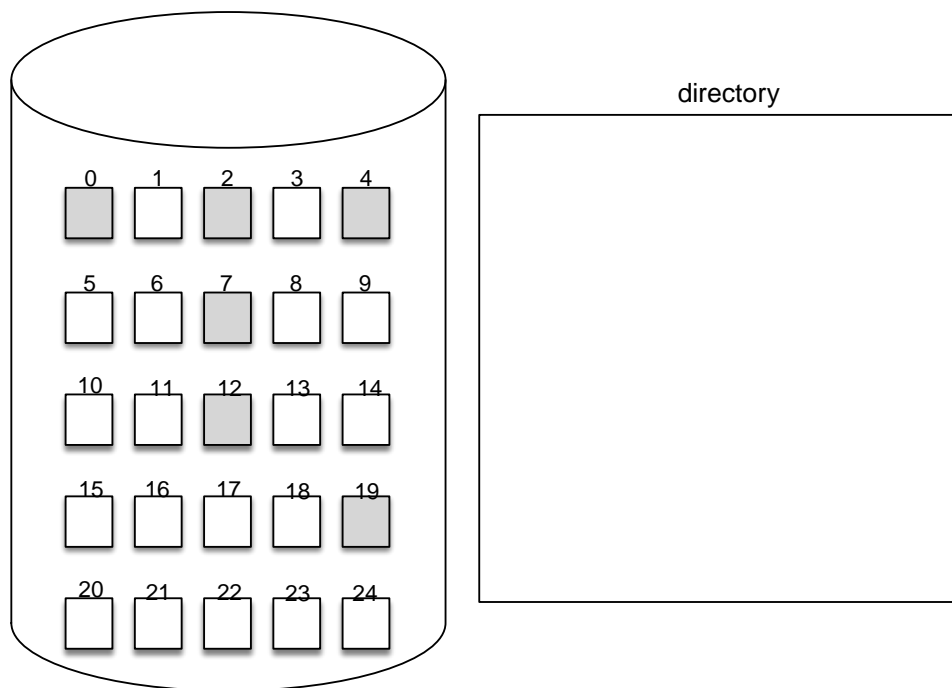


CSCI 315 Operating Systems Design

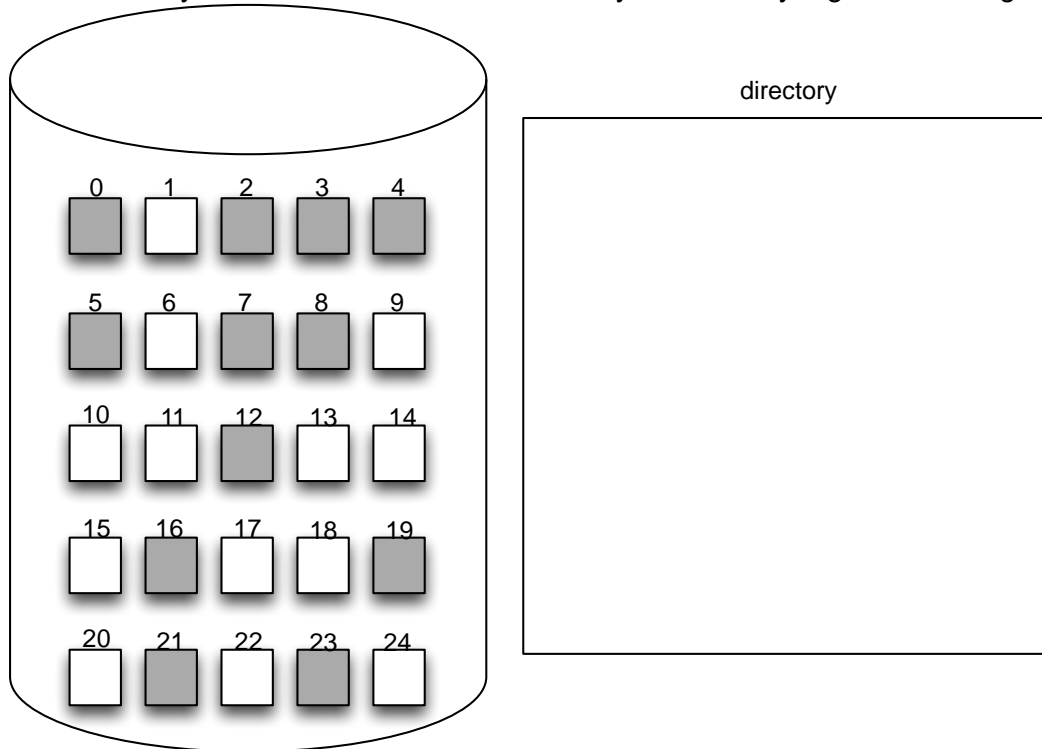
Activity 24

- 1) Consider a system in which disk space is allocated in **physically contiguous blocks**. Indicate in the figure what the directory structure should look like for this type of system (hint: it's like a table, but you must identify what is in each one of its lines and columns). Assume that all shaded blocks are already allocated to other files. Build the directory information for two files: a file called `.bashrc` with 2 blocks, a file called `data` with 6 blocks. Make sure to indicate all the data that your directory might need.



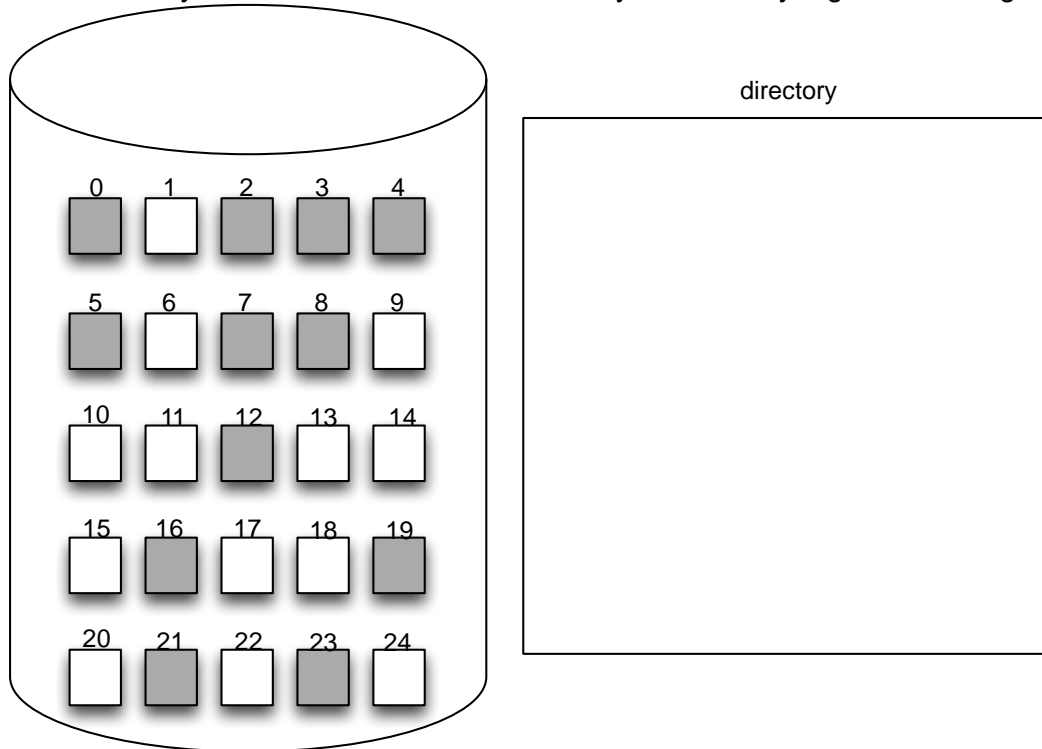
- 2) Identify the advantages and disadvantages of **contiguous allocation**. (Consider how well this scheme supports sequential and random file access.)

- 3) Consider a system that uses **linked allocation**. Indicate in the figure below what the directory structure should look like for this system. Build the directory information for two files: a file called `.bashrc` with 2 blocks, a file called `data` with 6 blocks. Assume that all the shaded disk blocks are already allocated to other files. Make sure to indicate, in one of the diagrams below, any “additional” data structures that your directory organization might need.



- 4) Identify what kind of advantages and disadvantages might come from **linked allocation**. Think how well or unwell this scheme supports sequential and random file access.

- 5) Consider a system that uses **indexed allocation**. Indicate in the figure what the directory structure should look like for this type of system. Build the directory to indicate two files: a file called `.bashrc` with two blocks, a file called `data` with six blocks. Assume that all the shaded disk blocks are already allocated to other files. Make sure to indicate, in one of the diagrams below, any “additional” data structures that your directory organization might need.



- 6) Identify what kind of advantages and disadvantages might come from **indexed allocation**. (Think how well this scheme supports sequential and random file access.)
- 7) How does the **FAT allocation scheme** relate to *linked* and *indexed* allocation? Are there any benefits to random-access with this scheme?
- 8) Identify the cause(s) of **consistency problems** in the file system.
- 9) Describe how the OS can check the consistency of a file system volume.