

# Multiprogrammed Batch Systems

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Read one record from file	15 $\mu$ s
Execute 100 instructions	1 $\mu$ s
Write one record to file	<u>15 <math>\mu</math>s</u>
TOTAL	31 $\mu$ s
Percent CPU Utilization = $\frac{1}{31} = 0.032 = 3.2\%$	

Processor is often idle

- even with automatic job sequencing
- I/O devices are slow compared to processor

Figure 2.4 System Utilization Example