1. Formulate the join selection problem as genetic algorithm. That is, given a join tree, select the appropriate join method (e.g. hash join, sort merge join, etc.). Specify the encoding, cross-over and mutation. (3)

2. The two-phase heuristic uses first iterative improvement and then simulated annealing. What happens when the two are exchanged? Does it make sense to exchange simulated annealing with tabu search (in the unmodified two-phase heuristic)? (2)

3. Implement Iterative Dynamic Programming. You can use the previous DP implementation as basis. (5)