1. **Decide a problem** to be solved and consult its appropriateness with the teacher.
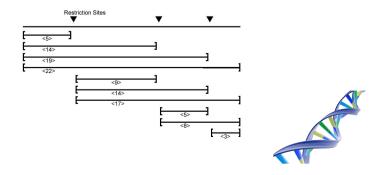2. **Solve the problem**. The output for course credit consists of
   - **code** in SICStus Prolog with a constraint model
   - example **data**
   - **documentation** with the following sections
     - precise (formal) description of the problem
     - complete abstract description of the constraint model
     - "user manual" – how to run the program
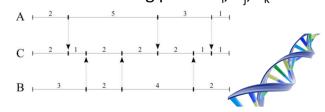   - results of experiments (different models, different search strategies, different data)

- Path finding for multiple agents
- Path finding for a cleaning robot
- general scheduling with unary resources (JSSP)
- dinner party problem
- social golfer problem
- peaceable armies of queens
- open stacks problem
- 2D protein folding
- …

DNA is cut at several locations by an application of enzyme. We know distances between all the cuts and we look for the exact positions of the cuts. Propose a constraint model to solve the problem.

Assume that DNA is cut by an enzyme and we know distances between neighboring points $a_i - a_{i-1}$. Now a different enzyme cuts DNA at different points b_j and again we know the distances $b_i - b_{i-1}$. Finally, both enzymes are applied together and DNA is cut in all points a_i and b_i so we get points c_i and again, we know the distances $c_i - c_{i-1}$ (note that some points a_i and b_i my overlap so the number of points c_k may be smaller than the sum of the numbers of points a_i and b_j). From the multisets of distances Δa, Δb, and Δc, find the all the cutting points a_i, b_j, c_k.