Bibliography/Model

(due Tuesday, January 24, 2023, at the beginning of class)

Goals:

(A) Goal (Now): As listed below your assignment is to have a useful list of references and a detailed model description. The references will be the references of your scientific paper(s) of the course. Use as guidance for your search of references: Main Goal is that you will know the **model** of your project precisely. For the example of the traffic flow it would mean that you know exactly all rules of how cars are put on the street,how they are moved further on the street and how their velocities are updated. Goal is that you know every detail of your model, so that you will be able to write the program for your model (starting mid February).

Usually it is a long process to find the paper(s) which describe a simple enough model (for a one semester long instead of year long project) and to find paper(s) which are written clearly enough (the majority of papers are written for experts and are not always very pedagogical). You will have to jump from paper to paper, i.e. start with a list of papers you found via web of science, scan the papers, check references therein and go from those references to the next set of papers, etc. This takes many days and sometimes weeks of work and that's why we dive into the bibliography already now.

(B) Goals (Later): As part of your first talk you will also describe 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".

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: 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).

Hand-In:

1. references of scientific papers which specify model & background of your project. (The final version of your bibliography should have at least 5 references of scientific papers. Goal right now (1st version) is that you find the best possible paper for your project. Later you want to have references to become an expert in your project topic.)

2. any further references, which are necessary to define your model precisely and which provide the information about previous work on the topic of your project. (E.g. if you do a simulation of many particles, you would need information about molecular dynamics simulations.)
3. hard-copy of paper(s) which describes best the model you will use (In case of a book being your major source, just scan in the appropriate page(s).
4. Describe the model of your project with as complete set of rules as possible (one or more pages; clearly hand-written notes are fine)