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Sanjivani College of Engineering, Kopargaon-423603
(An Autonomous Institute Affiliated to Savitribai Phule Pune University, Pune)
NAAC 'A' Grade Accredited, ISO 9001:2015 Certified
Department of Information Technology
NBA Accredited-UG Program

Class: S.Y. B. Tech Semester: IV
Subject: Data Visualization and Story Telling (SEIT261)

Practical No.: 01

Title:

Introduction and installation of power BI visualization tool.

Software Requirements:

- Power BI Desktop

Theory:

Power BI is a business intelligence and data visualization tool developed by Microsoft. It helps users connect to various data sources, transform raw data, and create interactive reports and dashboards. With features like AI-powered insights, real-time analytics, and cloud integration, Power BI enables organizations to make data-driven decisions. It is widely used in business, finance, healthcare, and other industries for data analysis and reporting.

Applications of Power BI:

1. **Data Visualization & Reporting** – Creates interactive dashboards and reports to present insights clearly.
2. **Business Intelligence** – Helps organizations make data-driven decisions by analyzing trends and patterns.
3. **Predictive Analytics** – Uses AI and machine learning features to forecast future trends.
4. **Real-Time Monitoring** – Tracks live data updates for quick decision-making.
5. **Data Integration** – Connects multiple data sources, such as Excel, SQL databases, cloud services, and APIs.

Industrial Uses of Power BI:

1. **Finance & Banking**
 - Analyzes financial statements, revenue trends, and fraud detection.
 - Automates reporting for compliance and audits.
2. **Healthcare**

- Monitors patient data, hospital performance, and medical research insights.
- Tracks disease outbreaks and resource allocation.
- 3. Retail & E-commerce**
 - Analyzes customer behavior, sales trends, and inventory management.
 - Helps in personalized marketing and demand forecasting.
- 4. Manufacturing**
 - Tracks production efficiency, supply chain performance, and equipment maintenance.
 - Reduces downtime and improves process optimization.
- 5. IT & Software**
 - Monitors system performance, project progress, and customer support analytics.
 - Helps in cybersecurity analysis and incident management.
- 6. Education**
 - Tracks student performance, attendance, and administrative processes.
 - Enhances learning outcomes through data-driven insights.
- 7. Government & Public Sector**
 - Analyzes population data, public health trends, and infrastructure planning.
 - Supports policy-making and budget allocation.

Power BI is widely used across industries to simplify data analysis, improve efficiency, and drive strategic decision-making.

Components of Power BI

Power BI architecture components make up a comprehensive ecosystem. These help in data collection, visualization, sharing and transformation. The top components include to know about are-

- **Power BI Desktop:** It's the main development tool employed for creating data visualizations and reports. It enables users to join with multiple data sources, build complicated data models, and clean and transform data.
- **Power BI Service:** It's a cloud-based platform. It is where the users share and publish dashboards and reports. It offers collaboration features and facilitates access to reports through mobile devices and web browsers.
- **Power BI Gateway:** It acts like a bridge between the Power BI Service and on-premises data sources. It enables secure data transfer and ensures that data is updated.
- **Power BI Mobile:** Mobile apps for Android, Windows and iOS devices that enable users to interact with and access Power BI dashboards and reports on the go.
- **Power BI Report Server:** It's an on-premises report server wherein the users can easily share and publish Power BI reports. The data is kept within the local network.

- **Power Query:** It's a data preparation and connectivity tool that's embedded in Excel and Power BI Desktop. It allows users to seamlessly connect, refine and combine data from various sources.
- **Power Pivot:** It is an in-memory data modeling component that enables users to create relationships, define calculations using DAX and build data models.

System Requirements

- **Operating System:** Windows 10 or higher, 64-bit.
- **Memory:** At least 4 GB RAM (8 GB recommended).
- **Disk Space:** At least 2 GB of free space.

Steps to install Power BI Desktop:

Step 1: Downloading Power BI Desktop

These steps should be followed to download Power BI Desktop -

- **Visit the Power BI Website:** Open browser and visit the official Power BI website. [Power BI Download Page](#).
- **Access the Download Section:** Navigate to the Power BI homepage > hover on the 'Products' menu, which is at the top of the page > click on 'Power BI Desktop' in the dropdown list. This will lead to the 'Power BI Desktop' page.
- **Initiate the Download:** A button named 'Download free' will appear. Click on this button. It will redirect the user to the 'Microsoft Store' page or to a direct download page. It varies as per the system and browser settings.
- **Direct Download:** Pick the apt version (32-bit/ 64-bit) as per the system architecture > click on the download link.

Step 2: Installing Power BI Desktop

After the download is finished it's time to install Power BI Desktop. Here are simple steps to make it happen.

- **Locate the Installer:** Navigate to where the downloaded file has been saved. It is generally named something like 'PBIDesktopSetup.exe.'
- **Run the Installer:** To run the installer file, double-click on it. A User Account Control (UAC) prompt may appear, seeking permission to render changes to the device. Click 'Yes' to move ahead.
- **Pick the Installation Language:** Once the installer is launched, a prompt to pick the installation language will appear. Pick the apt language and click 'Next'.
- **Say yes to the License Agreement:** Go through the license agreement > select the checkbox stating 'I accept the terms in the License Agreement' > click 'Next'.

- **Pick the Installation Folder:** The installer prompts the user to pick the destination folder to install the Power BI Desktop. The default location is also fine. However, it can be changed, if needed. Click 'Next' to continue.
- **Commence the Installation:** Tap on the 'Install' button to commence the installation process. The necessary files will be copied to the system and the app will be configured by the installer. This process may take some time.
- **Finish the Installation:** After completing the installation, a final screen pops to confirm the complete installation of Power BI Desktop. Tap on 'Finish' to exit the installer.

Step 3: Launching Power BI Desktop

After the installation is complete, it's time to launch Power BI Desktop.

- **Start Menu:** Tap on the 'Start menu', which is in the lower-left corner of the screen. Swipe through the list containing installed apps to find 'Microsoft Power BI Desktop'. Click to launch the app.
- **Desktop Shortcut:** Double-click on the 'Power BI Desktop' icon on the desktop to open the app.
- **Taskbar:** Power BI Desktop can be pinned to the taskbar for quick access. Right-click on the 'Power BI Desktop' icon (in the Start menu/ on the desktop) > select 'Pin to taskbar'.

Step 4: Exploring Power BI Desktop

Now that Power BI Desktop is installed and running, it is easy to begin exploring its features.

- **Connect to Data Sources:** Tap on the 'Get Data' button available on the 'Home' tab. This will connect to multiple data sources such as SQL Server, Excel, Azure, and others.
- **Transform & Clean Data:** Utilize Power Query Editor to transform, shape and clean the data to mold it as per the analysis requirements.
- **Create Visualizations:** Drag and drop required fields onto the report canvas. This will help create graphs, charts, visualizations and tables.
- **Build Reports:** Amalgamate various visualizations into a unified report. To this, add filters and then customize the layout to fit with the needs.
- **Publish Reports:** Once the report is ready, it can be published to the Power BI Service to be shared and help in collaboration.

Step 5: Keeping Power BI Desktop Updated

Microsoft keeps on releasing updates for Power BI Desktop frequently. This adds new features, improves performance and fixes bugs.

Frequently Asked Questions:

- What is Power BI, and what are its key features?
- What are the different components of Power BI?
- What is the difference between Power BI Desktop and Power BI Service?
- What are the different types of data connections available in Power BI?
- What is DAX in Power BI, and how is it used?

Conclusion:

Thus, we have successfully explored the Introduction and Installation of Power BI Visualization Tool. We began by understanding the significance of Power BI in data analysis and visualization. We then covered the step-by-step installation process for Power BI Desktop and its cloud-based counterpart, Power BI Service.

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