Q-1 What is Data Analysis?

**Data analysis** is defined as a process of cleaning, transforming, and modeling data to discover useful information for business decision-making. The purpose of Data Analysis is to extract useful information from data and taking the decision based upon the data analysis.

A simple **example** of Data analysis is whenever we take any decision in our day-to-day life is by thinking about what happened last time or what will happen by choosing that particular decision. This is nothing but analyzing our past or future and making decisions based on it. For that, we gather memories of our past or dreams of our future. So that is nothing but data analysis. Now same thing analyst does for business purposes, is called Data Analysis.

**Types of Data Analysis**: Techniques and Methods

There are several types of Data Analysis techniques that exist based on business and technology. However, the major Data Analysis methods are:

1. Text Analysis
2. Statistical Analysis
3. Diagnostic Analysis
4. Predictive Analysis
5. Prescriptive Analysis

Q-2 What are the tools used in Data Analytics?

Here are the data analysis tools -

1. [**Microsoft Excel**](https://careerfoundry.com/en/blog/data-analytics/data-analytics-tools/#microsoft-excel)
2. [**Python**](https://careerfoundry.com/en/blog/data-analytics/data-analytics-tools/#python)
3. [**R**](https://careerfoundry.com/en/blog/data-analytics/data-analytics-tools/#r)
4. [**Jupyter Notebook**](https://careerfoundry.com/en/blog/data-analytics/data-analytics-tools/#jupyter-notebook)
5. [**Apache Spark**](https://careerfoundry.com/en/blog/data-analytics/data-analytics-tools/#apache-spark)
6. [**SAS**](https://careerfoundry.com/en/blog/data-analytics/data-analytics-tools/#sas)
7. [**Microsoft Power BI**](https://careerfoundry.com/en/blog/data-analytics/data-analytics-tools/#microsoft-power-bi)
8. [**Tableau**](https://careerfoundry.com/en/blog/data-analytics/data-analytics-tools/#tableau)
9. [**KNIME**](https://careerfoundry.com/en/blog/data-analytics/data-analytics-tools/#knime)

* Excel at a glance:
* **Type of tool:** Spreadsheet software.
* **Availability**: Commercial.
* **Mostly used for:** Data wrangling and reporting.
* **Pros:** Widely-used, with lots of useful functions and plug-ins.
* **Cons:** Cost, calculation errors, poor at handling big data.
* Python at a glance:
* **Type of tool:** Programming language.
* **Availability:** Open-source, with thousands of free libraries.
* **Used for:** Everything from data scraping to analysis and reporting.
* **Pros:** Easy to learn, highly versatile, widely-used.
* **Cons:** Memory intensive—doesn’t execute as fast as some other languages.
* R at a glance:

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* **Type of tool:** Programming language.
* **Availability:** Open-source.
* **Mostly used for:** Statistical analysis and data mining.
* **Pros:** Platform independent, highly compatible, lots of packages.
* **Cons:** Slower, less secure, and more complex to learn than Python.
* Jupyter Notebook at a glance:

Jupyter Notebook at a glance:

* **Type of tool:** Interactive authoring software.
* **Availability:** Open-source.
* **Mostly used for:** Sharing code, creating tutorials, presenting work.
* **Pros:** Great for showcasing, language-independent.
* **Cons:** Not self-contained, nor great for collaboration.

**Q-**3 What are the various steps involved in any analytics project?

1. **Defining the problem**:-The first step is to understand your business problem and the questions being asked. What is the problem you are. The first step is to understand your business problem and the questions being asked so as to establish your data analytics requirements.
2. **Exploring the data**:- The next step is to explore the data, such as customer behaviour and transactions in order to become more familiar with it to obtain a deeper understanding of the information gathered. This is especially important when dealing with a completely new data set.

3.**Preparing the data** :- The third step is preparing the data for modelling.

4**. The data modelling process**:- Once the data is prepared, our data scientists using powerful analytics tools can begin modelling.

5. **Validating the model:**- The final model (or maybe the best 2-3 models) will then be put through the validation process.

6. **Using the model and tracking results**:-After the validation process the final model is chosen.

Q-4 What are the responsibilities of Data analytics?

**Data Analyst Roles and Responsibilities**

The following is a list of some of the data analyst roles and responsibilities:

* A data analyst oversees organizing data related to sales figures, market research, logistics, linguistics, or other behaviours. They use technical expertise to ensure that data is accurate and of high quality. Data is then analyzed , designed, and presented in a way that helps individuals, businesses, and organizations make better decisions.
* Using automated technologies for data extraction from primary and secondary sources.
* Eliminating damaged data, fixing coding difficulties, and other problems.
* Creating and managing databases and data systems involves reorganizing data into a format that is readable.
* Evaluating data to establish its value and quality.

Q-5 Write some key skills usually required for Data analytics?

Here are the top 10 data analysis skills to master for a successful career in this field:-

* Structured Query Language (SQL)
* Microsoft Excel
* Mathematical skills
* Statistical programming language
* Machine learning
* Data visualisation
* Data collection and cleaning
* Communication
* Critical thinking
* Problem-solving

Q-6 What are the common problems that data analytics encounter during analysis?

Problem #1: **Data Quality Issues**

One of the most common problems faced by data analysts. Data quality is an important indicator of the value of your data. The quality of your data is critical to your analysis since it can affect your findings.

Problem #2: **Lack of Resources**

If you don’t have the necessary resources to complete your analysis, this can cause significant problems.

Problem #3**: Not Knowing What to Look For**

This problem often arises when you don’t know what questions to ask. Your analysis is only as good as the questions you ask.

Problem #4**: Poor Data Visualization**

Poor data visualization is another common problem that can affect your analysis. Data visualization is the process of turning raw data into visual representations.

Problem #5: **Inaccurate Data**

Another common problem that can affect your analysis is inaccurate data. Data accuracy refers to the degree to which your data is correct.

Problem #6: **Not Knowing the Right Tools**

If you don’t know the right tools to use for your analysis, this can create problems.

Q-7 What is the difference between data analytics and data science?

The major difference between data science and data analytics is scope. A data scientist’s role is far broader than that of a data analyst, even though the two work with the same data sets. For that reason, a data scientist often starts their career as a data analyst.

Here are some of the ways these two roles differ.

**Responsibilities-**

Data scientists model data to make predictions, identify opportunities, and support strategy. They use data to understand the future. The role of the data analyst is to solve problems and spot trends. They work with the data as a snapshot of what exists now.

**Database manipulation and management-**

Data scientists use algorithms and machine learning to improve the ways that data supports business goals. Data analysts collect, store, and maintain data and analyze results.

**Questions and answers-**

Data scientists identify the questions and determine the best way to get at the answers. Data analysts receive questions and use data analysis to provide answers.