АРХИТЕКТУРА СОВРЕМЕННЫХ ЭВМ

Лекция 3:
Типовое устройство компьютера. Устройство внешних носителей данных

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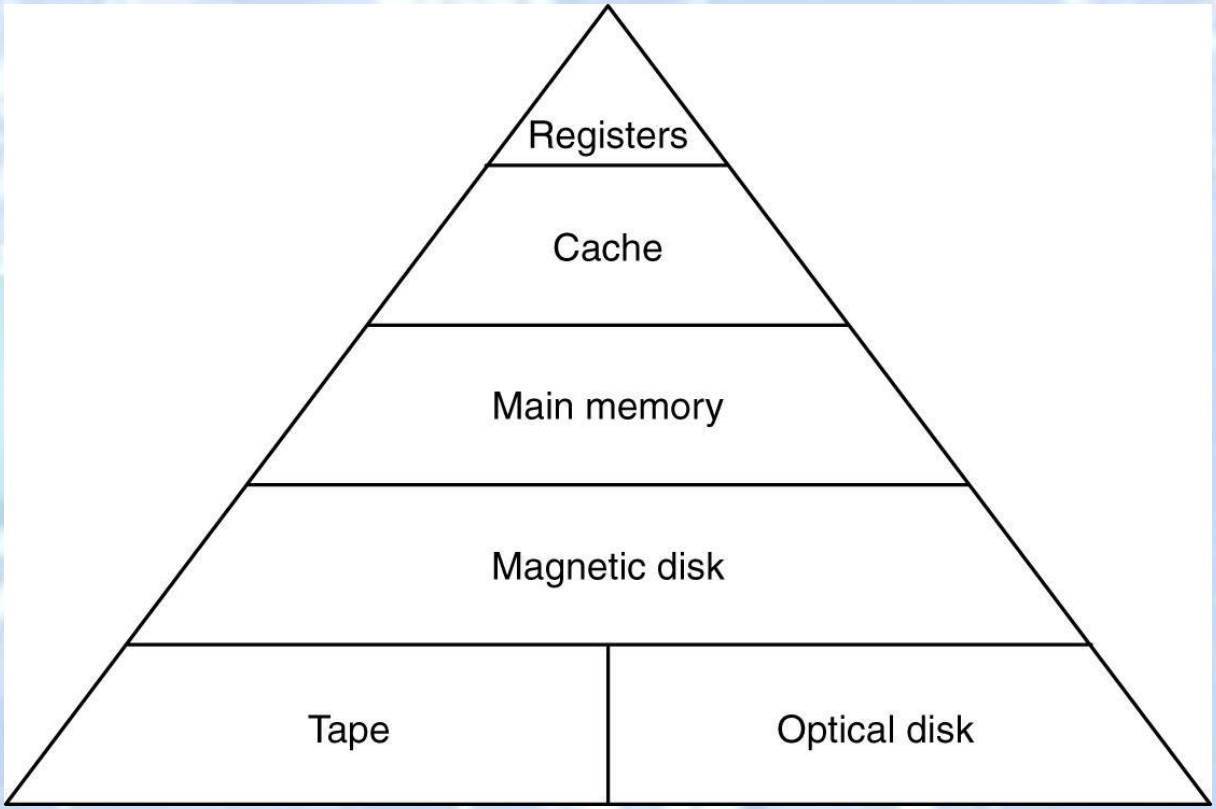
План лекции

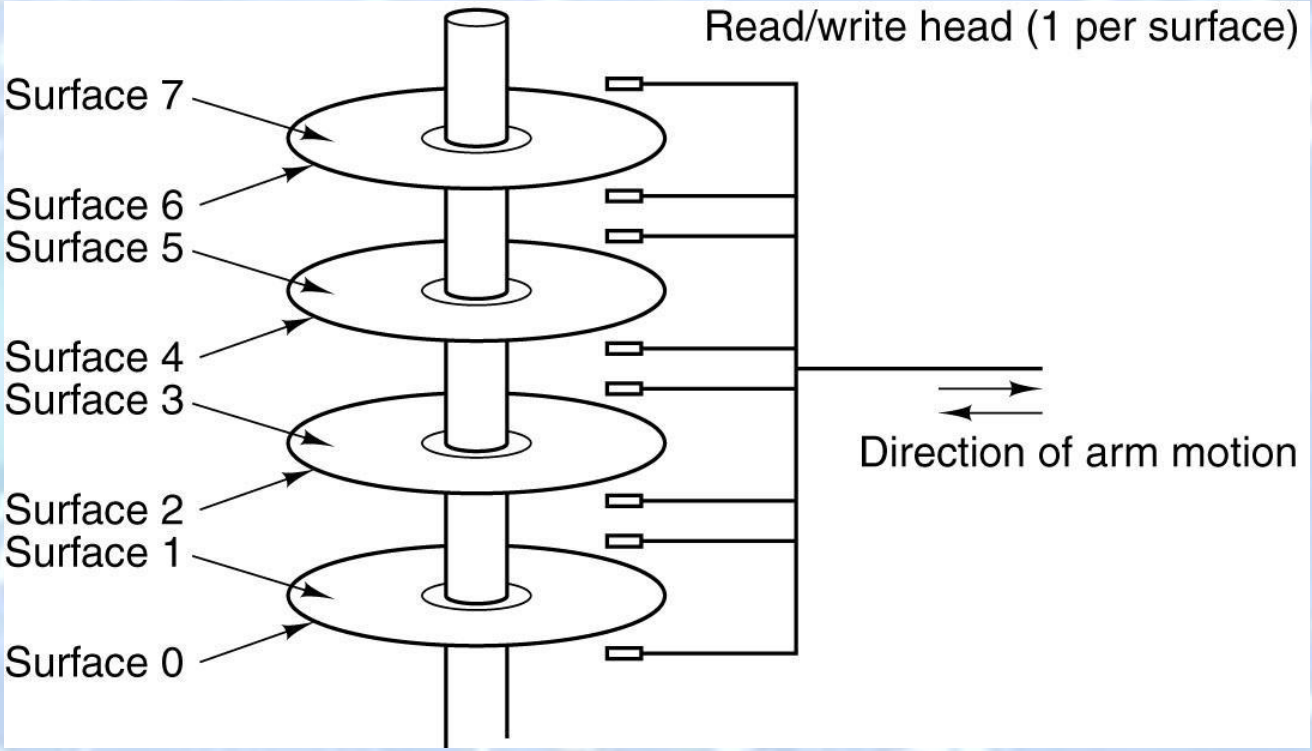
- Иерархия памяти
- Жёсткие диски
- Оптические диски
- Передача данных

Иерархия памяти

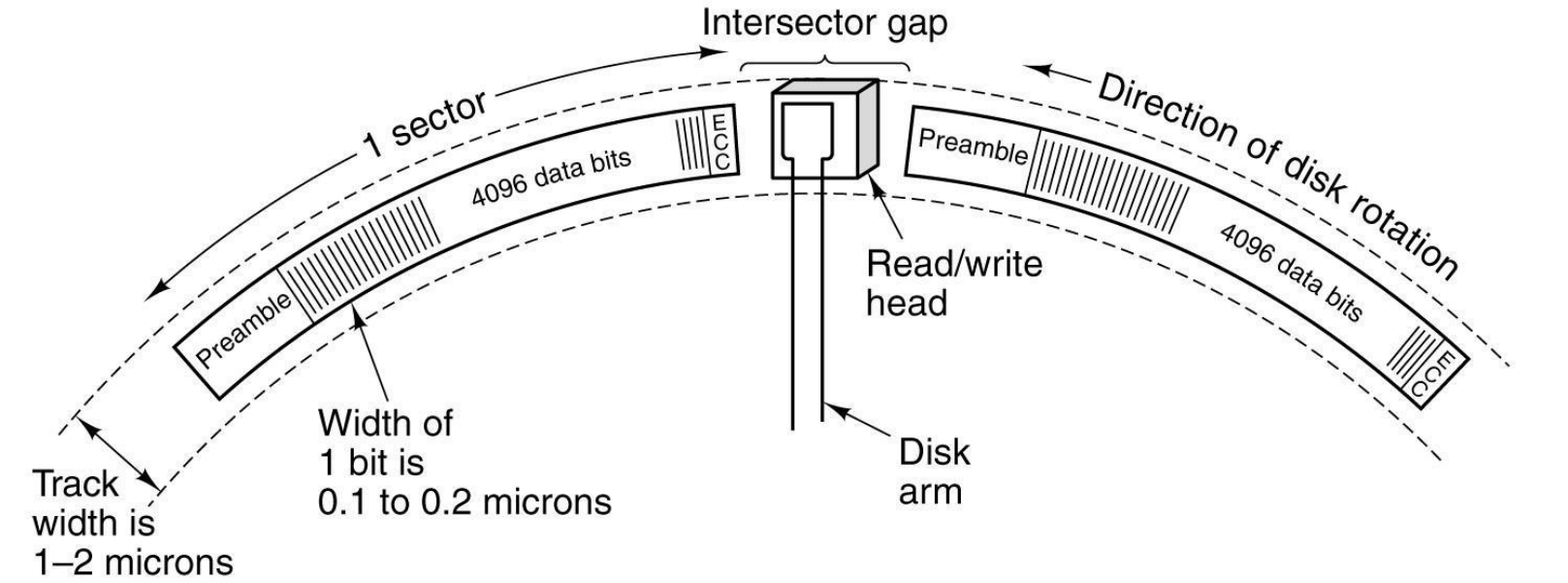


Жёсткие Диски

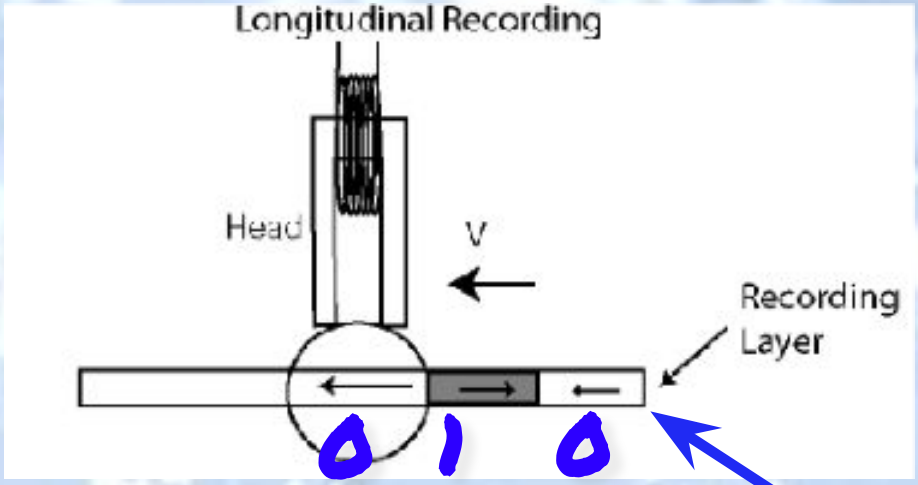
Устройство жёстких дисков

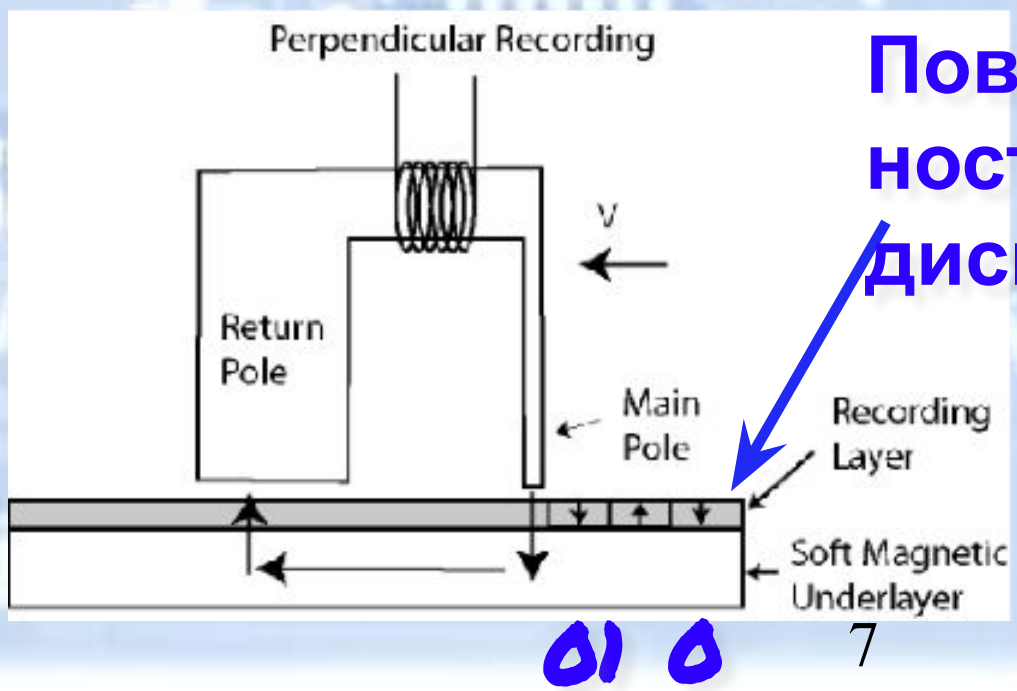


Устройство жёстких дисков



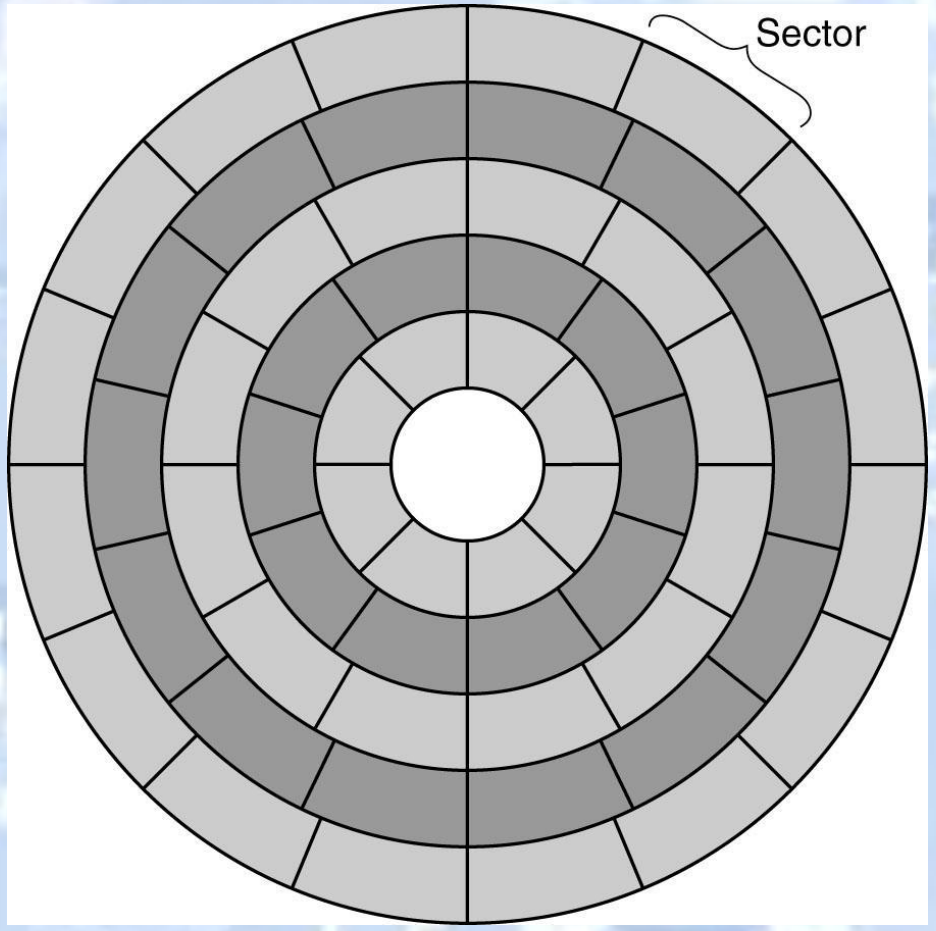
Жёсткие Диски (2)



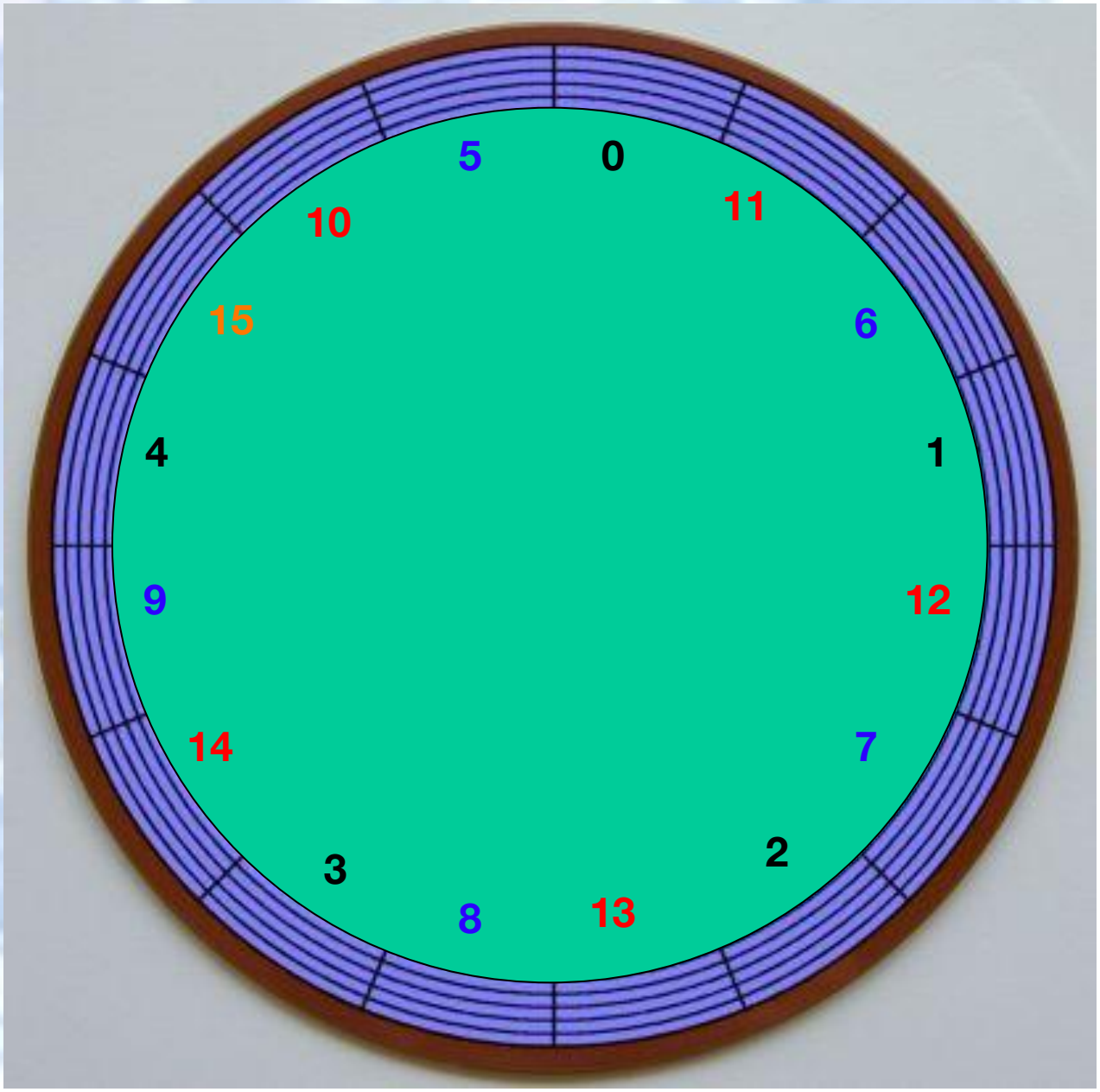


Поверхность диска

Сектора



Разбиение ОС



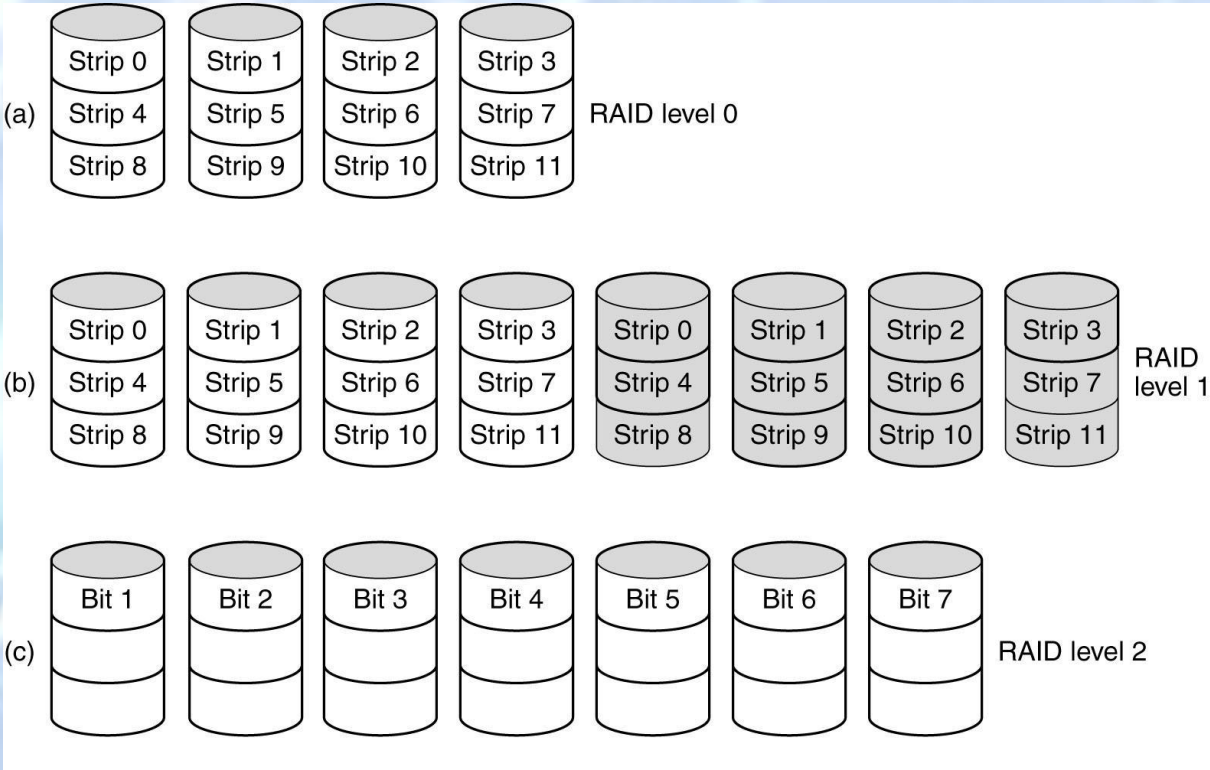
Характеристики

- Интерфейс
- Ёмкость
- Физический размер
- Скорость вращения
- Надёжность
- Количество операций ввода/вывода
- Потребление энергии
- Уровень шума
- Сопротивляемость ударам
- Скорость передачи данных

Первый винчестер RAMAC

RAID (1)

Redundant Array of Inexpensive Disks

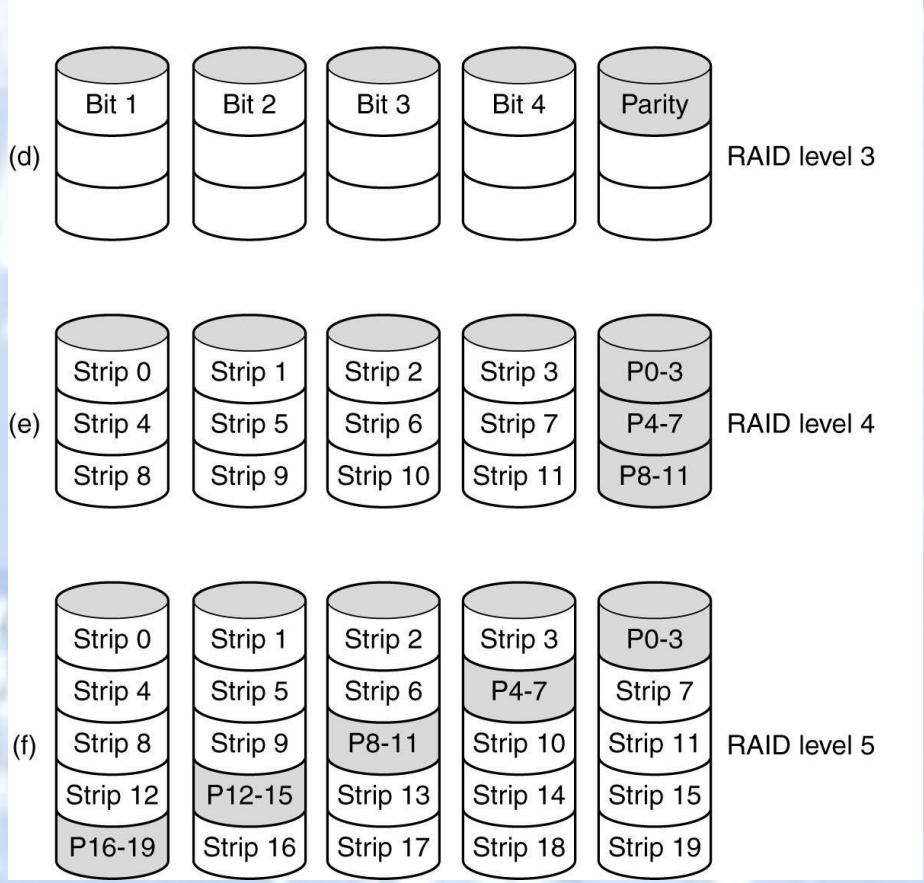


RAID levels 0 through 2.

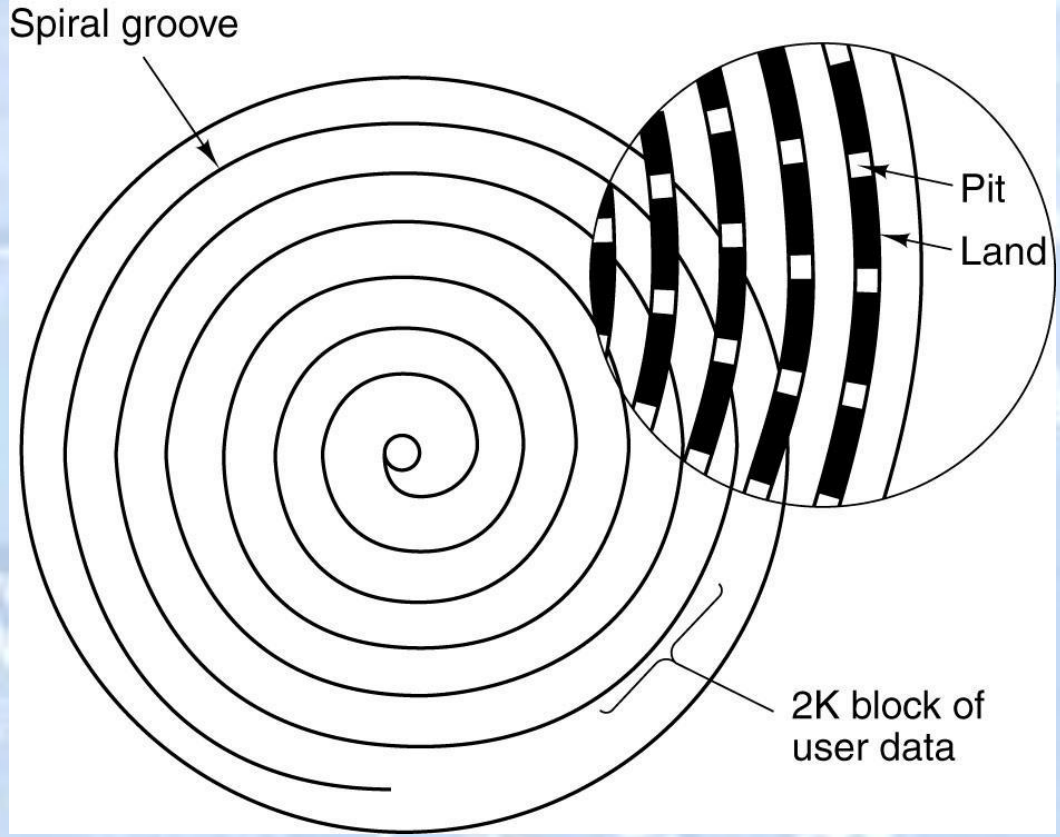
Backup and parity disks are shown shaded.

RAID (1)

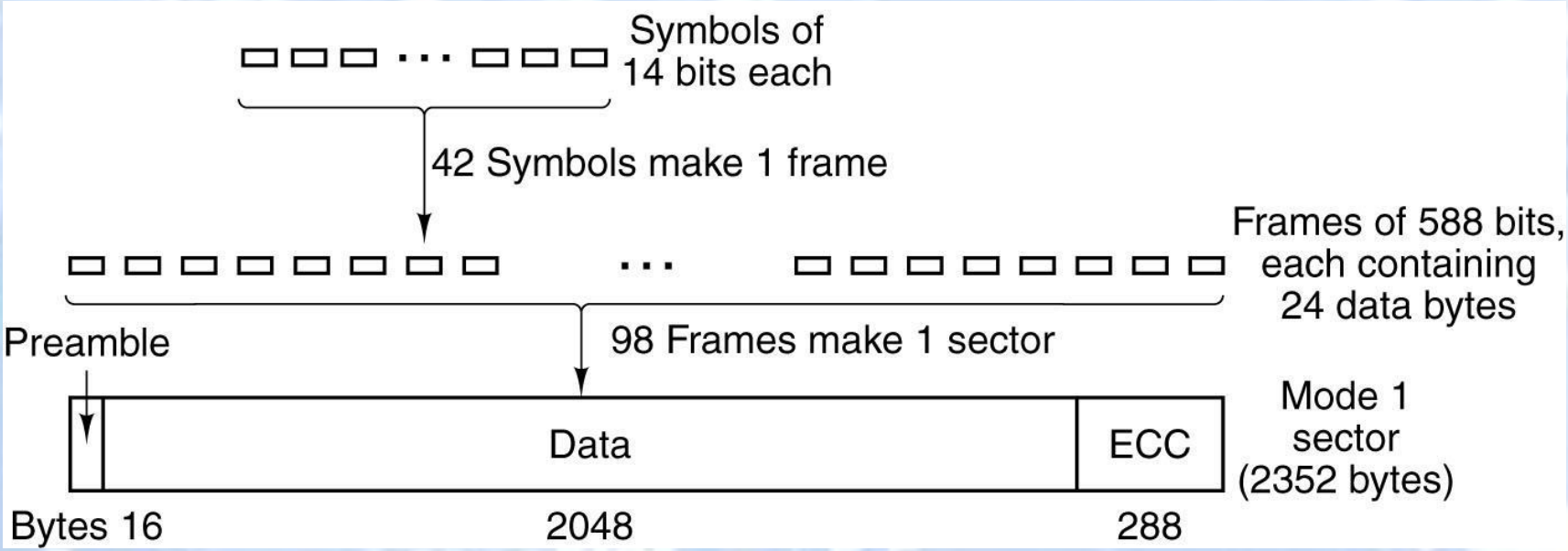
Redundant Array of Inexpensive Disks



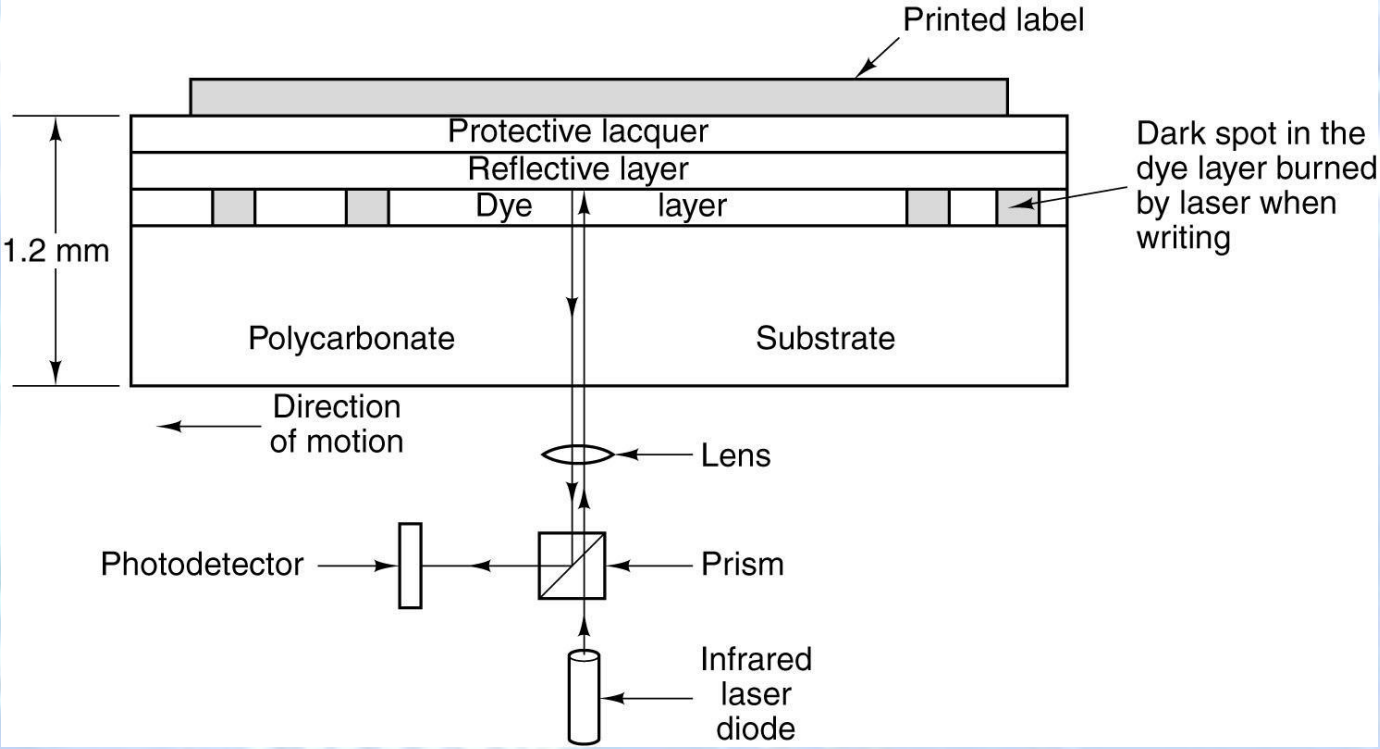
CD-ROMs (1)



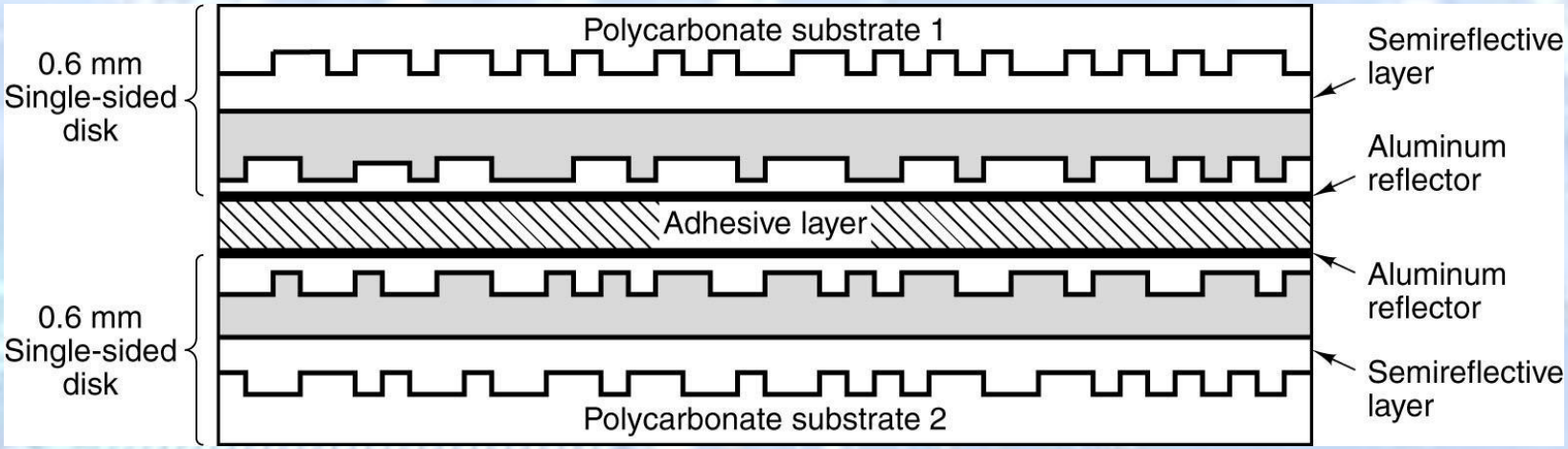
CD-ROMs (2)


Symbols of
14 bits each
42 Symbols make 1 frame
Frames of 588 bits,
each containing
24 data bytes
Preamble
98 Frames make 1 sector
Data
ECC
Mode 1
sector
(2352 bytes)
Bytes 16
2048
288

CD-R

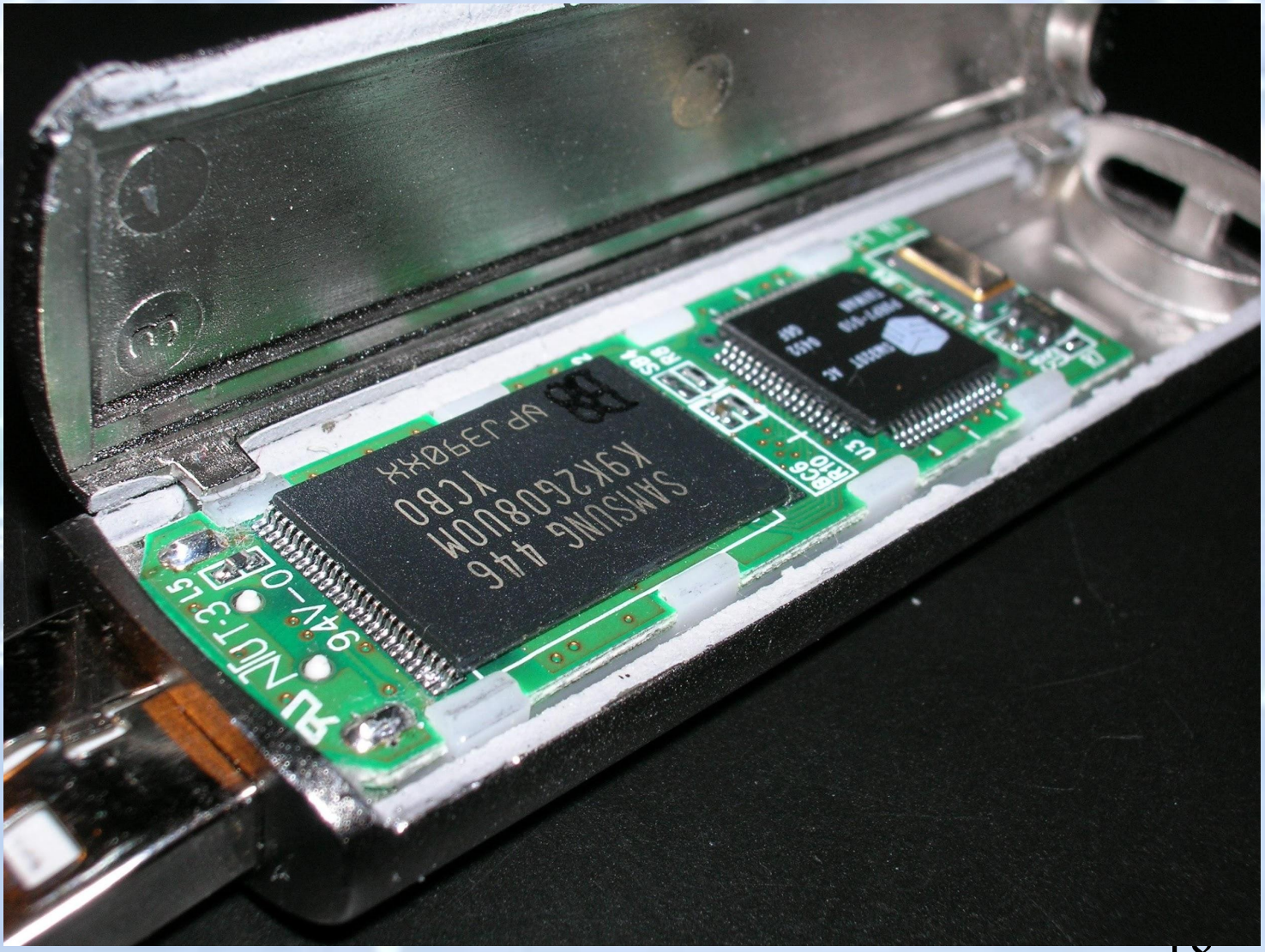

Printed label
Protective lacquer
Reflective layer
Dye layer
Dark spot in the dye layer burned by laser when writing
1.2 mm
Polycarbonate
Substrate
Direction of motion
Lens
Photodetector
Prism
Infrared laser diode

DVD

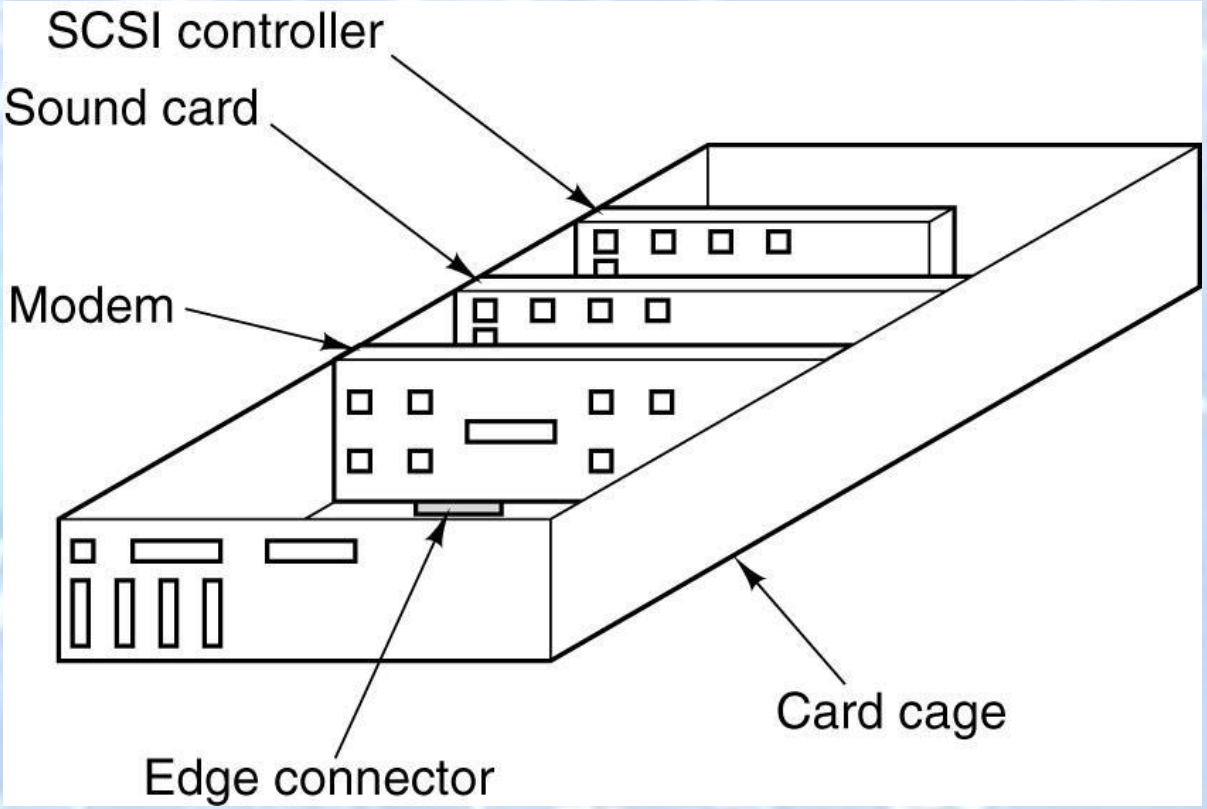


Двусторонний, dual layer DVD диск

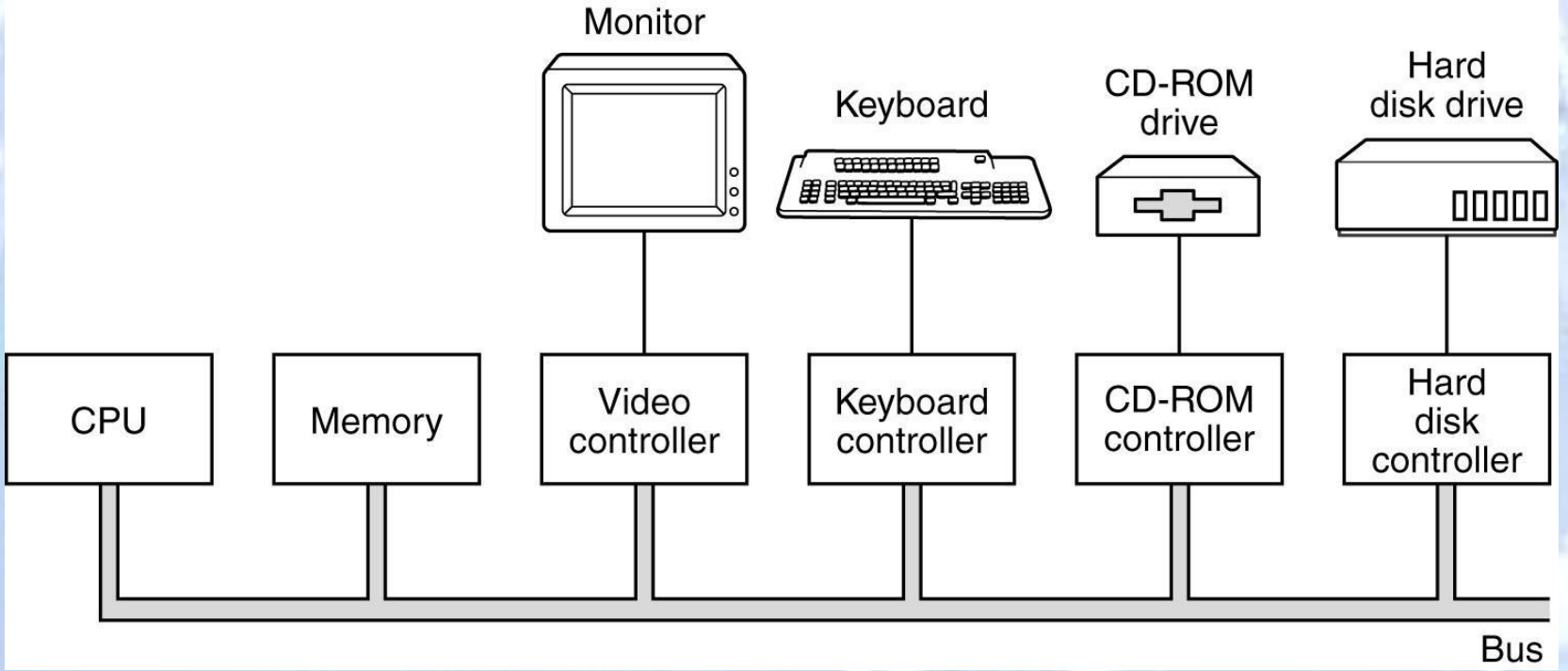
Флэш-память



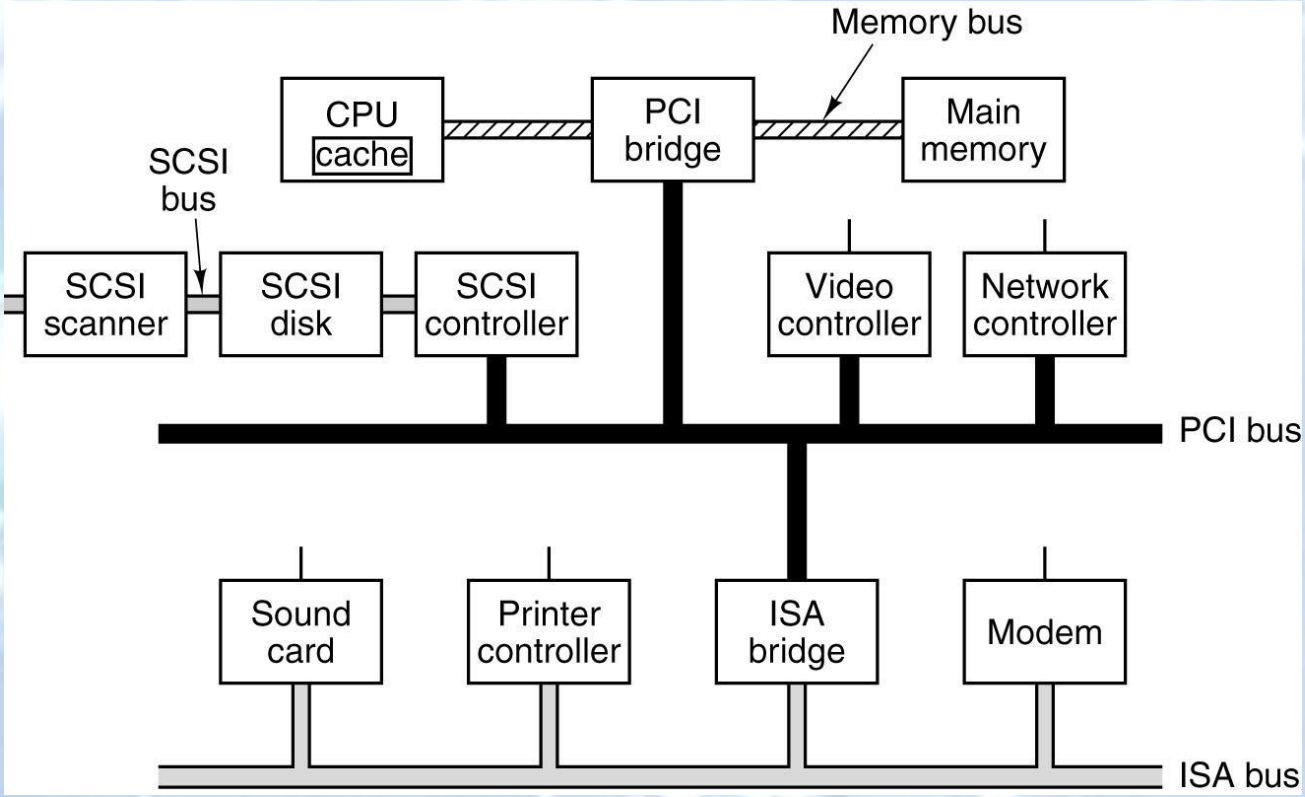
Ввод/Вывод
Шины (1)



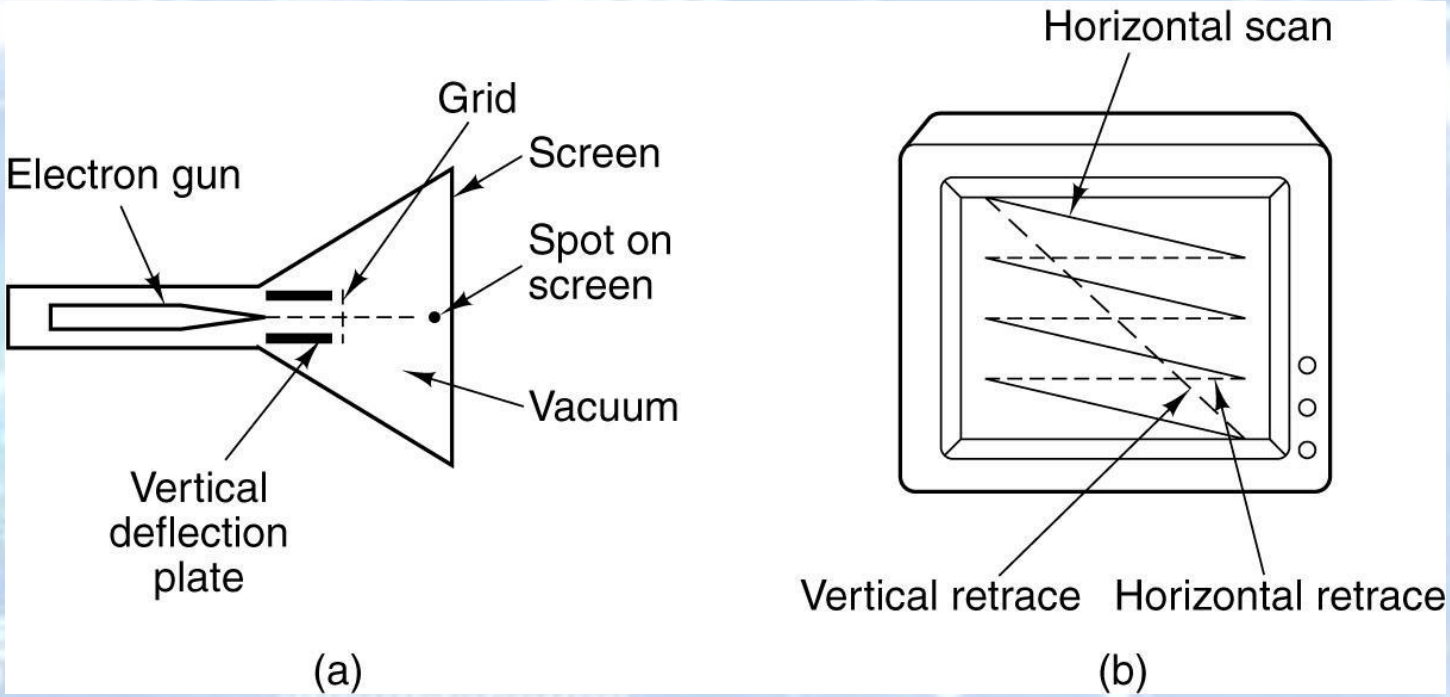
Input/Output
Шины (2)



Input/Output
Шины (3)



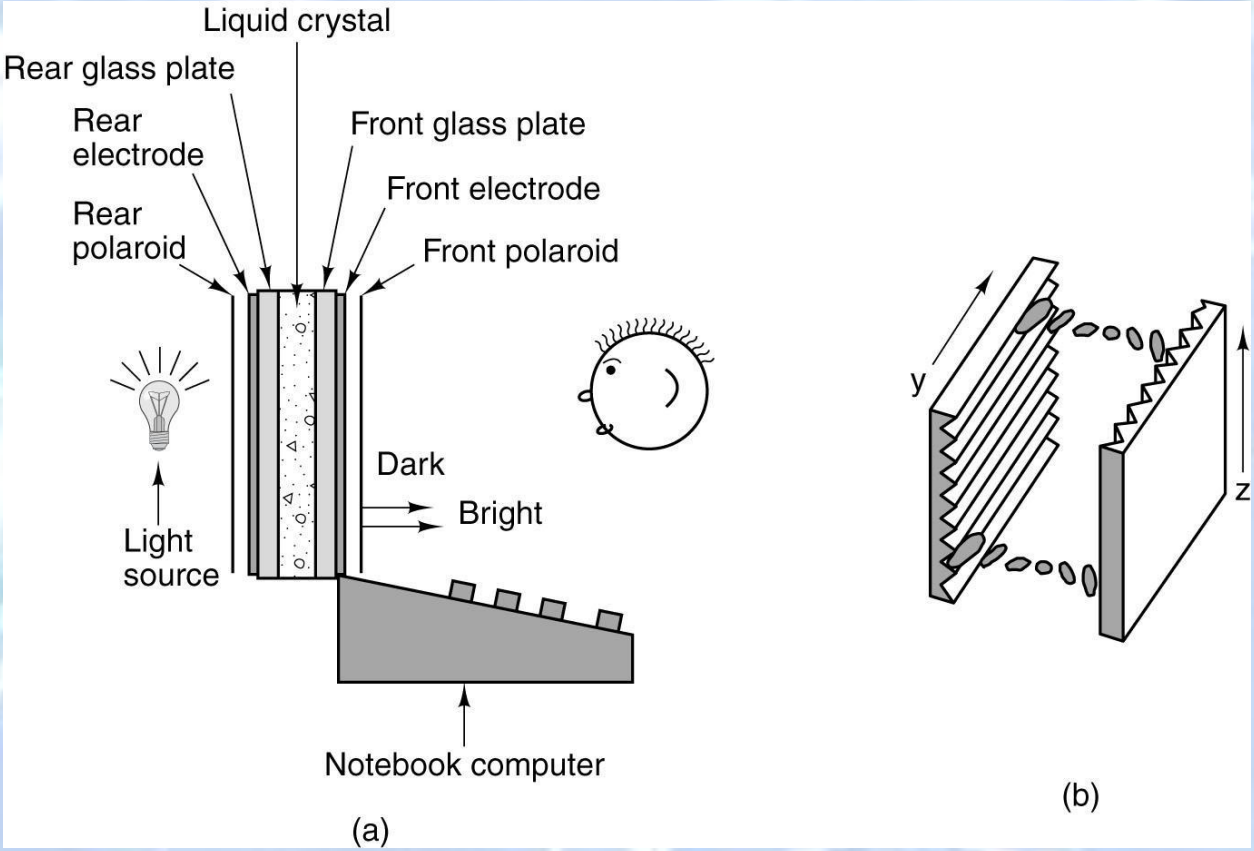
ЭЛТ Мониторы



(a) Поперечное сечени ЭЛТ

(b) Схема развёртки

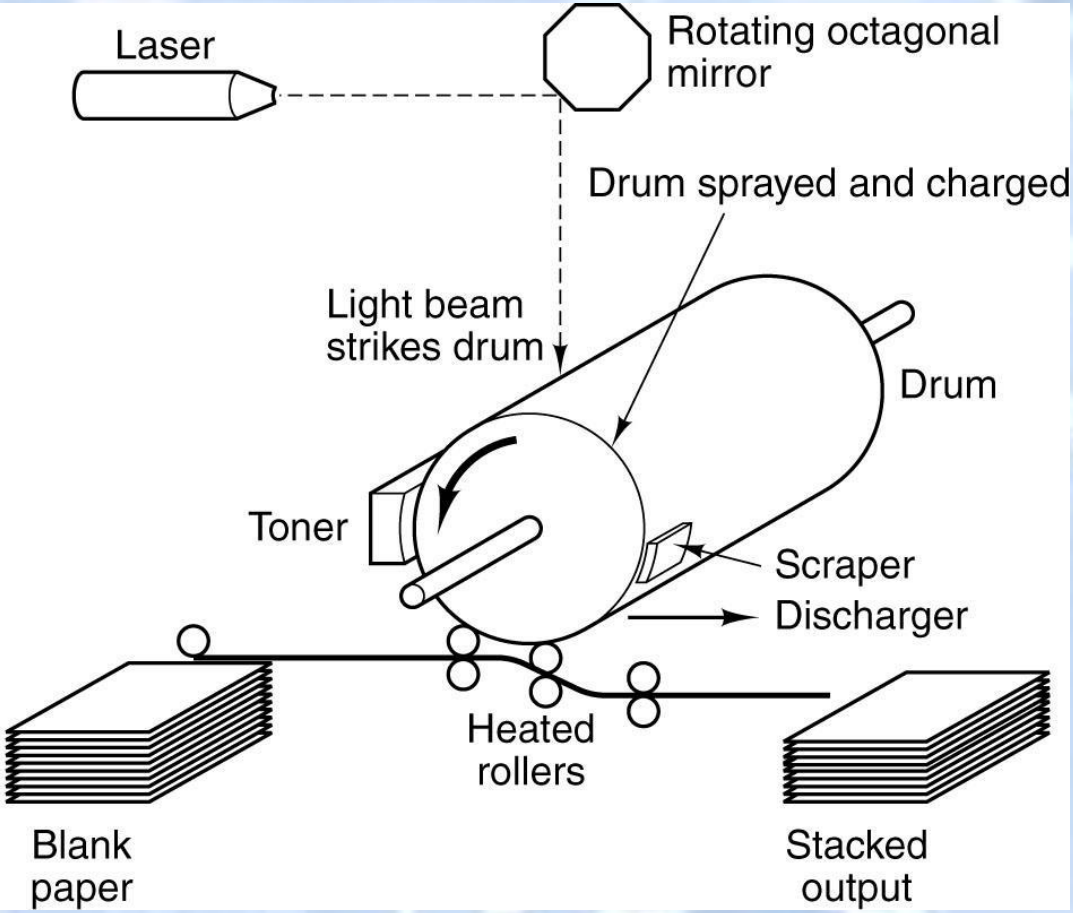
LCD Мониторы



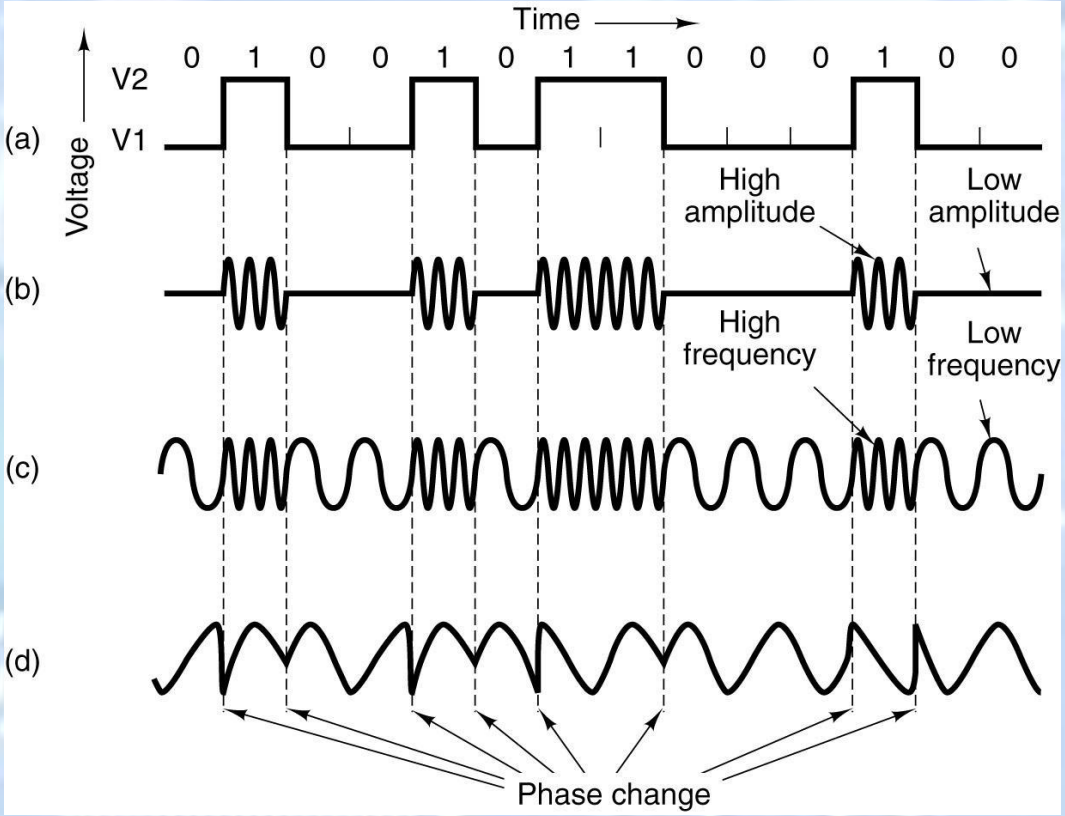
(a) Структура LCD экрана.

(b) Желобки на передней и задней пластинах.

Принтеры

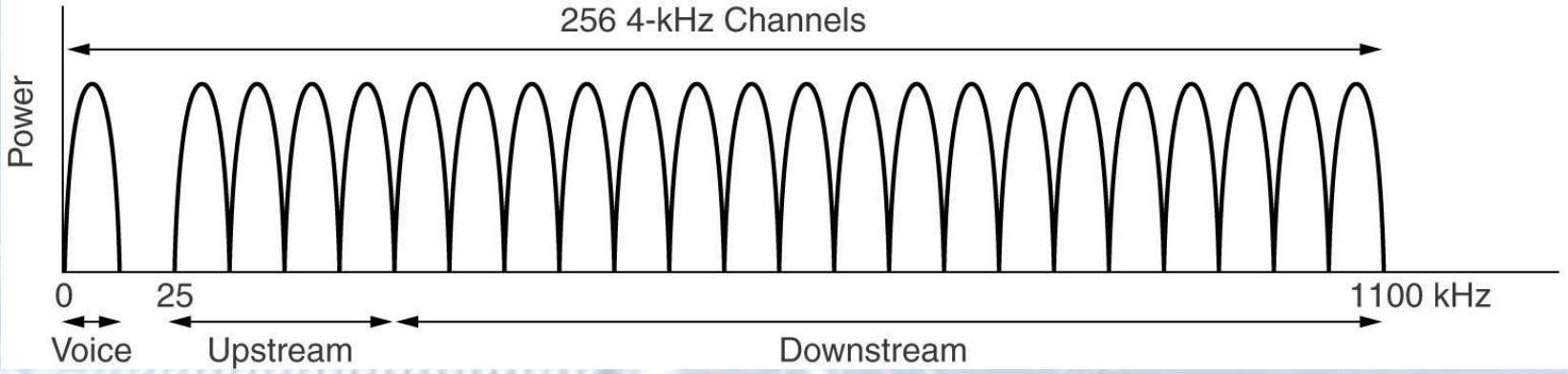

Laser
Rotating octagonal mirror
Drum sprayed and charged
Light beam strikes drum
Drum
Toner
Scraper
Discharger
Heated rollers
Blank paper
Stacked output

Передача данных

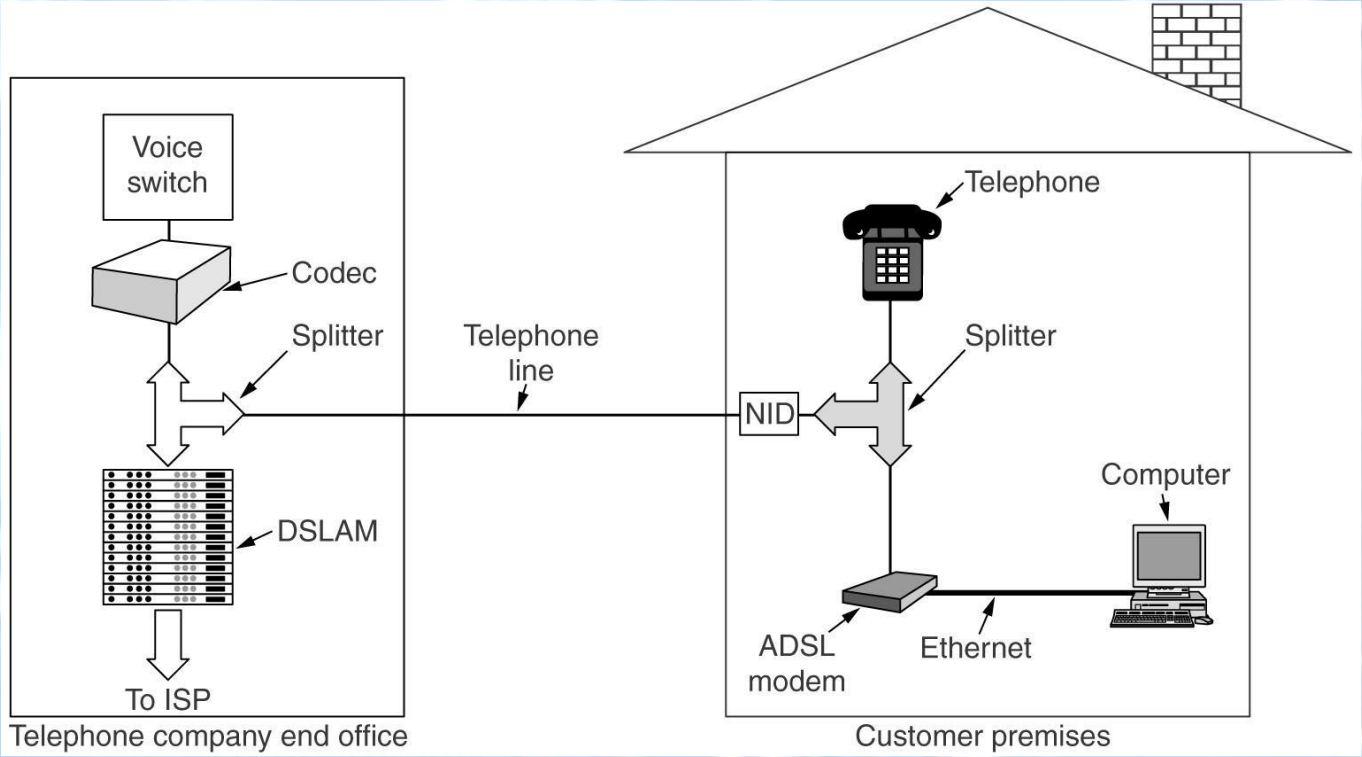


- (a) Двухуровневый сигнал.
- (b) Амплитудная модуляция
- (c) Частотная модуляция

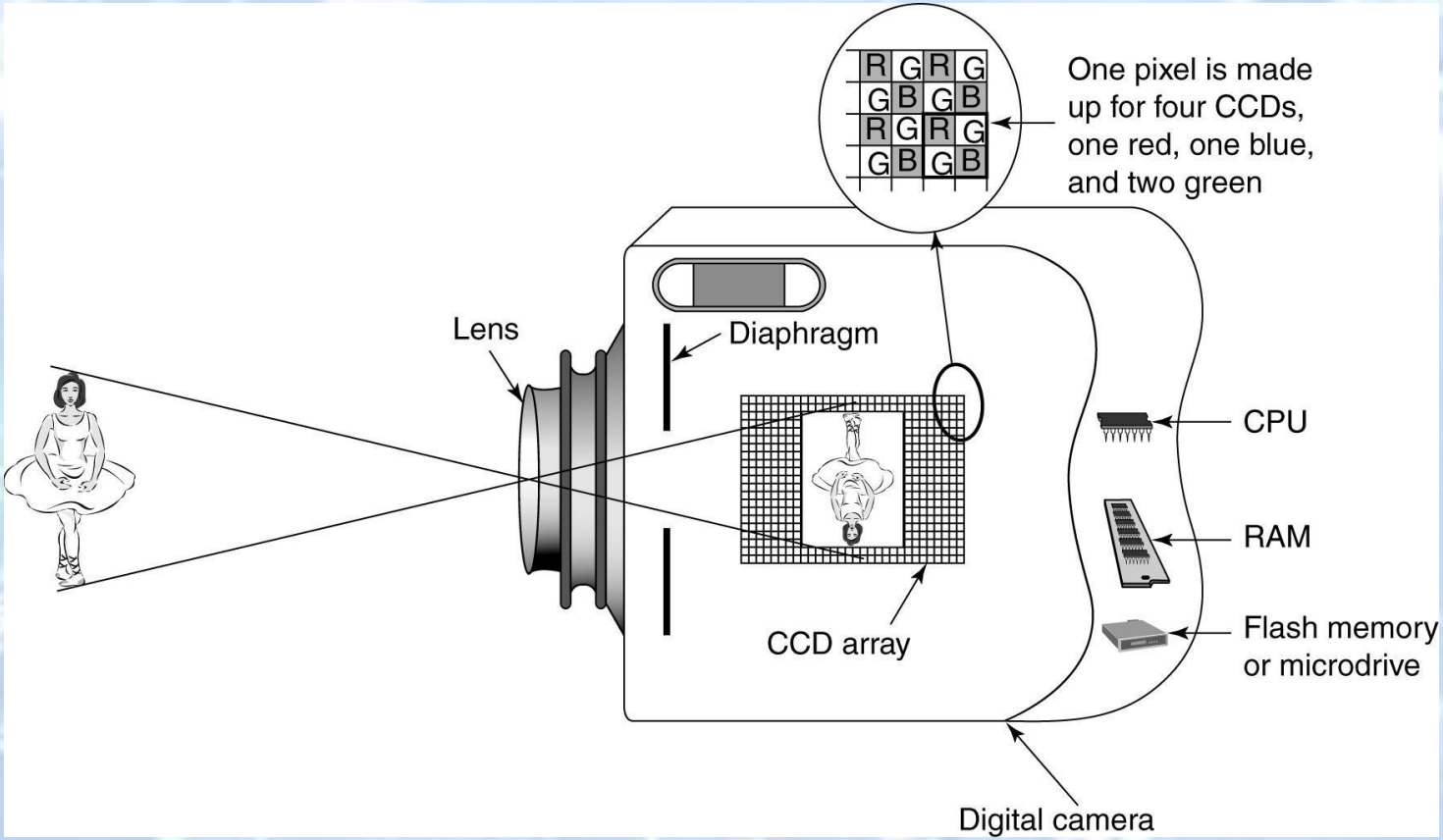
ADSL


256 4-kHz Channels
Power
0
25
1100 kHz
Voice
Upstream
Downstream

Подключение к сети



Цифровые Камеры



Спасибо за внимание!

RAID

RAID

RAID

RAID