Semester 2 2024
**Astroinformatics II**

# Tutorial 4: Introduction to C/C++ (I)

In this tutorial session, we will practice the usage of the GCC and coding in C++

## 1 Using the GCC

To make sure GCC is installed, run the following command in the console (terminal):

```
$ g++ --version
```

### 1.1 Compilater Options

The general GCC compilation command format is:

`gcc [options] [filenames]`
with for using C++:
`g++ [options] [filenames]`

**Task:** Compile the file `testprogram.c` into a `program.out` and run it.

## 2 Program with Input and Output

With what we have learned so far, we can write programs with input (from the console) and output that carry out computations.
As an example for such a program, here is code on how to convert temperature values given in Celsius to Fahrenheit.

```cpp
#include <iostream>

using namespace std;

int main()
{
    float far, cel;

    cout << "\n\n Convert temperature in Celsius to Fahrenheit :\n";
    cout << "-------------------------------------------------\n";

    cout << " Input the temperature in Celsius : ";
    cin >> cel;

    far = (cel * 9.0) / 5.0 + 32;

    cout << " The temperature in Celsius    : " << cel << endl;
    cout << " The temperature in Fahrenheit : " << far << endl;
    cout << endl;

    return 0;
}
```

**Task:**
a) The program code doesn't have comments. Try to understand what the above program does, line by line.
b) Then write a similar program for another equation, e.g. for the volume of a sphere (but you can also chose your own).