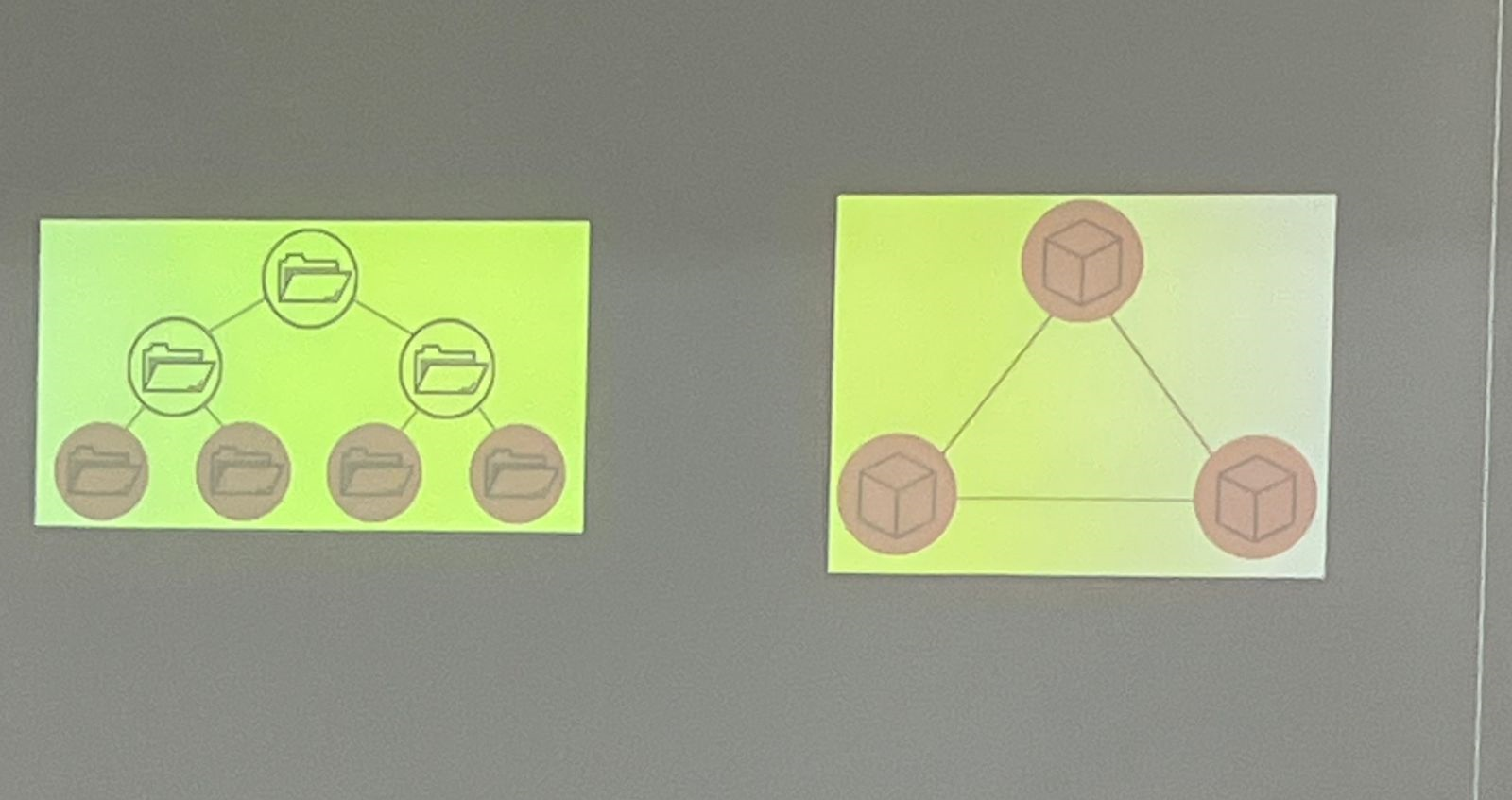
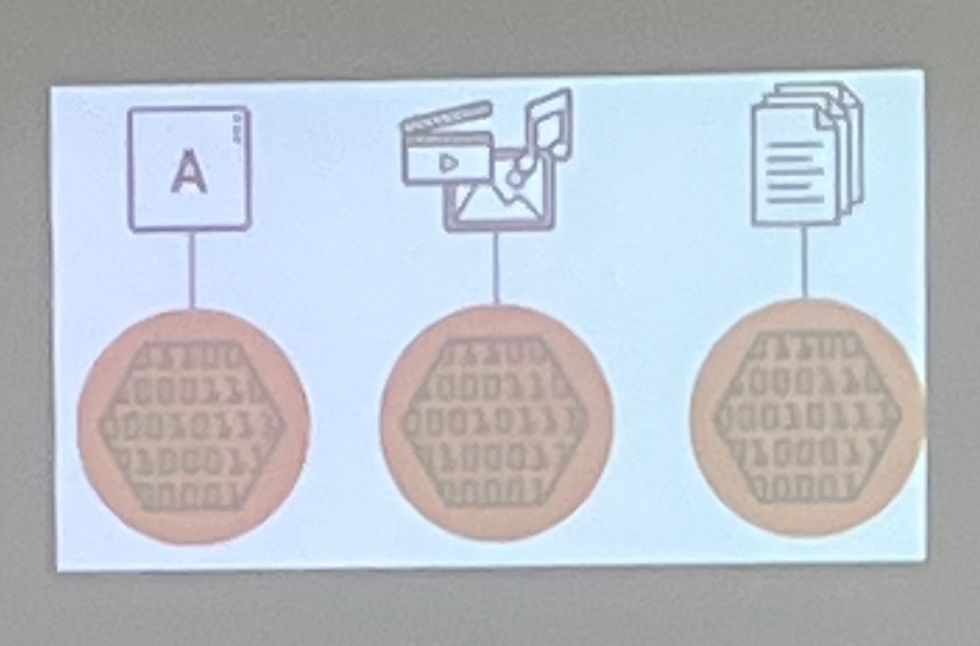
file storage is a data stored as a single piece of information inside a folder just like how we store pieces of paper inside a folder.

block storage chops data into blocks and stores them as separate pieces. each block of data is given a unique identifier, which allows a storage system to place the smaller pieces of data wherever most convenient.



***Image: file storage vs block storage***

Object storage (also known as object-based storage) is a flat structure in which files are divided into pieces and spread out among hardware. The data is broken into discrete units called objects and is kept in a single repository instead of being kept as a file in folders or as blocks on servers.

***Image: Object Storage***

Object storage requires a simple HTTP application programming interface (API) which is used by most clients in all languages.

[File storage, block storage, or object storage? (redhat.com)](https://www.redhat.com/en/topics/data-storage/file-block-object-storage)

Azure Storage offers different access tiers so that you can store blob data in the most cost-effective manner. The tiers include 4 tiers:

* **Hot tier** - An online tier optimized for storing data that is accessed or modified frequently. The hot tier has the highest storage costs, but the lowest access costs.
* **Cool tier** - An online tier optimized for storing data that is infrequently accessed or modified. Data in the cool tier should be stored for a minimum of **30** days. The cool tier has lower storage costs and higher access costs compared to the hot tier.
* **Cold tier** - An online tier optimized for storing data that is infrequently accessed or modified. Data in the cold tier should be stored for a minimum of **90** days. The cold tier has lower storage costs and higher access costs compared to the cool tier.
* **Archive tier** - An offline tier optimized for storing data that is rarely accessed, and that has flexible latency requirements, on the order of hours. Data in the archive tier should be stored for a minimum of 180 days.

Azure Storage capacity limits are set at the account level, rather than according to access tier. You can choose to maximize your capacity usage in one tier or to distribute capacity across two or more tiers.

Azure Queue storage is a service for storing large numbers of messages. You access messages from anywhere in the world via authenticated calls using HTTP or HTTPS. A queue contains millions of messages up to the total capacity limit of a storage account. Queues are commonly used to create a backlog of work to process asynchronously.

Azure Cosmos DB and Azure Storage are cloud based storage services. They differ in terms of their dta models, scalability, querying capabilities and storage options. The key differences are:

1. **Data Model:** Azure Cosmos DB is a globally distributed, multi-model database service that supports various data models, including key-value, document, columnar, and graph. Azure Storage, on the other hand, primarily offers a simple object storage service with a key-value data model. It is designed for storing unstructured data such as blobs, files, queues, and tables.
2. **Scalability:** Azure Cosmos DB is built for global scalability and can automatically scale throughput and storage across multiple regions. It offers elastic scalability with fine-grained control over performance and cost. Azure Storage also provides scalability, but it requires manual configuration and management of storage accounts and blob containers to handle increased load. Scaling Azure Storage may involve sharding data across multiple storage accounts.
3. **Querying Capabilities:** Azure Cosmos DB supports rich query capabilities across various data models. It provides a SQL-like query language called SQL API for querying JSON documents. It also supports other APIs like Gremlin for graph data and MongoDB API for document-oriented querying. Azure Storage, on the other hand, does not offer built-in query capabilities. Retrieving data from Azure Storage typically involves directly accessing the stored objects using their unique keys.
4. **Storage Options:** Azure Cosmos DB provides storage for application data, along with built-in features like automatic indexing, data partitioning, and replication. It is a fully managed service that abstracts away the underlying storage implementation. Azure Storage, on the other hand, offers different types of storage options, including Blob storage for large object data, Queue storage for messaging, Table storage for structured NoSQL data, and File storage for file shares.
5. **Consistency Models:** Azure Cosmos DB offers multiple consistency models, allowing developers to choose the desired level of data consistency based on their application requirements. It provides options like strong consistency, bounded staleness, session consistency, and eventual consistency. Azure Storage, on the other hand, primarily provides eventual consistency for read operations. It may take some time for changes made to Azure Storage to propagate across different regions.

Azure data lake storage Gen2 or ADLS Gen2 and Azure Blob Storage are both storage services offered by Azure, but they are designed for different use cases and have some key differences:

Storage Hierarchy