Q3. What are the three major activities in building BI applications

Q1. Explain steps in creating BI application specification (8 Marks)

Ans:

1. The BI application specification step involves several tasks: designing the report template, identifying and specifying the applications themselves, and designing the navigation framework and portal.

2. This must happen as soon after the requirements definition process as possible, while the application related requirements are still fresh in your mind.

3. Create Application Standards and Templates (designing the report template)-
Develop a set of naming standards and a template that captures the general look and feel of your reports and applications before you start to create individual report specs.

> 3.1. Determine Naming Standards- These standards cover areas like naming, formatting, and common fields. They are particularly important in helping users quickly understand the nature of a report — its contents, sources, and timing. Putting some thought into standards now will help you create a consistent set of specifications.

> 3.2. Create the Application Templates- Once you have a set of naming standards, you can turn your attention to creating a standard template for the physical layout of your BI applications. Creating templates is important because people can find information more quickly if it is presented to them in a consistent fashion.

> 3.3. The following standard elements need to be defined - Report name. Report title Report body Header & Footer Report file name.

3.4. Create Dashboard and Analytic Application Templates (identifying and specifying the applications themselves) –

Dashboards and analytic applications are generally more complex than simple standard reports. When your project includes dashboards or analytic applications, you should create a standard template for these as well. It will include the same basic elements found above (3.3)

4. Determine the Initial Application Set- Once you have your standards and templates in place, the next step in the BI specification process is to develop the target list of reports. The goal is to end up with a small set of high value reports that provide a range of report types. The process of generating the target list involves three tasks:

4.1. Identify Report Candidates- The project's consolidated requirement findings and supporting notes are the ideal places to begin drawing up a list of potential reports. Depending on how well you documented your interviews, each interview write-up may have a list of potential reports to draw from.

4.2. Consolidate the Candidate List- Once the list is reasonably complete, refocus the group on consolidating the list. The point here is to identify those reports on the list that are essentially different versions of the same report. Categorise according to the items in the spreadsheet.

4.3. Prioritize the Report List -Once you have the list of candidate reports, work with the users to assign a priority to each one. Some of the factors to consider include business value, data availability, degree of development difficulty, scope of use, and user importance.

5. Design the Navigation Framework and Portal - Portal tools help with grouping and organising processes by allowing multiple organisational frameworks on top of a single report set. Portals also allow users to create their own personal report lists. However, because so much of the navigation's implementation depends on the chosen tool set, detailed navigation design will take place during the development phase.

Q2. What kind of preparation is required for BI application development?

(8 Marks)

Ans:

1. Install and Test the BI Tools - This can be more work than you'd think. Some of the larger BI tools have many components, each of which operates as a separate service. You may need to install infrastructure components required by the BI tool, like a web server. Once the basic components are in place, you usually need to define metadata to access the database.

2. Populate BI Tool Metadata - Most BI tools require that some metadata be defined before you can start development. The richness and complexity of defining the metadata is highly tool dependent. At the low end, definition may simply be selecting tables to be used right out of the DBMS system tables and setting up default joins, or reading directly from the OLAP database. At the high end, full business definitions, default drill paths, and shared metrics must be predefined

3. Create Business Metadata - Business metadata is data that describes the contents of the DW/BI system. Business metadata is the most important metadata in DW/BI system because its sole purpose is to help users understand what's in the DW/BI system and how to use it. Most BI tools have business metadata elements that help the users understand and navigate the dimensional model. The ability to group dimension and fact tables together into business process dimensional models, and to group attributes into categories are good examples of this kind of business metadata.

4. Test the BI Tools - Build some simple queries or reports to test each attribute within each dimension to see if everything has been defined properly. If strange and unusual things happen, it may be because of the metadata definitions, but may also be the result of errors in the data or data model. You should also try out the tool's full functionality as part of this initial test. Debugging the tool's metadata definitions requires a deep understanding of the tool metadata and the ability to look directly at the data in the tables.

Q4. Explain Business Intelligent application resource planning

Ans:

The BI applications are a critical part of the overall DW/BI system.

1. *Role of the BI Application Developer -* The BI application developer must develop, maintain, enhance, and extend the core set of BI applications. This puts the BI application developer in the position of being a consumer software provider. This person must provide usable, working, documented, and supported solutions for a technically unsophisticated user community. Beyond the basic development role, someone must also be available to respond to business requests for additional reports or applications.

2. *Assigning jobs -* The central group of BI developers is a part of the overall DW/BI team, with additional BI developers located in the business. This central group is part of the core project team and is involved in the requirements definition process and dimensional model design. We also usually find BI application developers at the local or departmental level. These folks are engaged in supporting business people with more specific, focused analyses that are relevant to their local programs or opportunities. Clearly, building and supporting BI applications is a big job. A good guideline is to plan for as many people on the user-facing front room of the DW/BI system as you have in the back room. In addition to the application development task, the user facing team also provides new reports, enhancements, maintenance, documentation, user support, and business metadata.

3. *Lifecycle Timing -* The BI application process occurs in two places in the Life Cycle. The report templates should be specified just after the requirements are completed. Even with a detailed requirement findings document, much information related to applications remains stored in the brains of the interview participants. It is important to capture this information immediately so that it is not lost.

Q11. Describe process of creating application standards and templates in development of BI application?

Q5. What are the steps in creating application templates in BI application specification? (8 Marks)

Ans:

Develop a set of naming standards and a template that captures the general look and feel of your reports and applications before you start to create individual report specs.

1. Determine Naming Standards - These standards cover areas like naming, formatting, and common fields. They are particularly important in helping users quickly understand the nature of a report — its contents, sources, and timing. Putting some thought into standards now will help you create a consistent set of specifications.

2. Create the Application Templates - Once you have a set of naming standards, you can turn your attention to creating a standard template for the physical layout of your BI applications. Creating templates is important because people can find information more quickly if it is presented to them in a consistent fashion.

The following standard elements need to be defined –

        A. Report name.
        B. Report title
        C. Report body
        D. Header & Footer
        E. Report file name.

We also need to create the following information for each report:

• User variables and other user interactions,

• Report metadata - including description, calculations, derivations, author, and date created.

• Security requirements - including a list or description of the security groups who can see the report.

• Execution cycle,

• Execution trigger event.

• Delivery mechanisms - such as email, web site, file directory, or printer.

• Delivery list,

• Standard output format, such as text, html, PDF, Excel, or Word.

• Page orientation, size, and margin settings.

3. Create Dashboard and Analytic Application Templates (identifying and specifying the applications themselves) - Dashboards and analytic applications are generally more complex than simple standard reports. When your project includes dashboards or analytic applications, you should create a standard template for these as well. It will include the same basic elements found above (3.3)

Q9. Explain following w.r.t BI application development?

  1) Define user interactions
     Answer :
     static reports,
     allow users to specify parameters to view results,
     drop downlist,
     checkboxes or radio buttons

  2) Format results
     Answer :
     format for multiple targets,
     look good when printed,
     ability to export to excel and pdf,
     use of tools for formatting

Ans:

Q10. What are the set of documents required for developing report/application in BI systems?

Ans:

1) Mock up. The mock up is the primary communications vehicle about the report. It is a physical example of the report, including all the visual components. To create a mock up, start with your standard template and fill in the report-specific elements: rows, columns, calculations, and formatting.

2) User interactions. List all the points where the user can interact with the report, including variables, parameters, lists, limits, drill down paths, and links. If the user interactions occur separate from the report layout, create a mock up of the user interaction interface as well.

3) Datasets. Describe the datasets that fill the various sections and components of the report, including the report body and selection lists that support user interactions. Note any sources that are external to the warehouse, and indicate the sources for metadata elements as well. If you know SQL, it can be helpful to create simple SQL queries to define the datasets.

4) Algorithms, advanced calculations, and business rules. Include descriptions of any advanced analytics or data mining models that will be needed in the application. For example, this might include an algorithm to determine the baseline response rate to a promotion to determine the increase or lift gained by target marketing.

5) Interactions with other reports/systems. If the report links to other reports, or is intended to allow the user to feed results back to the operational systems or elsewhere, describe those interactions and include links to API documentation.

Q7. Explain steps in creating detailed BI application specification

Ans:

1. Specify Application Content - Each standard report mock up provides the layout of a report that is most often driven by a set of parameters. The user sets the parameters from pick lists or by accepting the defaults when they run the report. This parameter-driven approach allows users to generate dozens or potentially hundreds of variations on the basic standard report.

2. Design the Navigation Framework and Portal - Portal tools help with grouping and organising processes by allowing multiple organisational frameworks on top of a single report set. Portals also allow users to create their own personal report lists. However, because so much of the navigation's implementation depends on the chosen tool set, detailed navigation design will take place during the development phase.

3. Review and Validate the Applications and Model - The BI application specs provide a good way to logically test the dimensional model once it begins to take shape. Take each report specification and verify that the attributes, constraints, hierarchies, measures, and appropriate grain all exist in the model. Look at each report, compare it to the model and think about how you would write the SQL or OLAP queries for the report. This process often surfaces problems in both the dimensional model and report design, which are much easier to deal with at early point in the design phase rather than after all the database and ETL work is done.

4. Review with the Business - Once you are comfortable that the application specifications are complete and that the dimensional model will support them, the next step is to hold an official review session with the core users and all other interested stakeholders. Their feedback and buy-in will make a big difference in their support later when the BI applications roll out.

Q6. Explain Testing and Verification of Applications and Data in BI Application Development

Q13. What are the issues in testing and verification of applications and data?

Ans:

1. *Meaningless descriptions -* Often the names and descriptions that are supplied by the source systems were not designed for browsing and report labels. Though it may seem like a good idea to use the existing names, once you see them in a pick list or as row and column headers, you may change your mind.

2. *Duplicate dimension information -* The ETL process should include checks to make sure that there are no duplicate keys. However, two different keys from the source data may represent the same thing. This may not surface during the ETL process, but it will become obvious when you look at the data via the BI tool.

3. *Incorrect dimensional relationships -* Check to make sure that the correct information is pulled when drilling. Sometimes the attributes within a dimension are not properly assigned, which causes unusual results.

4. *Data not balancing -* Another data issue that comes up during application development is the inability to balance the data to another existing system. There can be several causes. One could be that the BI application is calculating a business measure differently. Another is that the facts themselves may be created using different business rules than in the legacy system.

5. *Performance tuning -* It's common for the initial set of BI applications to not perform well right out of the gate. These are generally very complex reports or analyses. They often represent a range of business needs across the initial dataset or multiple datasets in subsequent iterations.