Assignment 3

Explore the physics of the phase transition in the 2D Ising model on a square lattice, in the absence of an external field ($h = 0$). In particular, you should:

- Find the critical temperature T_c of the phase transition between ferromagnetic and paramagnetic phases, and plot the average magnetisation across the phase transition.

- Plot the specific heat capacity as a function of system size at $T = T_c$.

- Discuss the effect of varying the:
  - system size
  - initial state
  - Metropolis sample size & update method (random or sequential)

- Feel free to explore other features of the phase transition!

Submit your work online as **a pdf report (max. 5 pages) together with file(s) containing executable Python code that reproduces your results**. Your report should explain your methods and present your conclusions, supported by appropriate numerical evidence from the simulations. Include your own name in all file names.

Deadline: 2nd December @ 23:59