# ACIT 2515

# Virtual environments

# aka running your Python program

# Why virtual environments are useful

- There are different ways of running Python
  - In Windows: py
    - For example: `py -3.7` to run Python3.7
  - In Linux: `python3` (usually)
- Additional libraries are installed using pip
  - In Linux: pip3
- Use virtual environments
  - Cross platform
  - Repeatable setup
  - Easier to use in the long term
  - Allows separation of dependencies between projects

# Best practices

- Use the `venv` module from Python
- Create one virtual environment per project / assignment
- The virtual environment will be created in a folder
  - will contain binaries (scripts) to help you work with Python programs
  - will contain the libraries required by your program to run
- The virtual environment needs to be **activated** in order to work

# Creating and activating a virtual environment

- Create a folder for this course on your computer
- Browse to the location in your terminal if needed
  - Use `cd`
- Create the virtual environment:
  - `py -m venv venv` (in Windows)
  - `python3 -m venv venv` (in Linux)
  - This will create a folder called `venv`
- To work on your Python project, activate the virtual environment:
  - `.\venv\Scripts\activate.bat` (Windows command line)
  - `.\venv\Scripts\activate.ps1` (Windows Powershell)
  - `source venv/bin/activate` (Linux/macOS)

Your prompt will display `venv` when the virtual environment is active.

# Using the virtual environment

- When the virtual environment is active, you can run your Python programs using just `python`.
- You can install additional packages and libraries using `pip`:
  - `pip install pytest` will install the `pytest` library in the virtual environment

- When you are done working on your project, use the `deactivate` command to turn off the virtual environment.

# Use the interactive Python shell

- You can run a Python module and keep the Python interpreter open
- Useful for debugging

```
$ python -i file01.py
Hello from file01!
>>> hello()
Hello.
```