Practical Test 5

1. Setting up for Practical Test 5

Within your home directory (or a temporary directory) create the following structure:

- FOP
  - PracTest5

We will be working in the **PracTest5** directory for the test.

2. Type in and modify a Python program

Download the program from the assessment page, test5.py. You will be making a single plot of combined data, and then running the program multiple times using a parameter sweep.

Modify the code to:

1. Fix any errors
2. **Plot**:
   a. Add a figure title "SIR Model with r: <rvalue>, a: <avalue>".
   Make sure it uses the values from the variables – do not hard-code the numbers in the string.
   b. Change the x-axis label "# Days", and the y-axis label "# People"
   c. Modify the colours and markers:
      i. Susceptible people as a solid black line
      ii. Infected people as red triangles
      iii. Recovered as green diamonds
   d. Save the plot with a name to indicate the r and a values
3. **Parameter Sweep:**
   a. Change the test5.py code to take command line arguments for r and a values
   b. Using the sweep code provided, set up a parameter sweep for the simulation – varying the r and a values

3. Update the README file

You should know this...

4. Submission

Submit you test via Blackboard using the link on the Assessment page.

End of Test

- Hint # 1 - "r" and "a" values are noted in the comments
- Hint #2 – build a string for the title
  - plt.title("SIR model.... " + str(trans_const) + " the rest....")
  - So plt.title needs one string as an argument, so you need to build a string with all the things you want in the title.
- Hint #3 – getting S column from the 2d array
  - resultarray[:,0] # gives the "S" values
- Hint #4 – changing line colour
  - plt.plot(resultsarray[:,0], "ko") # black squares
- Hint #5 – command line arguments
  - You'll need to import sys, then use sys.argv[?] to access the command line values
  - You can test this by running the program on the command line (without the sweep)