```c
int main(void) {
    double end_time = SIM_TIME; // Total time to simulate
    double Ta = ARR_TIME;       // Mean time between arrivals
    double Ts = SERV_TIME;      // Mean service time
    double time = 0.0;          // Simulation time
    double t1 = 0.0;            // Time for next event #1 (arrival)
    double t2 = SIM_TIME;       // Time for next event #2 (departure)
    unsigned int n = 0;         // Number of customers in the system

    // Seed the RNG
    rand_val(1);

    // Main simulation loop
    while (time < end_time) {
        if (t1 < t2) {        // ** Event #1 (arrival)
            time = t1;        // Set time to that of current event
            n++;               // Increment number of customers in system
            t1 = time + exponential(Ta); // Assign time for the next arrival event
            if (n == 1) {      // If first customer in system then
                t2 = time + exponential(Ts); // assign its departure time
            }
        } else {            // *** Event #2 (departure)
            time = t2;        // Set time to that of current event
            n--;              // Decrement number of customers in system
            if (n > 0) {      // If customers in system then
                t2 = time + exponential(Ts); // assign next departure time
            } else {         // If no customers in system then
                t2 = end_time; // assign next departure to "infinity"
            }
        }
    }
    return(0);
}
```

---

**Main program from mm1_simple.c**

From MacDougall (page 15, Fig. 1.5)

Given:

\[ a = 20, 30, 25, 65, 80, 80 \]
\[ x = 80, 150, 90, 60, 80, 90 \]

<table>
<thead>
<tr>
<th>X</th>
<th>B</th>
<th>Ts</th>
<th>U</th>
<th>W</th>
<th>Wq</th>
<th>L</th>
<th>Lq</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
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