BIDV Exam Solutions

2.b List some potential costs associated with implementing a business intelligence solution. (CO2)

Implementing a business intelligence solution can involve significant costs, both upfront and ongoing. Some potential costs include:

1. Software licenses: This is one of the most significant costs for implementing a BI solution. The cost of software licenses can vary widely based on the vendor and specific product being used.

2. Hardware: Depending on the size of the organization and the amount of data being analyzed, additional hardware may be required to support the BI solution.

3. Implementation and customization: Implementing a BI solution typically requires some level of customization in order to meet the specific needs of the organization. This may involve hiring outside consultants or dedicating internal resources to the project.

4. Training: Users who will be accessing the BI solution will need to be trained on how to use it effectively. This may involve hiring trainers or dedicating internal resources to training efforts.

5. Maintenance and support: Ongoing maintenance and support of the BI solution will be required to ensure that it continues to function properly. This may involve hiring dedicated support staff or contracting with a third-party support provider.

6. Data integration: In many cases, integrating data from disparate sources can be a complex and time-consuming process. This may require additional expertise or resources to complete effectively.

7. Security: Ensuring the security of sensitive data can be a major challenge when implementing a BI solution. This may require additional investment in security infrastructure and personnel.

2.c. Explain the Hierarchy in Tableau. (CO3)

The hierarchy in Tableau refers to the way in which data is organized and displayed within a visualization. Tableau allows users to create hierarchies by grouping together related fields.

For example, in a sales dashboard, a user might want to group their products by category and subcategory. To create this hierarchy, the user would drag the "Category" field onto the "Rows" shelf, and then drag the "Sub-Category" field onto the "Category" field.

The resulting hierarchy would allow the user to drill down from high-level category information to more specific sub-category information. This can be useful for gaining a deeper understanding of the data and identifying patterns or trends.

2.d. Define Pivot. (CO4)

Pivot refers to a feature in many data analysis tools that allows users to rotate data between rows and columns. In other words, it allows users to reorganize their data to make it easier to analyze and visualize.

2.e. Explain advantage and disadvantages of Power BI. (CO5)

Power BI is a popular business intelligence tool developed by Microsoft. It has several advantages and disadvantages:

Advantages:

1. Integration with Microsoft products: Power BI integrates seamlessly with other Microsoft products such as Excel and SharePoint.

2. Easy to use: Power BI has a user-friendly interface that makes it easy for users to create dashboards and reports without extensive technical knowledge.

3. Customizable: Power BI allows users to customize their dashboards and reports to meet their specific needs.

4. Cost-effective: Power BI offers a range of pricing options, including a free version, which makes it accessible to small businesses and individuals.

Disadvantages:

1. Limited functionality: Compared to some other BI tools, Power BI may have limited functionality in certain areas, such as predictive analytics.

2. Steep learning curve: Although Power BI is relatively easy to use, it can still take time to master all of its features and capabilities.

3. Limited data processing capabilities: Power BI may struggle to handle very large datasets or complex data relationships.

4. Security concerns: Like any cloud-based service, there are potential security risks associated with storing data in Power BI.

3-a. Explain how mobile BI contribute to the overall effectiveness of a BI solution. (CO1)

Mobile BI refers to the ability to access business intelligence data and reports on mobile devices such as smartphones and tablets. This can contribute to the overall effectiveness of a BI solution in several ways:

1. Accessibility: Mobile BI allows users to access business intelligence data from anywhere at any time. This means that they can make more informed decisions on-the-go, without having to be tied to a desktop computer.

2. Real-time updates: Mobile BI can provide real-time updates on key performance indicators (KPIs) and other important metrics. This means that decision-makers can respond quickly to changes in the business environment.

3. Increased productivity: Mobile BI can help increase productivity by allowing decision-makers to work more efficiently. For example, they can check KPIs while waiting for a meeting to start or access reports while traveling.

4. Better collaboration: Mobile BI can facilitate better collaboration among team members by allowing them to share data and insights more easily. This can lead to more effective decision-making and better outcomes for the organization.

continuous line, with each point representing a data point in time or a category.

3. Pie chart: Displays data as a circle divided into slices, with each slice representing a category and the size of the slice indicating the value of the data.

4. Scatter plot: Displays data as a set of points plotted on an x-y axis, with each point representing a data point and the position of the point indicating the values of the variables.

5. Map: Displays data on a geographic map, with each data point located on the map based on its geographic coordinates.

6. Gauge: Displays data as a dial or gauge, with the position of the pointer indicating the value of the data.

These visualizations can be customized and combined to create interactive dashboards and reports that allow users to explore and analyze their data in different ways.

3.f. Explanation of Difference between Data Journalism and Data Storytelling with Example (CO6)

Data journalism and data storytelling are both approaches to using data to communicate information and insights, but they differ in their focus and purpose.

Data journalism is a form of journalism that uses data analysis and visualization to support reporting and investigation. It involves collecting, analyzing, and presenting data to uncover stories or trends that may not be immediately apparent. Examples of data journalism include investigative reports on government spending, crime rates, and environmental issues.

Data storytelling, on the other hand, is a method of communicating insights and information through data visualization and narrative. It involves using data to tell a story or convey a message in a way that engages and informs the audience. Examples of data storytelling include infographics, interactive maps, and data-driven videos that present information in a compelling and accessible format.

While data journalism tends to focus on uncovering newsworthy stories and exposing wrongdoing, data storytelling is more concerned with informing and educating the public on complex topics such as climate change, healthcare, and social justice.

3.g. Explanation of Types of Visualizations in Power BI with Diagram (COS)

Power BI supports a range of visualizations that can be used to present data in different formats. Some common types of visualizations include:

1. Column chart: Displays data as vertical bars, with each bar representing a category and the height of the bar indicating the value of the data.

2. Line chart: Displays data as a continuous line, with each point representing a data point in time or a category.

3. Pie chart: Displays data as a circle divided into slices, with each slice representing a category and the size of the slice indicating the value of the data.

4. Scatter plot: Displays data as a set of points plotted on an x-y axis, with each point representing a data point and the position of the point indicating the values of the variables.

5. Map: Displays data on a geographic map, with each data point located on the map based on its geographic coordinates.

6. Gauge: Displays data as a dial or gauge, with the position of the pointer indicating the value of the data.

Here is a diagram that shows some examples of these visualizations:

As you can see, each visualization has its own strengths and weaknesses, and the choice of which to use will depend on the specific data being analyzed and the insights that need to be communicated.

4-a. Description of Data Warehouse, Data Mart and OLAP and their Differences (CO1)

Data Warehouse:

A data warehouse is a large centralized repository of data that is designed to support business intelligence activities such as reporting and analysis. It is typically used to store data from multiple source systems and consolidate it into a single, standardized format. Data warehouses are optimized for querying and analysis and are often used to support decision-making processes within an organization.

Data Mart:

A data mart is a subset of a data warehouse that is designed to support the needs of a specific business unit or department. Data marts are typically smaller in scale than data warehouses and contain only the data that is needed by the business unit. They are often used to provide a more focused and tailored view of the data to support specific analyses or reporting requirements.

OLAP:

Online Analytical Processing (OLAP) is a set of techniques and tools used to perform multidimensional analysis of data. OLAP allows users to analyze data from multiple perspectives, such as time, geography, and product lines, by creating virtual cubes that represent these dimensions. OLAP cubes can be queried using specialized tools such as pivot tables, which allow users to drill down and explore the data in different ways.

Differences:

The main differences between data warehouse, data mart, and OLAP are:

1. Scale: Data warehouses are typically larger in scale than data marts, which are designed to support the needs of a specific business unit or department. OLAP cubes can be created from both data warehouses and data marts.

2. Purpose: The purpose of a data warehouse is to provide a centralized repository of data for business intelligence activities such as reporting and analysis. The purpose of a data mart is to provide a focused view of the data for a specific business unit or department. The purpose of OLAP is to enable multidimensional analysis of data.

3. Structure: Data warehouses and data marts are typically structured using a dimensional model, which organizes the data into fact tables and dimension tables. OLAP cubes use multidimensional structures that allow users to analyze data from multiple perspectives.

4-b. Explanation of Analytical Operations that OLAP can Perform (CO1)

OLAP provides a range of analytical operations that can be performed on multidimensional data cubes. Some common analytical operations include:

1. Slice: This operation allows users to select a subset of the cube by specifying one or more values for a particular dimension. For example, a user might slice a sales cube by selecting a specific time period or product line.

2. Dice: This operation allows users to select a subset of the cube by specifying values for multiple dimensions. For example, a user might dice a sales cube by selecting a specific time period and region.

3. Roll-up: This operation allows users to aggregate data at a higher level of granularity. For example, a user might roll up a sales cube to show total sales by region, rather than by individual store.

4. Drill-down: This operation allows users to view data at a lower level of granularity. For example, a user might drill down into a sales cube to view sales by individual store, rather than by region.

5. Pivot: This operation allows users to rotate the cube to view it from a different perspective. For example, a user might pivot a sales cube to view it by product line, rather than by time period.

These analytical operations allow users to explore and analyze multidimensional data in a flexible and intuitive way, enabling them to gain deeper insights into their business operations.

5-a. Flow Graph of Designing BI Project (CO2)

The process of designing a BI project typically involves several steps, including:

1. Identify business requirements: The first step is to identify the business requirements for the BI project. This involves understanding the organization's goals and objectives, as well as the specific reporting and analysis needs of different departments or business units.

2. Define data sources: Once the business requirements have been identified, the next step is to define the data sources that will be used in the BI project. This may involve integrating data from multiple systems or databases.

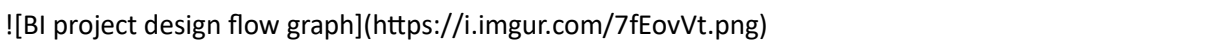
3. Develop data models: The data models are used to organize and structure the data for analysis. This may involve creating a dimensional model or another type of data model that is appropriate for the project.

4. Develop ETL processes: The Extract, Transform, Load (ETL) processes are used to extract data from the source systems, transform it into the appropriate format for analysis, and load it into the BI platform.

5. Develop queries and reports: Once the data has been loaded into the BI platform, queries and reports can be developed to provide insights into the data. This may involve using tools such as pivot tables or dashboards to visualize the data.

6. Test and deploy: Finally, the BI project can be tested and deployed to users. This involves ensuring that the data is accurate and that the reports and dashboards are meeting the business requirements. The BI project can then be deployed to users, who can begin using it to analyze data and make informed business decisions.

Here is a flow graph of the steps involved in designing a BI project:



This flow graph illustrates how each step in the process builds on the previous one, with the ultimate goal of creating a BI solution that meets the needs of the organization and provides valuable insights into its operations.

5.b. Explain how is SDK irrelated to BI tools.

SDK (Software Development Kit) and BI (Business Intelligence) tools are two different things that serve different purposes.

An SDK is a set of software development tools that allows developers to create applications for a specific platform or framework. It typically includes APIs, libraries, documentation, and sample code to facilitate the development process. SDKs are used by software developers to build custom applications that can interact with the platform or framework they are targeting.

On the other hand, BI tools are used to analyze data and generate insights into business performance. They typically include features such as data visualization, dashboards, and reporting capabilities. BI tools are designed to help business users make data-driven decisions based on the insights generated by the software.

While an SDK may be used to develop custom applications that integrate with BI tools, they are not directly related. The purpose of an SDK is to provide tools for developers to build applications, whereas the purpose of BI tools is to help business users analyze data and gain insights.

6.

a.Explain in details about data dimension and parameters in Tableau. (CO3)

In Tableau, data dimension refers to the categorical data that is used to segment and organize the information in a data visualization. Dimensions are usually discrete values such as names or dates that are used to group data into different categories. Parameters, on the other hand, are dynamic input controls that allow users to change certain aspects of a visualization.

Parameters can be used to adjust things like color, size, or filter settings within a visualization. They can also be used to create calculated fields or control the display of different elements in a dashboard. Parameters allow users to interact with a visualization and explore it in more detail.

b. Write difference between heat map and tree- map in Tableau with example (CO3)

Heat maps and tree maps are both types of data visualizations in Tableau, but they differ in how they represent the data. A heat map displays the relative density of data points in a two-dimensional space by using color coding. The intensity of the color represents the frequency or value of the data points. For example, in a heat map showing sales by region, darker colors might represent higher sales figures.

A tree map, on the other hand, shows hierarchical data as nested rectangles. Each rectangle represents a category, and the size of the rectangle reflects the value of that category. The categories are organized into a hierarchy based on their relationships to each other. For example, in a tree map showing the breakdown of a company's expenses, the largest rectangle might represent total expenses, with smaller rectangles representing individual expense categories.

7.

a. Is Tableau for MacOS available. If yes, Justify your reason. (CO4)

Yes, Tableau for MacOS is available. Tableau Desktop has versions for both Windows and MacOS. Tableau also offers a web-based version called Tableau Online, which can be accessed from any device with an internet connection. The availability of Tableau for MacOS makes it a versatile tool that can be used by a wide range of users, regardless of their preferred computing platform.

b. State the different connections you can make with your dataset. (CO4)

Tableau allows users to connect to a variety of data sources, including spreadsheets, databases, and cloud-based services. Some of the connections that can be made with a dataset include:

- Excel or CSV files
- Microsoft SQL Server
- Oracle databases
- Google Analytics
- Salesforce
- Hadoop clusters

Tableau also allows users to connect to web data connectors, which are custom APIs designed by third-party developers for specific data sources. This flexibility in data connections makes it easy for users to access and integrate their data from multiple sources.

8.

a. Elaborate about Workspace in Power BI. (CO5)

In Power BI, the workspace is a container for content related to a particular project or team. Workspaces allow users to share dashboards, reports, and datasets with other members of the team or organization. Workspaces can be set up for different projects, teams, or departments, depending on the needs of the organization.

Within a workspace, users can create and manage content like reports, dashboards, and datasets. They can also manage access and permissions for other members of the team. Workspaces provide a centralized location for collaboration and sharing of information.

b. Discuss how the power BI products integrate in detail. (CO5)

Power BI products integrate in several ways to provide a seamless user experience. For example, Power BI Desktop is a standalone application that allows users to create and publish reports and visualizations. Power BI Service is a cloud-based platform that provides additional features like collaboration, sharing, and data refreshing.

Power BI Mobile allows users to access their reports and dashboards from mobile devices, while Power BI Report Server allows for on-premises deployment of Power BI content. The integration between these products allows users to create, publish, and access Power BI content across different platforms and devices. Additionally, Power BI integrates with other Microsoft products like Excel and SharePoint, as well as third-party applications like Salesforce and Google Analytics.