

Homework Assignments

Flow Chart due Wed, Febr. 19, hard copy

Write a flow chart for your main project program. Be as detailed as possible. This can be handwritten, whatever is easiest. This might even mean that you have one less detailed flow chart and then more detailed flow chart elements. For the more detailed flow chart(s) you may want to list the main variables for your program

You find examples for flow charts for the random walk analysis (see your class notes) and the DLA flow chart. In the case of the DLA program you would specify the lattice array as one of your variables and x,y as integer variables for the random walker position.

Background will be due Mo in a week, Febr. 24, hard copy: bibliography and descriptions (can be keywords)

Goals: As part of your first talk you will describe the model and also the **background** for the model you will use for your project. In case of the traffic flow model this would mean that you find out (by finding and reading the appropriate references) which other traffic models have been studied (e.g. two lane, city grid, ...) and what the main results are (including some theoretical and experimental results). You should become an expert in the topic of your project. You will find this information in scientific papers in a paragraph usually called "introduction" or "background" or "theory".

Your bibliography should include all relevant papers you found. Your background should be a summary of what you have found.

Please read my comments to your previous bibliography. I described more specifically how to find more background papers and what it implies for your specific project.

How to Read Papers:

To scan efficiently through the papers and to read more carefully through the papers, indicate on a copy of each paper (and/or take careful notes about each scientific paper): motivation, previous models, model/simulation, results. These keywords will help you to identify most important papers and to summarize all your findings for your papers.

How to Give Reference: (Examples; format as in APS journals)

Article: D. Chowdhury, L. Santen and A. Schadschneider, *Curr. Sci. India* **77**, 411 (1999).
Book: M.E.J. Newman, *Computational Physics*, Revised and expanded, (Createspace, North Charleston, SC, 2013).

Gould, H.; Tobochnik, J.; Christian, W. An Introduction to Computer Simulation Methods : Applications to Physical Systems, Revised third.; ComPADRE: Place of publication not identified, 2017.

Upcoming Deadlines:

- Febr. 19: 1st Version of Flow Chart for Main Project
- Febr. 24: 1st Version of Background
- Febr. 26: 1st Version of Talk Slides
- March 3: Final Version of Background
- March 18: Final Version of Flow Chart
- **Fr, March 21, 3-4pm:** Talks