CS 344 / 715
Lecturer: Simina Fluture
Lecture # 2

Topics: **Review of some of the Operating Systems Concepts:**
Interrupts
CPU scheduling
Context Switch Busy Waiting

Readings: **Web Lecture** **Bibliography:** **[SG] (ch. 14)**
Class notes **[AT] (ch. 1)**

Short History
1945 – 1985: *mainframes, large and expensive*
not too many computers could be afforded at once.
computers operated independently from one another.

mid 80s – present: *development of* ***powerful computers*** *(8, 16, 32, 64 bit CPUs)*
development of ***high-speed computer networks*** *(**LAN, WAN**)*

LAN: **Local Area Network**
common links **– twisted links and fiber optics cabling**
Common configuration **– multi-access bus, ring, star networks**
Speed range **– megabit/sec – 1gigabit/sec**
No central controller

WAN: **Wide Area Network**
Common links **– telephone lines, microwave links, satellite channels**
Speed range **– 1200 bits/sec – megabit/sec**
Communication controllers **– communications processors, routers**

Definitions
Centralized systems

Distributed systems (network system)

Distributed vs. Centralized (Parallel)
Advantages: **Computation speedup**
Resource sharing
Reliability
Communication

Disadvantages: **Software**: little software exists
Networking: the network can saturate
Security: easy access to secret data

Multiprocessing Systems

Asymmetric multiprocessing model *(master/slave)*

Symmetric multiprocessing model *(SMP)*

How specific issues are addressed in a Multiprocessing system vs. a Uniprocessing system
Ready Queue
Interrupts
Scheduling
Context Switch vs. Busy Waiting