College of Computer & Information Science Northeastern University CSG714: Theory of Computation

Problem of the Week – 2

Minimizing number of states and stack alphabet size

Consider the collection of all context-free languages over the alphabet $\{0, 1\}$.

- Determine the smallest integer s, if it exists, such that for every context-free language L there exists a PDA that accepts L and has alphabet size at most s?
- Determine the smallest integer s, if it exists, such that for every context-free language L there exists a PDA that accepts L and has at most s states?

Justify your answers.