

For each scenario that is to be simulated, decisions need to be made concerning the length of the simulation run, the number of runs (also called replications), and the manner of initialization that is required. The simulation analyst will need to understand the difference between Sue and Bob's performance and how that can be included in the simulation as the service time of the attendant, and then make changes in the simulation to include that as an input parameter and not hardwired into the equations for the attendant. However, if the simulation has tens or hundreds of input parameters, conducting a run for each combination of the parameters can be unmanageable. If there are only a few input parameters, this approach will work. The simulation analysts may also want to use a technique called Monte Carlo analysis (described in a later chapter) that relies on repeated random sampling to compute the results of the simulation. One approach to conducting experiments is to vary the input data for each simulation run and observe the behavior of the system. To illustrate the importance of thinking through experiments during the conceptual model development, what would happen if you were presenting the results of these runs to the client (i.e., gas station management), and they ask you whether the results change if Sue is working as an attendant versus Bob? The changes needed may not be that difficult, but it requires time and resources to change the conceptual model, collect data, make the changes to the simulation, do the verification and validation, and run the experiments again.