pancakes eaten for breakfast by 5 different people (Person 1, Person 2, ..., Person 5). Once the data has been entered the program must analyze the data and output which person ate the most pancakes for breakfast.
2. Modify the program so that it also outputs which person ate the least number of pancakes for breakfast.
3. Modify the program so that it outputs a list in order of number of pancakes eaten of all 5 people.

i.e.
Person 4: ate 10 pancakes
Person 3: ate 7 pancakes
...
Person 5: ate 0 pancakes

Exercise 4 - Fun With Functions

Requires:
variables, data types, and numerical operators
basic input/output
logic (if statements, switch statements)
loops (for, while, do-while)
functions

Write a function titled say_hello() that outputs to the screen "Hello"

1. Modify the function so that it takes an integer argument and says hello a number of times equal to the value passed to it.
2. Make another function that takes two integers arguments and then returns an integer that is the product of the two integers. (i.e., integer1: 4, Integer2: 5 returns: 20)
3. Make a function called half() that takes an integer argument. The function must print the number it received to the screen, then the program should divide that number by two to make a new number. If the new number is greater than zero the function then calls the function half() passing it the new number as its argument. If the number is zero or less than the function exits.

Exercise 5 - Strings are your friends, until they betray you

Requires:

variables, data types, and numerical operators

basic input/output

logic (if statements, switch statements)

loops (for, while, do-while)

functions

strings & string functions

1. Write a program that asks for a user first name and last name separately. The program must then store the users full name inside a single string and output it to the string. I.e. Input: John, Input: Smith, Output: John Smith
2. Modify the program so that it then replaces every a, e, i , o, u w/ the letter z. I.e. John Smith -> Jzhn Smzth
3. Modify the Program so that it reverses the users name. I.e. John Smith -> htimS nhoJ

References

http://www.cplusplus.com/forum/articles/12974/ exercises were from here