Q1. Explain the advantages of Natural Queries in PowerBi with an example?

Ans: Natural Language Query is the ability to use natural language expressions to discover and understand data and accelerates the process of finding answers that data can provide. It is an advanced feature that can find almost any insight. The Q&A feature in Power BI lets you quickly get answers about your data by using natural language to ask questions about the data. This article describes supported configurations for Q&A, and how indexing and caching improve performance for each configuration.

advantages of Natural Queries

a. Supports data sources

The following Power BI configurations support

- Import mode.
- Live connect mode with on-premises SQL Server Analysis Services, Azure Analysis Services, or Power BI datasets.
- Direct Query with Azure Synapse Analytics, Azure SQL, or SQL Server 2019. Other sources might work in direct query mode, but aren't officially supported.

b. It helps to build your model well the Natural Language Query works best with a solid and detailed model.

c. Using naming conventional in queries we can show total profits by product name in the search bar and the results will appear automatically**.**

Q2. Explain Web Front End(WFE) cluster from Power BI Service Architecture?

Ans: The WFE cluster provides the user's browser with the initial HTML page contents on site load, as well as pointers to CDN content used to render the site in the browser.

A WFE cluster consists of an ASP.NET website running in the Azure App Service Environment. When users attempt to connect to the Power BI service, the client's DNS service may communicate with the Azure Traffic Manager to find the most appropriate (usually nearest) datacenter with a Power BI deployment. For more information about this process, see Performance traffic-routing method for Azure Traffic Manager. Static resources such as **.js*, **.css*, and image files are mostly stored on Azure Content Delivery Network (CDN) and retrieved directly by the browser.

The Power BI service is built on Azure, Microsoft's cloud computing platform. Power BI is currently deployed in many datacenters around the world – there are many active deployments made available to customers in the regions served by those datacenters, and an equal number of passive deployments that serve as backups for each active deployment.

Q3. Explain Back End cluster from Power BI Service Architecture?

Ans: The back-end cluster is the backbone of all the functionality available in Power BI. It consists of several service endpoints consumed by Web Front End and API clients as well as background working services, databases, caches, and various other components.

Each back-end cluster is stateful and hosts all the data of all the tenants assigned to that cluster. A cluster that contains the data of a specific tenant is referred to as the tenant's home cluster. An authenticated user's home cluster information is provided by Global Service and used by the Web Front End to route requests to the tenant's home cluster. The back end is available in most Azure regions, and is being deployed in new regions as they become available. A single Azure region hosts one or more back-end clusters that allow unlimited horizontal scaling of the Power BI service once the vertical and horizontal scaling limits of a single cluster are exhausted.

Tenant metadata and data are stored within cluster limits except for data replication to a secondary back-end cluster in a paired Azure region in the same Azure geography. The secondary back-end cluster serves as a failover cluster in case of regional outage, and is passive at any other time. Each back-end cluster consists of multiple virtual machines combined into multiple resizable-scale sets tuned for performing specific tasks, stateful resources such as SQL databases, storage accounts, service buses, caches, and other necessary cloud components.

Q4. What ASP.NET component does in Power BI Service Architecture?

Ans: Integration with Power BI is (always not so) easy to set up. We need reference to Microsoft**.**PowerBI.Api NuGet package and some coding to get reports integrated to our application. But first we need report. I once built simple report showing data about my craft beer ice distilling (check out my beer IoT journey if you are into complex beers). For embedding I'm using another one with just a chart from main report.

Now I want this report to be available in my ASP.NET Core web application.

There are two ways how to do it:

- **Use embedded Power BI report in iframe** – use this option if users are authenticated using Azure AD. It's the fastest way to get work done.
- **Use C and JavaScript to embed Power BI report** – use this option if users are authenticated using Azure AD or if you have service account for Power BI that all users must use. This option is also good if you need more server-side control over Power BI service.

Q5. Compare Microsoft Excel and PowerBi Desktop on the following features:

Data import
Data transformation
Modeling
Reporting
Server Deployment
Convert Models
Cost

Ans:

➢ Data import

With Power BI, you can extract data from virtually anywhere – any application, platform, or software. This gives Power BI users access to a massive range of data sources. Usually, this is done using Power BI desktop.

Excel can connect and use data from a huge range of different sources, but Power BI is still more intuitive when it comes to getting this kind of information into your reports and dashboards quickly!

➢ Data transformation

Power BI is really focused on data ingest and building potentially complex data models easily whereas

Excel is totally focused on structured and simple data models with a wide range of features.

➢ Modeling

Power BI can cope with very complex modelling if you're looking to build a complex data model, whereas Excel is not made for these purposes. Power BI Desktop offers users

the ability to perform modelling with ease using drag and drop features and advanced filters, which can't be done in excel.

➢ Reporting

As Power BI can handle multiple data sources, it makes your reports much more customisable. For example, if you wanted to change the colour scheme of a Power BI report or add custom visuals like maps or gauges which aren't available in Excel – Power BI is an invaluable tool.

Power BI reports are updated automatically, and the visualisations included make it much more user-friendly. Reports can be generated quickly with Power BI, whereas Excel requires a lot of time to set up calculations and formatting for each report or dashboard you create.

Excel is still useful when you're working with a lot of data in an existing sheet, but Power BI's quick reporting speed makes it an excellent option for those who need to generate reports and dashboards quickly.

➢ Convert Models

Power BI is ideal for Dashboards, alerts, KPIs, and visualizations, including analyzing your data visually but Excel does have some of the newer charts now, they can't connect to the data model.

➢ Cost

The cost of Power BI depends on how many projects you need and the amount of power you'll use to crunch and display your data. There are 4 Power BI subscriptions to choose from, including:

- Power BI Pro Free Trial
- Power BI Pro – $9.99 per user, per month
- Power BI Premium Per User – $20 per user, per month
- Power Bi Premium Per Capacity – $4,996 per capacity, per month

Excel is included in the Microsoft 365 Business Standard package and costs £9.40 per user per month. You also get a host of other software, including Outlook, Word, Teams and Exchange.

Q6. List 20 data sources supported by Power Bi desktop.

Ans:

- Excel workbook
- XML
- Parquet
- SQL server database
- Access database
- Oracle database
- IBM db2 database
- MySQL database
- SAP HANA database
- Amazon Redshift
- Impala
- Google BigQuery
- Snowflake
- Azure SQL database
- Azure Cosmos DB
- Power Bi datasets
- Microsoft Exchange Online
- Salesforce Reports
- Adobe Analytics
- GitHub (Beta)