**Introduction to Data Analystics**

**What is Data-Analytics?**

**Definition:** Data Analytics involves examining data sets to draw conclusions about the information they contain, often with the aid of specialized software.

**Purpose:** Helps organizations make informed decisions, improve processes, and understand patterns and trends.

**Key Steps:** Collecting data, processing, analyzing, and interpreting results.

**Tools:** Excel, SQL, Python, and visualization tools like Tableau.

**What are Roles and Responsibilities of Data Analyst?**

* **Data Collection:** Collect data from diverse sources, including databases, surveys, social media, and other repositories.
* **Data Cleaning and Preparation:** Ensure data is accurate, complete, and consistent for analysis.
* **Data Analysis:** Use statistical and machine learning techniques to identify trends, patterns, and insights.
* **Data Visualization:** Create easy-to-understand charts, graphs, and visuals to represent data effectively.
* **Report Generation:** Develop clear, concise, and actionable reports to communicate the findings of data analysis.
* **Stakeholder Collaboration:** Work with stakeholders to understand their needs and present data in a relevant and meaningful way.
* **Tool and Technique Development:** Build and maintain data analysis tools while staying up-to-date with the latest technologies and trends.
* **Data Security and Privacy:** Protect data from unauthorized access, use, or disclosure to ensure privacy.
* **Continuous Learning and Skill Development:** Participate in courses, conferences, and read books/articles to enhance skills in data analytics.
* **Industry Awareness:** Stay informed about the latest trends and advancements in data analytics.

**Difference Between Data Analyst, Business Analyst and Data Scientist.**

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| **Category** | **Business Analyst** | **Data Analyst** | **Data Scientist** |
| **Main Focus** | Business processes, systems, and strategies | Data collection, analysis, and interpretation | Advanced data modelling, machine learning, and predictive analysis |
| **Role** | Acts as a liaison between business and IT | Analyzes data to provide actionable insights | Creates advanced models to solve complex business problems |
| **Responsibilities** | Requirements elicitation, analysis, and management | Data cleaning, analysis, and visualization | Designing algorithms, building models, and analyzing large datasets |
| **Expertise** | Domain knowledge, communication, problem-solving | Data analysis, statistical skills, visualization | Advanced statistics, machine learning, AI, and programming |
| **Skills** | Communication, process modelling, documentation | Data querying, manipulation, statistical analysis | Programming (Python, R), deep learning, predictive analytics |
| **Tools/Languages** | Process modelling tools, requirements documentation | SQL, Excel, Tableau, Python | Python, R, SQL, TensorFlow, Scikit-learn, Hadoop |
| **Outcome** | Improved business processes and system solutions | Insights for data-driven decision making | Predictive models and data-driven strategies |
| **Interaction** | Collaborates with stakeholders at all levels | Works with data and business teams | Works with data engineers, analysts, and decision-makers |
| **Deliverables** | Functional requirements, process improvements | Reports, dashboards, actionable insights | Predictive models, recommendations, and research papers |