## Assignment I - Complexity

I1. What is the time-complexity of a decider for L1 = { ww | w ∈ {a,b,c}\* } ?

For the following items, LA and LB are languages over alphabet Σ such that LA ≠ Σ\*, LB ≠ Σ\*, LA ≠ φ and LB ≠ φ.

Explain why each of the following statements involving classes P and NP is true.

I2. If LB ∈ P, then LA ∩ LB ≤P LA.

I3. If LB ∈ P, then LA U LB ≤P LA.

I4. If LA ∈ NP, LB ∈ P, and LA U LB is NP-complete, then LA is NP-complete.

I5. Reflect on your learning experience and report your observations insights.