**Power BI Assignment 1:**

1. **What do you mean by BI? Explain.**

**Ans**: **Business intelligence (BI):**

**Definition:** Business intelligence (BI) is a technology-driven process for analyzing data and presenting actionable information to help corporate executives, business managers and other end users make more informed business decisions. (Or)

Business intelligence (BI) is the set of techniques and tools for the transformation of raw data into meaningful and useful information for business analysis purposes.

It takes each and every data from Business stake holders and answers to various questions like what has happened?, why it happened, why it didn't happen?, what might be a solution? Etc.

It combines Business Analytics, Data mining, Data visualization, Data tools and Infrastructure and helps organizations to take better data driven decisions.

**Tools used**: Power BI, Tableau, Qlikview.

**Advantages:**

1. **Boost productivity**: It is possible for businesses to create reports with a single click thus saves lots of time and resources. It also allows employees to be more productive on their tasks.
2. **To improve visibility:** BI also helps to improve the visibility of these processes and make it possible to identify any areas which need attention.
3. **Fix Accountability:** BI system assigns accountability in the organization as there must be someone who should own accountability and ownership for the organization’s performance against its set goals.
4. **It gives a bird’s eye view:** BI system also helps organizations as decision makers get an overall bird’s eye view through typical BI features like dashboards and scorecards.
5. **It streamlines business processes:** BI takes out all complexity associated with business processes. It also automates analytics by offering predictive analysis, computer modelling, benchmarking and other methodologies.
6. **It allows for easy analytics:** BI software has democratized its usage, allowing even nontechnical or non-analysts users to collect and process data quickly.

**Disadvantages**

1. **Cost:** Expensive for small andmedium-sized enterprises.
2. **Complexity:** BI is its complexity in implementation of data warehouse.
3. **Limited use:** Like all improved technologies, BI was first established keeping in consideration the buying competence of rich firms.
4. **Time Consuming Implementation:** It takes almost one and half year for data warehousing system to be completely implemented. Therefore, it is a time-consuming process.
5. **How Power-BI helps in BI, and how does it help Analysts? Explain.**

**Ans**: **Power BI helps in BI Analysts:**

* Power BI is Business Intelligence tool developed and maintained by Microsoft which is capable of handling huge amount of Data in much faster way. It is an advanced version of Microsoft excels with advanced analytic options and service.
* Power BI is an easy-to-use analytics tool that helps businesses to generate thorough reports and gain valuable insights from their data, whether it’s on-premise or on the cloud. In other words, it allows you to look at past and present data and use it to make predictions.
* Power BI is a business analytics solution that lets you visualize your data and share insights across your organization, or embed them in your app or website.
* Connect to hundreds of data sources and bring your data to life with live dashboards and reports.
* power BI is capable of getting data from multiple sources from SQL, cloud, on-premise data, or any file type such as .xls, .csv, .tsv etc.,
* It provides interactive visualizations with self-service business intelligence capabilities, where end users can create reports and dashboards by themselves, without having to depend on any information technology staff or database administrator.
* Data visualization becomes easier in just few clicks, drag and drops. Power BI comes with 180+ visualization techniques which are interactive, formattable to create colourful plots and graphs.
* Power Query editor which heart of Power BI makes a record of changes what the analyst is doing, So that if they identify error and need to make any changes, analyst can revert back to any specific step directly and make changes in all subsequent steps automatically.
* Power BI creates a Data model how different data is related to each other.
* Data ingestion from various sources, All the data such as reports/Dashboards are very secure.

1. **Explain Descriptive analytics?**

**Ans**:

* **Descriptive analytics**: It is the interpretation of historical data to better understand changes that have occurred in a business. Descriptive analytics describes the use of a range of historic data to draw comparisons.
* **For ex**: In financial metrics are a product of descriptive analytics, for example, [year-over-year](https://www.investopedia.com/terms/y/year-over-year.asp) pricing changes, month-over-month sales growth, the number of users, or the total [revenue per subscriber](https://www.investopedia.com/terms/a/arpu.asp). These measures all describe what has occurred in a business during a set period.
* Descriptive analytics can help to identify the areas of strength and weakness in an organization.
* In its simplest form, descriptive analytics answers the question, "What happened?"
* The two main methods in which data is collected for descriptive analytics are data aggregation and [data mining](https://www.investopedia.com/terms/d/datamining.asp). Before data can be made sense of it must first be gathered and then parsed into manageable information. This information can then be meaningfully used by management to comprehend where the business stands.
* Descriptive analytics is one of the most basic pieces of business intelligence a company will use.

1. **Explain Predictive analytics?**

**Ans**:

* **Predictive analytics** is a branch of advanced analytics that makes predictions about future events, behaviours, and outcomes.
* It uses statistical techniques – including [machine learning](https://www.sap.com/insights/what-is-machine-learning.html) algorithms and sophisticated predictive modelling.
* Uses:
* Reducing employee and customer churn
* Identifying customers who are most likely to default on payments
* Supporting data-based sales forecasting
* Setting optimal pricing
* Tracking when machines will need maintenance or replacement

**Example:** Predictive analytics has also played a key role in the fight against COVID-19. Hospitals and health systems use predictive models to gauge risk, predict disease outcomes, and manage supply chains for medical equipment and PPE. In turn, researchers are using models to map the spread of the virus, predict case numbers, and manage contact tracing, all with the goal of reducing infection numbers and deaths.

1. **Explain prescriptive analytics?**

**Ans**:

* Definition: Prescriptive analytics is a type of [data analytics](https://www.investopedia.com/terms/d/data-analytics.asp) that attempts to answer the question "What do we need to do to achieve this?"
* It involves the use of technology to help businesses make better decisions through the analysis of raw data. Prescriptive analytics specifically factors information about possible situations or scenarios, available resources, past performance, and current performance, and suggests a course of action or strategy. It can be used to make decisions on any [time horizon](https://www.investopedia.com/terms/t/timehorizon.asp), from immediate to long-term.
* It is the opposite of descriptive analytics, which examines decisions and outcomes after the fact.
* It uses machine learning to help businesses decide a course of action based on a computer program’s predictions.
* Prescriptive analytics isn't fool proof, as it's only as effective as its inputs.
* **Pros:**
* Prevents fraud, reduces risk, and increases efficiency among other things
* Simulates outcomes and shows probably of each.
* **Cons:**
* Only as effective as the inputs
* Not suitable for long-term predictions/solutions
* Some big data providers provide results while others don't

1. **Write five real-life questions that Power Bi can solve.**

**Ans**: Following are the five real-life questions that Power BI can solve:

1. A Telephone network organization may look around for a reason for **"why customers shift to other networks?"** by using the details of customers and their feedback who changed their network to other network operators.
2. An E-commerce company might dig their data to see drop is sales, patterns in sales, understand customer buying behaviour to know reason **"Why sales is not increasing?"** despite demand is there in market.
3. A software product company may need to know **"Why should users opt competitor company products/services?"** to maintain their current product sustainability and provide better service to their users.
4. Government may need to know **"About what topic are most people talking about?"** during any social evil event occurs that led to burst in protests and revolts to stop the spread of false information or to to mute people voices in specific regions to outside regions.
5. A Data ware warehouse will need to know **"Why security breach occurred in database?, what data is lost?"** to concentrate on data recovery and tightening the security layer of database.