**Caching**

* **What is caching?**
* **Caching is the technique of storing frequently used data of information in the memory** so that, when the same data of information is required next time. It can be directly retrieved from the cache memory instead of being generated by application.
* **Advantages:**
* It increases performance of the application by serving user with cached output.
* It decreases server round trips for fetching data from database by persisting data in the memory.
* It greatly reduces overhead from server resources**.**
* **Explain types of Caching?**
* Caching in ASP.NET can be of the following types:
* Page Output Caching
* Data Caching
* Fragement / Partial Page Caching

**Page Output Caching:**

* Output cache stores the copy of html page or the part of the page that is sent to the client. When the next client request for this page, instead of regenerating the page a cache copy of the page is given to the client.
* This type of caching is implemented by placing output cache directive at the top of aspx page.
  + - * <% output cache Duration=20%>
* The Duration specifies how long the page will remain in the cache.

**Data Caching:**

* Data caching means caching the data from the data source. As long as the cache is not expired a request for the data will be fulfilled from the cache. When the cache is expired, the fresh data is obtained from the data source and the cache is refilled again.
* The main aspect of data caching is caching the data source controls.
* ASP.NET also supports caching of data as objects. We can store objects in memory and use them across various pages in our application.
* This feature is implemented using the Cache class.

**Partial Page Caching:**

* This technique is used to store part of a Web form response in memory by caching a user control.
* Fragment Caching means only particular portion of page is cached and This concept can be Implemented by using UserControl.
* **Automatic Data Removal**
* ASP.NET can remove data from the cache for one of these reasons:
* Because memory on the server is low, a process known as scavenging.
* Because the item in the cache has expired.
* Because the item's dependency changes.
* To help you manage cached items, ASP.NET can notify your application when items are removed from the cache.
* **Scavenging:**
* Scavenging is the process of deleting items from the cache when memory is scarce. Items are removed when they have not been accessed in some time or when items are marked as low priority when they are added to the cache. ASP.NET uses the CacheItemPriority object to determine which items to scavenge first. For more information.
* **Expiration:**
* In addition to scavenging, ASP.NET automatically removes items from the cache when they expire. When adding an item to the cache, you can set it to expire as following way:
* **Sliding expiration**
* Specifies how long after an item was last accessed that it expires. For example, you can set an item to expire 20 minutes after it was last accessed in the cache.
* **Absolute expiration:**
* Specifies that an item expires at a set time, regardless of how often it is accessed. For example, you can set an item to expire at 6:00 PM or after four hours.