100 Days of Data Science

Week 1

Google Data Analytics Course

Module 1

1. Core Concepts

- **Data:** A collection of facts used as the foundation for analysis.
- **Data Analytics:** The scientific process of analyzing data to make informed decisions.
- **Data Analysis:** Collecting, transforming, and organizing data to draw conclusions and predict outcomes.

2. Roles and Skills

- **Data Analyst:** A professional who processes and interprets data to guide decision-making.
- **Analytical Skills:** Problem-solving qualities based on factual analysis.
- **Analytical Thinking:** A systematic, data-driven approach to identifying and resolving problems.
- **Technical Mindset:** The ability to simplify processes into manageable, logical steps.

3. Key Processes and Strategies

- **Data Design:** The organization of information for effective analysis.

- **Data Ecosystem:** Interconnected elements for producing, managing, storing, and analyzing data.
- **Data Strategy:** Management of people, processes, and tools in data analysis.
- **Data-Driven Decision-Making:** Using data insights to shape business strategies.

4. Tools and Techniques

- **Data Visualization:** Graphical representation of data for easier interpretation.
- **Dataset:** A structured collection of data analyzed as a single unit.
- **Gap Analysis:** Identifying discrepancies between the current state and desired outcomes to improve processes.
- **Root Cause Analysis:** Determining the fundamental reason for a problem.

5. Broader Fields

- **Data Science:** Using raw data to model and understand unknowns, often applying advanced techniques like machine learning.

6. Context and Application

- **Context:** The conditions in which data exists, providing necessary background for analysis.
- **Visualization:** Focuses on presenting data insights visually, supporting better comprehension.

Module 2

Terms and Definitions

1. **Database**: A collection of data stored in a computer system.
2. **Spreadsheet**: A digital worksheet for organizing and analyzing data.
3. **Formula**: Instructions to perform calculations in a spreadsheet.
4. **Function**: A preset command for automated tasks in a spreadsheet.
5. **Query**: A request for data or information from a database.

6. **Query Language**: A programming language for database communication.
7. **SQL (Structured Query Language)**: A query language specifically for databases.
8. **Stakeholders**: People invested in a project and its outcomes.

Module 3

1. Overview

- **Key Tools for Data Analysts**:
  - **Spreadsheets**: Organize, analyze, and calculate data.
  - **Query Languages**: Communicate with databases to retrieve and manipulate data.
  - **Data Visualization Tools**: Graphically represent data for better understanding.

2. Learning Objectives

- **Spreadsheets**:
  - Understand their basic features (e.g., formulas, functions, sorting).
  - Use them for data organization and analysis (e.g., Excel, Google Sheets).
- **Query Languages (SQL)**:
  - Learn basic concepts (e.g., SELECT, WHERE, JOIN queries).
  - Examples include retrieving specific data or combining tables.
- **Data Visualization**:
  - Create visuals like charts, graphs, and dashboards.
  - Examples include using tools like Tableau or Google Data Studio to represent trends or comparisons.

Module 4

1. Data Analyst's Role

- **Responsibilities**:
  - Analyze data to support business decisions.
  - Perform tasks like identifying trends, creating reports, and making predictions.

2. Google Data Analytics Certificate

- Prepares candidates for analyst roles by teaching necessary skills and tools.
- Helps meet job requirements through hands-on learning and industry-relevant projects.

3. Business Tasks for Data Analysts

- Tasks must be fair and value-driven, ensuring ethical use of data.
- Examples include:
  - Market trend analysis for fairness in product pricing.
  - Customer behavior analysis for improved services.

4. Companies Hiring Data Analysts

- Potential employers include:
  - Tech companies
  - Retail organizations
  - Healthcare providers
  - Financial institutions

5. Prior Experiences

- Transferable skills (e.g., problem-solving, communication, or technical know-how) can be applied to a data analyst career.

6. Ethical Data Use

- Fair practices involve unbiased and responsible handling of data.
- Examples of unfair practices: Misleading data representation or invasion of privacy.

7. Data-Driven Decision-Making

- Using data insights to guide strategies.
- Example: A retail company adjusting inventory based on sales trends.

8. Organizational Use of Data

- Businesses use data for operations, marketing, customer insights, and strategic planning.