CI411 - 2022 - Game Programming - Week 2

Useful Links

C++

https://www.w3schools.com/CPP/cpp_syntax.asp

https://www.w3schools.com/CPP/cpp_output.asp

https://www.w3schools.com/CPP/cpp_comments.asp

https://www.w3schools.com/CPP/cpp_variables.asp

https://www.w3schools.com/CPP/cpp_user_input.asp

https://www.w3schools.com/CPP/cpp_data_types.asp
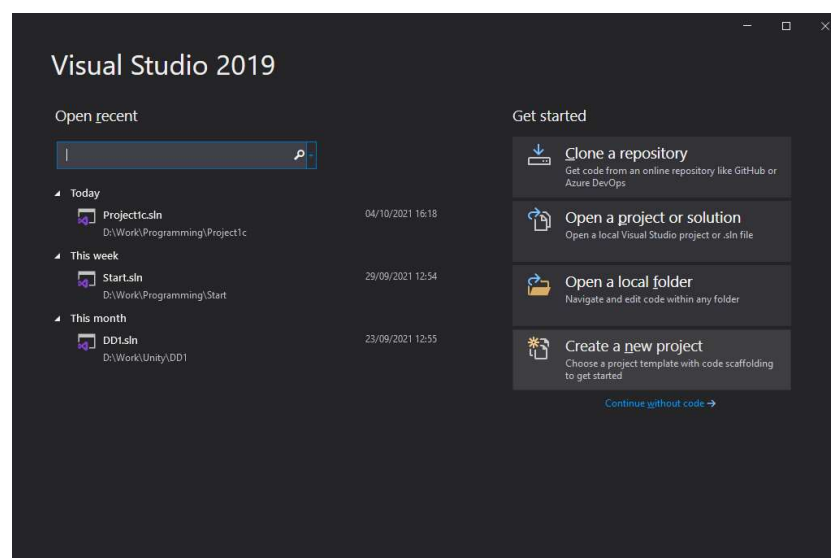
Visual Studio

Open Visual Studio

You may be prompted to select a theme on start-up.

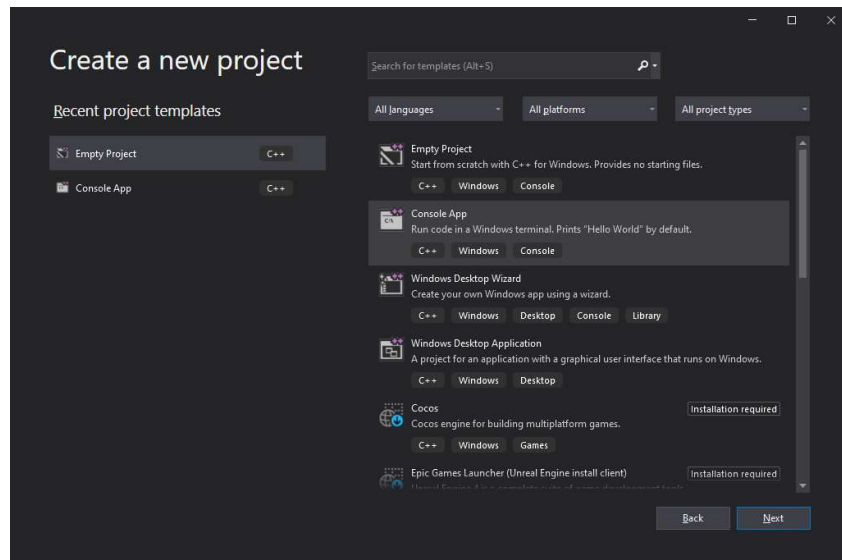DARK is recommended to avoid eye strain.

You can either work in the project you started last week if it shows in the list of projects or create a new one.

Try to create a new project

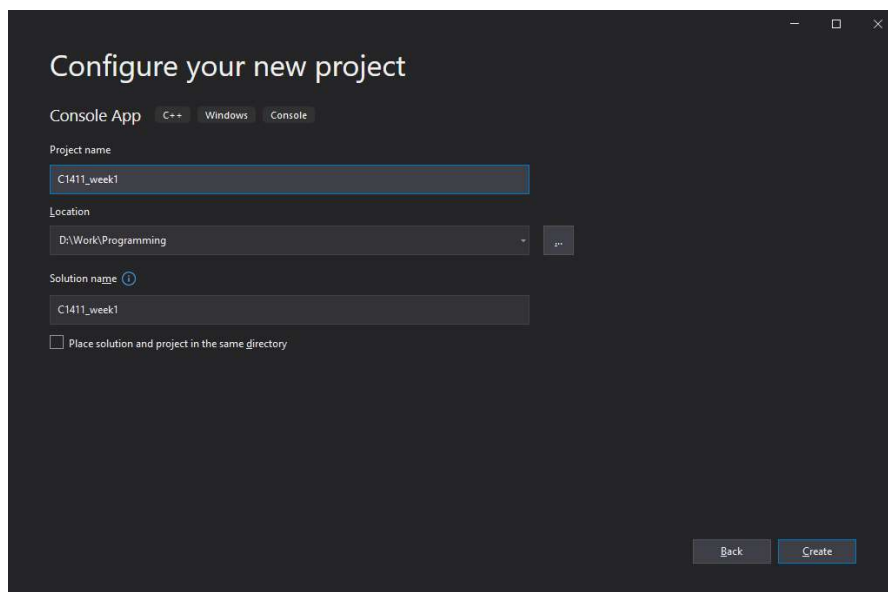Select Console App C++ with hello world by default
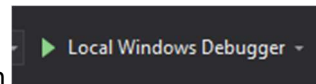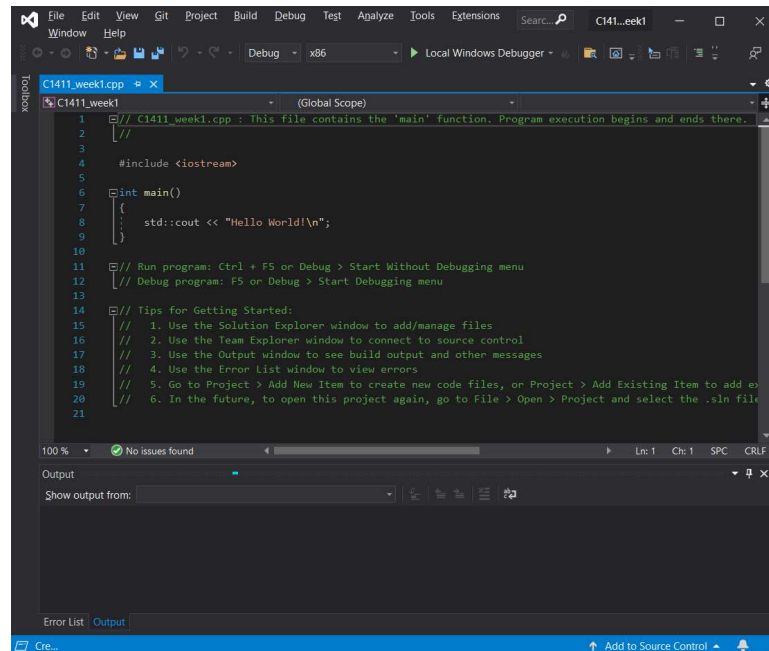
Name the project CI411_Week2

Set the Location of project folder to be on your Onedrive in an appropriate folder for this week

Check the box to place the solution and project in the same directory

The editor should open with the basic hello world programme

Test Run the programme by clicking the play button

A text-based console should open and look similar to below
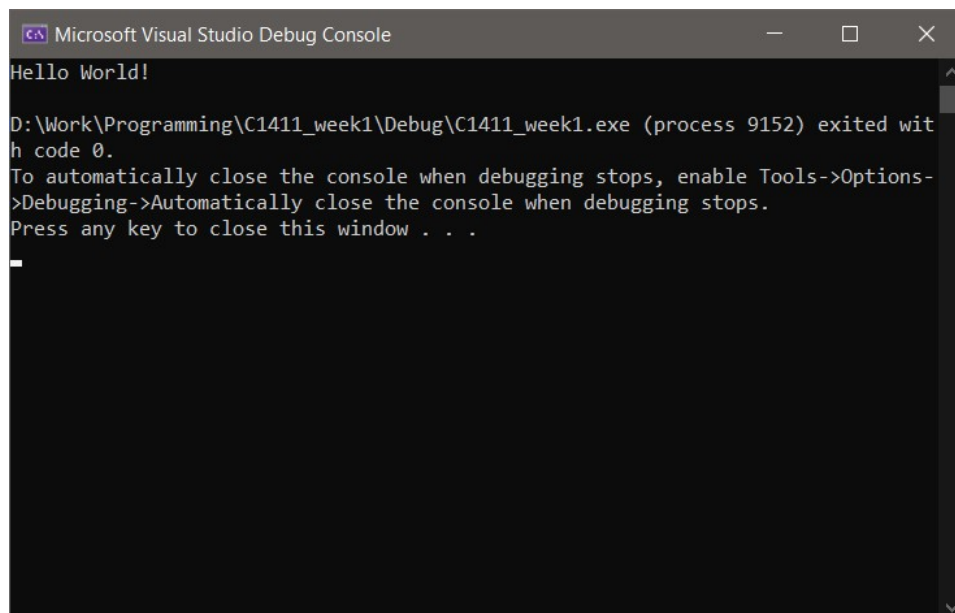
Delete the Original Green Text

Rename the Title to CI411 Week 2

Add your Name or Student ID to the top

Delete the hello world text

```cpp
//--------------------------------------
// ---------- CI411_Week2
// ---------- David Dorrington, UoB 2022
//--------------------------------------

#include <iostream>

int main()
{


    return 0;
}//-----

```

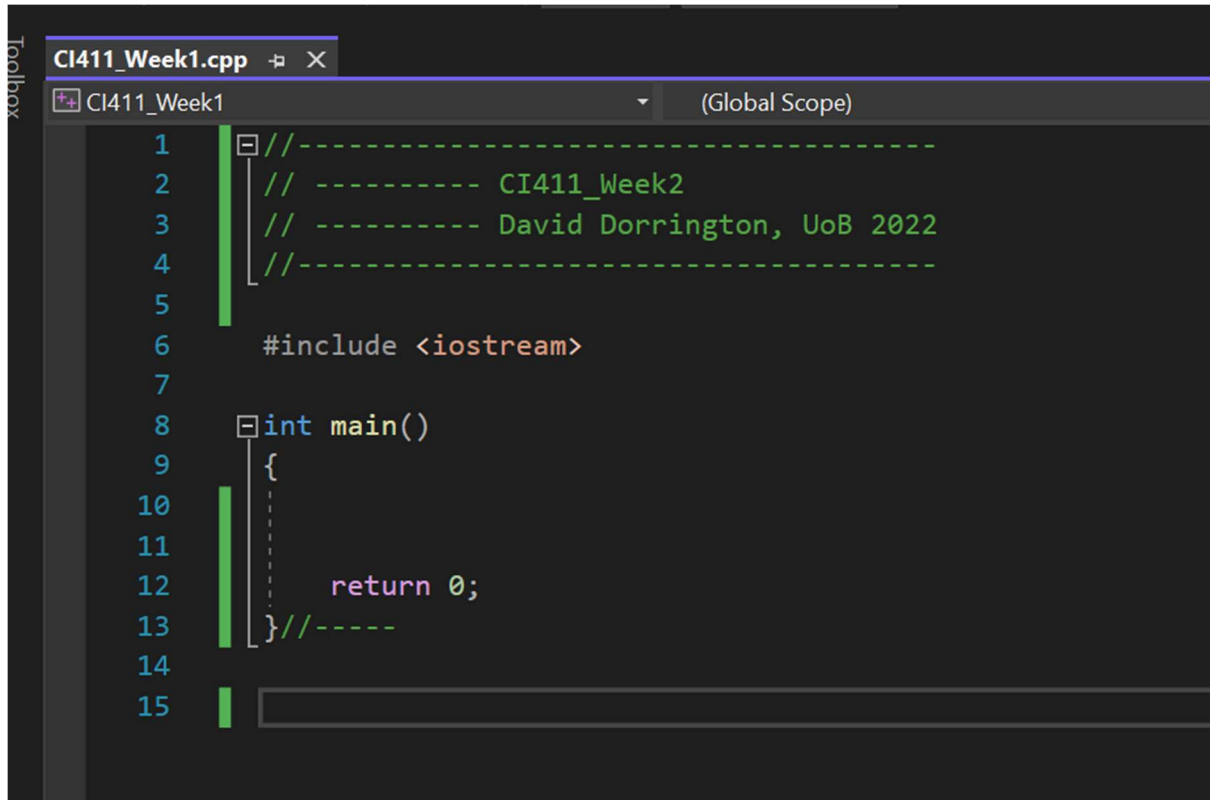# CI411 - 2022 - Game Programming - Week 2

Output and Arithmetic Operators

Create a programme the displays strings and numbers.

Try something similar to the examples below.

Note how the program computes the different commands
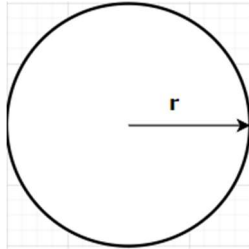
What can you use instead of endl?

```cpp
//-------------------------------------
// ---------- CI411_Week2
// ---------- David Dorrington, UoB 2022
//-------------------------------------

#include <iostream>
using namespace std;

int main()
{
    // Arithmetic Operators
    cout << "  Arithemetic opererators" << endl;
    cout << "----------------------------" << endl << endl;

    cout << "7 + 3 = " << 7 + 3 << endl;
    cout << "7 - 3 = " << 7 - 3 << endl;
    cout << "7 * 3 = " << 7 * 3 << endl;

    cout << "7 / 3 = " << 7 / 3 << endl;
    cout << "7.0 / 3.0 = " << 7.0 / 3.0 << endl;
    cout << "7 % 3 = " << 7 % 3 << endl;

    cout << "7 + 3 * 5 = " << 7 + 3 * 5 << endl;
    cout << "(7 + 3) * 5  = " << (7 + 3) * 5 << endl;


    // End Message
    cout << endl << endl << "  Goodbye" << endl;
    cout << "----------------------------" << endl << endl;

    return 0;
}//-----
```

Note: we can only have one main() function in a program, add to / replace the content in it instead of repeating the function.

Remember to save frequently and test run the program

Circle Calculations

Create a program that calculates the **diameter, circumference, and area** a circle, given its **radius (r)**.

Diameter = 2r Circumference = 2π r Area $= \pi\ r^2$ π = 3.142 <center>π is pi</center>	

You will need to use variables

This is one possible way of starting

```
24          cout << "(7 + 3) * 5  = " << (7 + 3) * 5 << endl;
25
26          // Cirle Calculations
27          cout << endl << "  Circle Calculations" << endl;
28          cout << "---------------------------" << endl << endl;
29
30          // Variables
31          const float PI = 3.142;
32          float radius = 5; // Change this
33
```

You could prompt the user to input a radius

```
33
34          // Prompt user
35          cout << " Please enter a value for a radius: ";
36          cin >> radius;
37
```

Range of a Missile

Create a programme that calculates the time it takes for a missile to travel the range.

Time taken = Missile Range / Missile Speed

Prompt the user to enter the Speed of the missile in metres per second and then the Range in metres. Then calculate and display the result.

```
run:

    ----------  Missile Calc ----------
Please input the missile speed (m/s)
12
Please input the missile range (m)
300
Time taken to travel = 25.0 seconds
```

Calculating the damage inflicted on a Character

Create a programme that calculates the new character HP after an attack has been sent. There is a shield that reduces that attack by a percentage.

HP = HP – (attack * ((100 – shield strength)/100))

```
-------- Character Damage Calc --------
HP = 100.0
Please input the attack power
30
Please input the shield power 0 - 100%
50
attack = 15.0
new HP = 85.0
```

Above is an example but you do not have to do it this way, you do not have to do it this way, you can use any equation you want to.

Try Something Yourself

Can you use the tools introduced today to create another simple game-based arithmetic calculation that you could program?

Reading

https://www.toppr.com/guides/computer-science/introduction-to-c/operator-and-expressions-operators/arithmetic-operators/

This should be summarised in your log for this week.

Upload your Work and update your log

When you have completed the task, please complete the workshop log for this week. Find the template in the assessment section on the myStudies page.

You will need to take screen grabs of your source code and the running programme.

Use the windows snipping tool.

You will need to describe what you were doing and critically evaluate how well you completed the tasks.