Homework 4

Try to be precise and to the point. Your answers should be short.

1. Suppose the selection rule for the interval scheduling problem is the following. Select a request that has the fewest possible requests overlapping it. Give an example where this rule does not provide an optimal solution.
2. Find a necessary and sufficient condition on n requests that guarantees that any optimal solution to the interval colouring problem would require n resources.
3. Explain an algorithm for the interval colouring problem that runs in $O(n \cdot \log(d))$ time. Here you just need to say what data structure you would use, describe your data structure, and explain why you achieve the bound. Keep your answer compact.
4. Solve Exercise 2 from Lecture Note 8.
5. Solve Exercises 1, 2, 3 from Lecture Note 9.