NSWI101
SECOND HOMEWORK ASSIGNMENT

The goal of the assignment is to model a multi-threaded web server in UPPAAL. The server should contain two threads, thus being able to serve two clients "in parallel". Note that similar to Spin, UPPAAL uses the interleaving semantics, so, except for the channel communication, in each step, just a single event occurs (a single transition is taken). The server will provide two services, A and B, processing of the first type of service will take 3 seconds, while processing of the other one will take 5 seconds (according to your interpretation, this can mean either "at most" or "at least"). Each client will be single-threaded, requesting a single service each time, i.e., waiting for a response before issuing any other requests to the server.

Analyze some interesting properties of your model, for example absence of deadlocks (or explain the reason why and in which situations it can occur) and response time – those are just examples, feel free to come with one or two other ones, fitting your model.

Make the model as simple as possible (e.g., the client can consist of just three or four states). You are allowed to make additional assumptions, such as that the clients are served in a FIFO order or, on contrary, based on the type of the service they request, or in a random order.

Write a brief description of the model and of the properties you attempt to analyze/verify.