**Power BI Assignment 2**

* Explain the advantages of Natural Queries in PowerBi with an example?
* Explain Web Front End(WFE) cluster from Power BI Service Architecture?
* Explain Back End cluster from Power BI Service Architecture?
* What ASP.NET component does in Power BI Service Architecture?
* Compare Microsoft Excel and PowerBi Desktop on the following features:

Data import

Data transformation

Modeling

Reporting

Server Deployment

Convert Models

Cost

* List 20 data sources supported by Power Bi desktop

**Ans 1.**

Benefit #1 - Guided NLQ is a unique self-service BI experience

Yellowfin Guided NLQ provides immediate assistance on the question you want to ask, with no guesswork or technical knowledge required to get started with using the tool.

After selecting a dataset, you’re presented with a search box you can type in, but it’s not blank. Guided NLQ provides a list of options for possible questions, then guides you through each step in formulating the query. You can choose your own path through the question by typing what you want to ask, using your mouse to choose an option, or both. These add-on elements can help build your query, and lead toward a more relevant result than traditional free text search. You’re actively shown a list of options in simple drop-down menus, and prompted with suggestions that can help correctly state the question you mean to ask, such as ‘compare’, or ‘list’, using familiar terms, not technical jargon.

Once your query is built, Guided NLQ presents the ideal level of data you need to uncover the answer, delivered as a best practice data visualization (chart), which can also be viewed in tabular form. These answers highlight hidden patterns, trends and outliers or shifts in behavior that can reveal deep insights otherwise not seen in traditional analysis.

1.1 Benefit #2 - Every question is understood by Guided NLQ

Traditional search-based NLQ solutions are harder to set up because they’re focused on fixing the wrong problem: semantics (language used in a question), rather than analytics.

With Yellowfin Guided NLQ, there is no need to set up synonyms and word dictionaries, or continuously train the solution to understand your users’ intent, because using the Yellowfin metadata layer bypasses this problem altogether.

How it does this is each piece of text in the query you build is known and understood, and by offering guided options to choose from, any ambiguity or misunderstanding in what you’re asking - a problem that limited NLQ adoption in the past - is eliminated.

At no point can an invalid question be asked; there’s no more "Search didn't understand what you meant" messages, because there’s no such thing as a ‘wrong’ question.

1.3 Benefit #3 - Guided NLQ makes it simple to ask complex questions

The questions you can ask search-based NLQ tools are often too basic because the vendor has spent all their effort in fixing the language problem, and their approach doesn’t support question complexity in the best way.

Guided NLQ approaches question complexity differently by implementing thousands of comprehensively modelled question types and sequences, which effectively enables anyone to ask questions of their data, and to deliver answers as best practice visualizations or tabular reports for every possible question combination you can think.

1.4 Benefit #4 - Guided NLQ is integrated throughout Yellowfin

Guided NLQ is designed to combine with existing features of Yellowfin for a powerful analytics experience that accommodates all users and self-service BI preferences.

It’s fully integrated with Yellowfin Dashboards, Stories, and Presentations, which makes it easy to generate and add new content, and any questions and results generated using Guided NLQ can be shared using existing Yellowfin collaboration functionality. It also contains multi-language support, the same security model, and is multi-tenant enabled.

1.5 Benefit #5 - It's easy to embed Guided NLQ into your applications

Yellowfin Guided NLQ is designed from the ground up to be easily embedded.

What this all means is the feature can be used independently of the rest of the Yellowfin platform, plugged into any of your applications, and launched from anywhere you want, whether it’s a customer relationship management (CRM), human resources (HR) payroll, or finance system. It can even co-exist within Tableau and Power BI environments.

As a stand-alone module not tied to a user interface (dashboard, workbook), or single data set, you can curate a view and drop in NLQ capability for quick and easy self-service deployment, and it's API-enabled to provide fine-grained control and a customized experience. You can even allow users to ask questions of any dataset, or limit the scope of what can be asked to ensure relevance to wherever you decide to embed Guided NLQ.

**Ans 2.**

Clients and the back end are connected by the front end, commonly known as the web front-end cluster. The front-end services handle the initial connection and Azure Active Directory client authentication. User IDs are kept in the Azure Active Directory. After authentication, user requests are routed through Azure Traffic Manager to the closest data center. The Azure Content Delivery Network (CDN) makes static Power BI content and files available to users when a client or user has been authorized.

**Ans 3.**

Visualizations, datasets, storage, reports, data connections, data updating, and other Power BI interactions are handled by the Power BI services on the back end. A web client can only directly interface with Azure API Management and Gateway Role on the backend. These two parts are in charge of routing, load balancing, authentication, and authorization.

**Ans 4.**

Integration with PowerBI 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. For embedding I’m using another one with just a chart from main report.

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.

**Ans 5**

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| Differnce | Excel | Power Bi |
| Data import | Capable of handling limited dataset | Capable of handling larger dataset form different sources |
| Data | Excel is totally focused of structured and simple data models with wide range of features | Power Bi is really focused on data ingest and building potentially complex data models easily |
| transformation | Excel is your traditional spreadsheet program with a very long history which leads to a vast array of features. | Power BI is an advanced version of the analytics tool with a large number of features to play with data. |
| Modeling | Excel is totally focused on structured and simple[data models](https://www.educba.com/data-models-in-dbms/) with a wide range of features. | Power BI is really focused on data ingest and building potentially complex data models easily. |
| Reporting | Reports available is limited to specific users | Reports available to a broad range of readers with varying degrees of tech savvy |
| Server | Work only on same server | Power bi work on different server like SQL database. |
| Convert Models | Excel offers simple models as compared to power Bi | Power Bi offers high level of models for analytics |
| Cost | There are many of office packages for buy | Is basic version is free and premium features are paid |

**Ans 6**

List of data sources;

* SQL Server database
* Access database
* SQL Server Analysis Services database
* Oracle database
* IBM Db2 database
* IBM Informix database (Beta)
* IBM Netezza
* MySQL database
* PostgreSQL database
* Sybase database
* Teradata database
* SAP HANA database
* SAP Business Warehouse Application Server
* SAP Business Warehouse Message Server
* Amazon Redshift
* Impala
* Google BigQuery
* Vertica
* Snowflake
* Essbase
* Actian (Beta)
* Amazon Athena
* AtScale cubes
* BI Connector
* Data Virtuality LDW
* Denodo
* Dremio Software
* Dremio Cloud (Beta)
* Exasol
* Indexima