Overview

- **Language**

➢syntax and keywords we must use to write source code with instructions the program should perform

- **Compiler**

➢the compiler can turn source code into an executable program for the machine to run

- **IDE (integrated development environment)**

➢has text editor functionality plus fields and buttons to aid writing source code, building the binary, and debugging the functions

- **Libraries**

➢bring well known and pre tested functions useful for different applications

Setup

- enviroment for scientific computing
- => linux (lubuntu LTS) .or. => windows + MinGW

setup in windows

- **Language => Fortran (modern)**
- ➢ probably because you or your work group have legacy code written in fortran and it is fast for math
- **Compiler => gfortran (GNU' fortran) => MinGW (Minimal GNU for Windows)**
- ➢ because it is free, it is from a trustworthy group (GNU), it is primarily developed for linux, then made available for windows via MinGW, therefore your program can be built in machines from groups using either operational system.
- **IDE => Code::Blocks**
- ➢ it is free, it is good, it has the easiest setup, it sets up together with MinGW
- **Libraries => GSL (GNU scientific library)**
- ➢ it is free, it is from GNU too, it has polynomial solvers, statistical test functions, random number generators, etc..., stuff from IMSL (INTEL MATHEMATICAL SCIENTIFIC LIBRARY) your legacy code might be using
- ❖***SEE THE DETAILED GUIDE IN "2-Setup-windows"***

setup in linux

- install GNU' stuff with the native package manager
  - gfortran
    ```
    sudo apt install build-essentials gfortran gdb
    ```
  - gsl
    ```
    sudo apt install gsl-bin libgsl0-dev gsl-doc-info gsl-doc-pdf gsl-ref-html
    gsl-ref-psdoc
    ```

- install codeblocks as well
  ```
  http://www.codeblocks.org/downloads/26
  ```

➢ enjoy the same functionality and tool availability in either windows or linux

References

- *modern* **fortran**
- http://people.ds.cam.ac.uk/nmm1/fortran/
- **GNU**
- https://www.gnu.org/gnu/gnu.html
- **gfortran**
- https://gcc.gnu.org/fortran/
- **MinGW**
- http://www.mingw.org/
- **Code::Blocks**
- http://www.codeblocks.org/
- **GSL**
- https://www.gnu.org/software/gsl/