An office of a state license bureau has two types of arrivals. Individuals interested in purchasing new plates are characterized to have interarrival times distributed as EXP0(6.8) and service times as TRIA (8.7, 13.7, 15.2); all times are in minutes. Individuals who want to renew or apply for a new driver's license have interarrival times distributed as EXP0(8.7) and service times as TRIA (16.7, 20.5, 29.2). After the service has completed, 75% customers will go for their daily special care service and others will leave the office. Special care service has a service time of UNIF(1.2, 2.9). The office has two lines, one for each customer type. The office has five clerks: two devoted to plates (Mary and Kathy), two devoted to licenses (Sue and Jean), and the team leader (Neil) who can serve both customer types. Assume that all clerks are available all the time for the eight-hour day.

1) Design the above model and make 30 replications of the model.

2) Modify the above model by including 30 minutes lunch break for each clerk. Start the first lunch break 180 minutes into the day. Lunch break should follow one after the other covering a 150-minute time span during the middle of the day. The breaks should be given in the following order: Mary, Sue, Neil, Kathy and Jean.

3) Viva