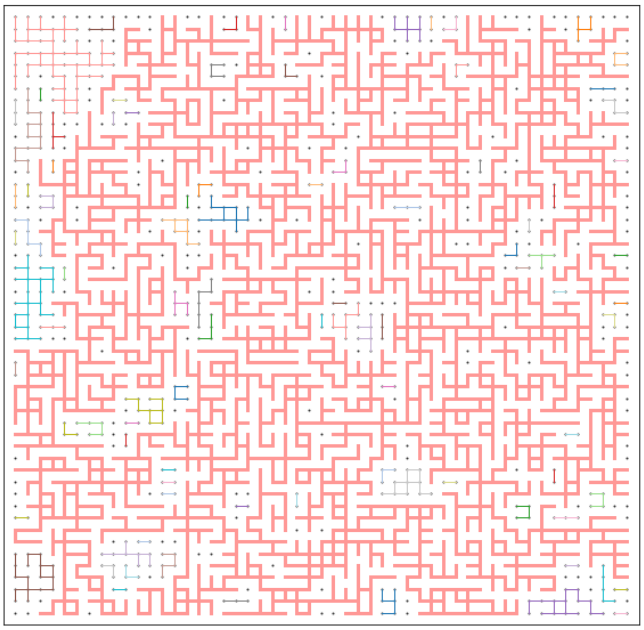
Estimation of Bond Percolation Threshold

In this assignment, you will create square lattices with dimensions NxN and simulate bond percolation on these lattices. You are expected to run simulations to estimate the percolation threshold and analyze the simulation results for the cluster sizes and the order parameter P_∞. Try to run as many simulations as necessary to converge to the p_c.

a) Visualize clusters (like the example below) on grid systems for different p values with small enough increments and around p_c **(40pt)**
b) Plot percolation probabilities for different p values ranging between (0,1) **(20pt)**
c) Plot average finite cluster sizes for different p values **(20pt)**
d) Plot mean and std. of P_∞ for different p values **(20pt)**
e) Estimate p_c (mean and CI) for different systems sizes and plot N vs. p_c **(Bonus +10pt)**



Please refer to **NetworkAssignment2** notebook for the helper functions and further instructions. You can make changes or improvements if needed.

Please make sure to give yourself sufficient amount of time since the simulations may take a while to complete.

Please share your assignment following the format below.

- Name your file as a compressed file **yourSUid-hw2**
- Share both IPython notebook and HTML file exported from the notebook.
- **Please report your answers in a PDF file, provide as much as explanation possible and share figures to justify your interpretations.**