# Topics Covered in Lecture 21

12-September-2002

- Home work #4 solutions are discussed.
- Chapter 8 titled **Continuous-Time Markov Chains** is started.
- Let $X(t)$ be the number of jobs in queue at time $t$ then $\{X(t)|t \geq 0\}$

$$
\begin{aligned}
X(t) &= k \\
X(t+h) &= \begin{cases} k-1 \\ k \\ k+1 \end{cases}
\end{aligned}
$$

- $$
\begin{aligned}
X(t) &= 0 \\
X(t+h) &= \begin{cases} 0 & \text{with probability } 1-\lambda h + o(h) \\ 1 & \text{with probability } \lambda h + o(h) \end{cases}
\end{aligned}
$$

- $$\pi_0(t+h) = \pi_0(t)[1-\lambda h + o(h)] + \pi_1(t)[\mu h + o(h)]$$