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## *Introduction to Data Analytics Theory Questions*

### **1.What is Data Analysis?**

Data Analytics, or data analysis, is similar to data science, but in a more concentrated way. Data analytics is a data science. The purpose of data analytics is to generate insights from data by connecting patterns and trends with organizational goals. Comparing data assets against organizational hypotheses is a common use case of data analytics, and the practice tends to be focused on business and strategy.

- Data analytics deals less in AI, machine learning, and predictive modelling, and more with viewing historical data in context.
- Data analysts are not commonly responsible for building statistical models or deploying machine learning tools.
- Data Analytics uses basic query expressions like SQL to slice and dice data.
- Data Analysts are less likely to be versed in big data settings.
- Data Analysts wrangle data i.e., either localized or smaller in footprint.

### **2.What are the tools useful for data analysis?**

It is supported by many tools such as:

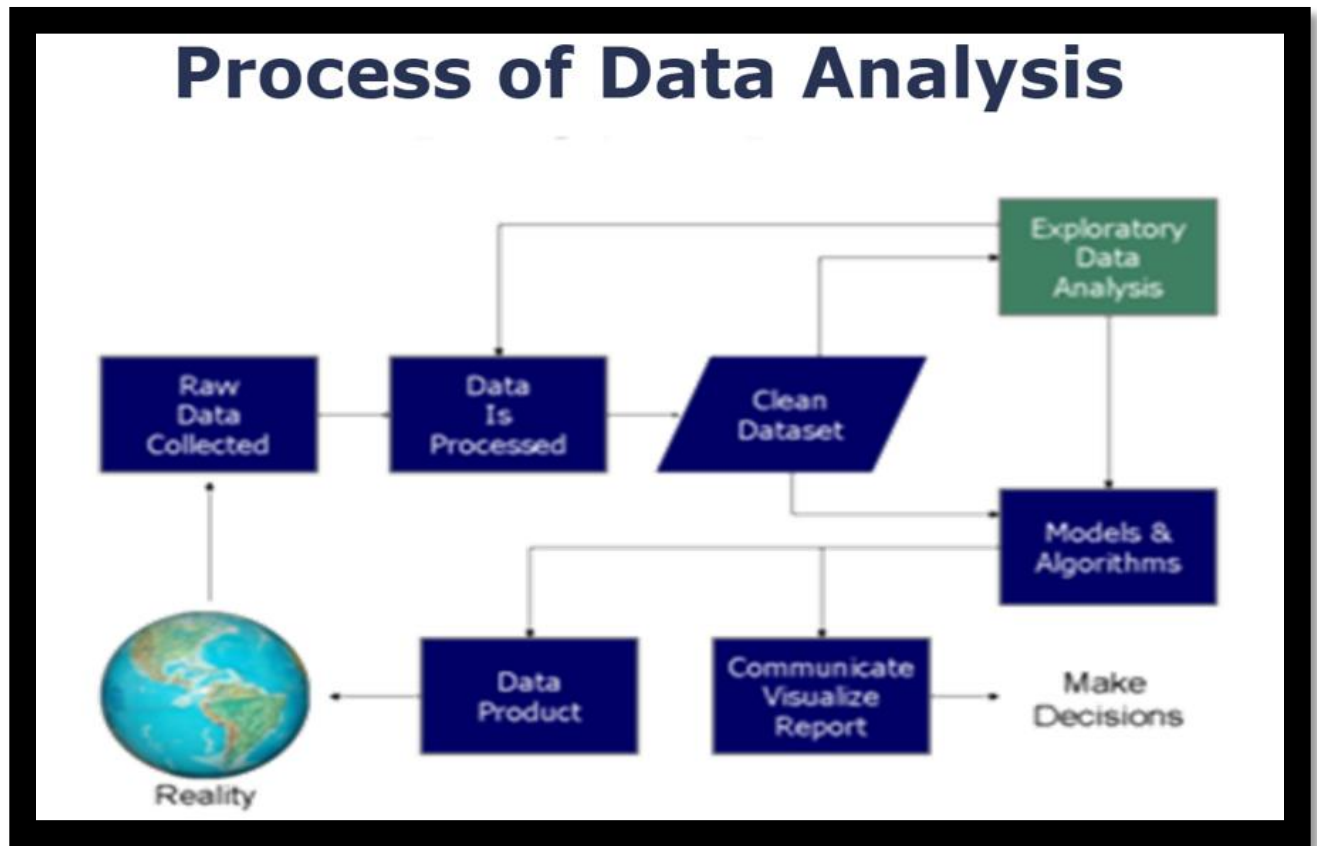
- I. Microsoft Excel
- II. SAS
- III. R
- IV. SQL
- V. Python
- VI. Tableau
- VII. Apache Spark
- VIII. And Many More.

### **3.What are the various steps involved in any analytics project?**

The various steps involved in any analytics project are as follows:

1. Define the Problem and Objectives
2. Gather and Prepare Data
3. Explore and Analyze the Data
4. Select Analytical Techniques
5. Build and Validate Models
6. Interpret and Communicate Results
7. Implement Solutions and Monitor
8. Document and Maintain
9. Evaluate Project Success

This diagram shows the process of Data Analysis.



#### 4.What are the responsibilities of a Data Analyst?

Data Analysts gather information from various sources and interpret patterns and trends.

**Duties of Data analyst** are:

- Collecting and interpreting data
- Analyzing results
- Reporting the results back to the relevant members of the business
- Identifying patterns and trends in data sets
- Working alongside teams within the business or the management team to establish business needs
- Defining new data collection and analysis

#### 5.Write some key skills usually required for a data analyst.

- Skills required for Data Analyst are as follows:
  1. Analytical Skills
  2. Numerical Skills
  3. Technical And Computer Skills
  4. Attention To Details
  5. Business Skills

## 6.What are the common problems that data analysts encounter during analysis?

Data analysts may encounter various challenges and problems during the analysis process. Here are some common issues that data analysts may face:

- I. **Insufficient or Incomplete Data:** Data analysts may encounter situations where the available data is inadequate or incomplete, lacking certain variables or records necessary for analysis. Missing or inconsistent data can affect the accuracy and reliability of the analysis.
- II. **Data Quality Issues:** Poor data quality, such as errors, duplicates, outliers, or inconsistencies, can significantly impact the analysis results. Data analysts need to spend time cleaning and preprocessing the data to ensure its quality before analysis.
- III. **Data Bias and Sampling Issues:** Biases in data collection methods or sampling techniques can introduce skewed or non-representative datasets, leading to biased analysis results. Data analysts must be aware of potential biases and account for them appropriately.
- IV. **Lack of Domain Knowledge:** Without sufficient domain knowledge, data analysts may struggle to understand the context and meaning of the data they are working with. Domain expertise is crucial for proper interpretation and meaningful analysis of the data.
- V. **Complex Data Relationships:** Some datasets may involve complex relationships or dependencies between variables. Analyzing such data requires advanced techniques, such as multivariate analysis or network analysis, which can be challenging for data analysts without expertise in those methods.
- VI. **Data Privacy and Security Concerns:** Data analysts often work with sensitive or confidential information, requiring them to adhere to privacy and security regulations. Ensuring data protection while performing analysis can be a complex task.
- VII. **Scalability and Performance:** Large datasets or computationally intensive analyses may pose challenges in terms of computational resources and processing time. Data analysts need to optimize their algorithms and use appropriate tools to handle big data effectively.
- VIII. **Communication and Visualization:** Presenting complex analysis results in a clear and understandable manner can be a challenge. Data analysts must effectively communicate their findings to stakeholders using appropriate visualizations, reports, or presentations.
- IX. **Keeping Up with Technology and Techniques:** The field of data analysis is rapidly evolving, with new tools, techniques, and algorithms being developed regularly. Data analysts need to continuously update their skills and knowledge to stay current with the latest advancements.
- X. **Ethical Considerations:** Data analysts may encounter ethical dilemmas during analysis, such as handling sensitive data, ensuring fairness in algorithmic decision-making, and addressing

potential biases or discrimination in the data. Ethical considerations should be carefully addressed throughout the analysis process.

## 7.What is the difference between data analytics and data science?

Parameters	Data Science	Data Analytics
<b>Fundamental Goal</b>	Asking right business questions & finding solutions	Analyzing and Mining Business Data
<b>Quantum of Data</b>	Broad set of Data (Big Data)	limited Set of Data
<b>Various Task</b>	Data Cleansing, preparation analysis to gain insights	Data querying, aggregation to find pattern
<b>Definition</b>	Data Science is the art and science of extracting actionable insight from raw data	Data analysts are not commonly responsible for building statistical models or deploying machine learning tools
<b>Substantive Expertise</b>	Needed	Not Needed
<b>Non-technical</b>	Needed	Not Needed
<b>Focus</b>	Pre-processed Data	Processed Data
<b>Bandwidth</b>	More freedom in scope and practice	Less freedom in scope and practice
<b>Purpose</b>	Finding insights from raw Data	Finding insights from processed data
<b>Data Types</b>	Structured and Unstructured Data	Structured Data
<b>Benefits</b>	Data scientist explores and examines data from multiple disconnected sources	data analyst usually looks at data from a single source like the CRM
<b>Artificial Intelligence</b>	Deals more in Artificial Intelligence	Deals Less in Artificial Intelligence
<b>Machine Learning</b>	Deals more in Machine Learning	Deals Less in Machine Learning
<b>Predictive Analysis</b>	Deals more in Predictive Analysis	Deals Less in Predictive Analysis