6-Months

Road-map to Become a

Data Analyst*

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Purpose: This 6-month roadmap will guide you through the essential skills, tools, and techniques to become a proficient data analyst. Whether you're looking to start freelancing, pursue a job in the industry, or just improve your data skills, this guide will provide you with a clear path forward.

What You'll Learn: In this learning path, you will learn Excel, SQL, Python, Statistical Analysis, data visualization, and portfolio building.

Who This Guide Is For: This roadmap is designed for beginners looking to enter the world of data analytics.

Month 1: Build the Foundations

- 1.1 **Week 1: Excel/Spreadsheets**
- 1.2 **Week 2: SQL Basics**
- 1.3 **Week 3–4: Python Basics**

Month 2: Data Visualization & Advanced SQL

- 2.1 **Week 1: Data Visualization**
- 2.2 **Week 2: Advanced SQL**
- 2.3 **Week 3–4: Combine Python & SQL**

Month 3: Data Cleaning and Analysis

- 3.1 **Week 1: Data Cleaning**
- 3.2 **Week 2: Statistical Analysis**
- 3.3 **Week 3–4: Case Studies**

Month 4: Dashboard Creation and Reporting

- 4.1 **Week 1–2: Tableau/Power BI**
- 4.2 **Week 3–4: Reporting**

Month 5: Portfolio Building

- 5.1 **Week 1–2: Portfolio Projects**
- 5.2 **Week 3–4: Mock Freelancing**

Month 6: Career Launch

- 6.1 **Week 1–2: Job Search Strategies**
- 6.2 **Week 3–4: Interview Preparation**

Month 1: Build the Foundations

Objective: Learn the basics of data analysis—Excel, SQL, and Python fundamentals.

Week 1: Excel/Spreadsheets
- **Day 1–2**: Introduction to Excel basics
  - Formatting cells, numbers, text, dates.
  - Functions: `SUM()`, `AVERAGE()`, `IF()`, `VLOOKUP()`, `COUNTIF()`.
  - Basic charting: bar, line, and pie charts.
- **Day 3–4**: Intermediate Excel functions
  - Data manipulation: Sorting, filtering, and basic conditional formatting.
  - Pivot Tables: Creating pivot tables and analyzing data.
- **Day 5–6**: Data analysis practice
  - Practice on small datasets: Analyze sales, customer data, or financial data.
  - Create simple visualizations like bar charts and histograms.
- **Day 7**: Project: Analyze a sample dataset (e.g., sales data).
  - Clean the dataset, apply basic formulas, create summary statistics, and visualize trends.

Week 2: SQL Basics
- **Day 1–2**: Learn basic SQL queries
  - Syntax: `SELECT`, `WHERE`, `ORDER BY`, `LIMIT`.
  - Filtering and sorting data.
- **Day 3–4**: Joins and Aggregations
  - Different types of joins: `INNER JOIN`, `LEFT JOIN`, `RIGHT JOIN`, `FULL OUTER JOIN`.
  - Aggregations: `COUNT()`, `SUM()`, `AVG()`, `MAX()`, `MIN()`.
- **Day 5–6**: Practice SQL
  - Use platforms like SQLZoo, Mode Analytics, or W3Schools to practice queries.
- **Day 7: Project:** Write SQL queries to extract insights from a database (e.g., employee, sales, or customer data).

Week 3–4: Python Basics
- **Day 1–3**: Python Fundamentals
  - Learn Python syntax: Variables, data types, control structures (loops, if-else).
  - Functions, modules, and libraries.
- **Day 4–5**: Introduction to Pandas

  - Learn Pandas basics: DataFrames, Series, indexing, filtering.
  - Load and clean datasets using `read_csv()` and `dropna()`.
- **Day 6**: Introduction to NumPy
  - Learn NumPy arrays and basic mathematical operations.
  - Vectorization for faster data manipulation.
- **Day 7: Project:** Clean and manipulate a CSV dataset using Pandas.

Month 2: Data Visualization & Advanced SQL

Objective: Learn data visualization tools, build on SQL skills, and practice more advanced techniques.

Week 1: Data Visualization with Python & Tableau

- **Day 1–2**: Learn Matplotlib and Seaborn
    - Create basic plots: Line charts, bar charts, scatter plots, histograms, and box plots.
    - Customize plots: Titles, labels, color palettes.
- **Day 3–4**: Learn Tableau basics
    - Import data and create basic visualizations.
    - Create interactive dashboards using filters, parameters, and calculated fields.
- **Day 5–6**: Advanced visualization techniques
    - Explore advanced plotting techniques in Seaborn (heatmaps, violin plots).
    - Learn data storytelling: Communicating insights through visualizations.
- **Day 7: Project:** Create a Tableau dashboard (e.g., COVID-19 trends).

Week 2: Advanced SQL

- **Day 1–3**: Advanced SQL concepts
    - Learn subqueries, window functions (`RANK()`, `ROW_NUMBER()`), `CASE` statements.
    - Practice writing complex queries with multiple subqueries and joins.
- **Day 4–6**: Real-world SQL
    - Work on sample datasets (e.g., e-commerce, customer data).
    - Practice writing reports and queries for deeper insights.
- **Day 7: Project:** Write complex queries for a sample database (e.g., customer segmentation).

Week 3–4: Combine Python & SQL

- **Day 1–2**: Use Python libraries to interact with SQL
    - Learn `SQLAlchemy` to connect Python to SQL databases.
    - Execute SQL queries directly from Python using `pandas.read_sql()`.
- **Day 3–5**: Practice integrating SQL with Python
    - Perform analysis on a dataset by combining SQL queries and Python data manipulation.
- **Day 6–7: Project:** Analyze a large dataset using both Python and SQL (e.g., data from an SQL database).

Month 3: Data Cleaning & Statistical Analysis

Objective: Focus on data cleaning, exploration, and basic statistical analysis.

Week 1: Data Cleaning

- **Day 1–2**: Handling missing data
  - Learn imputation techniques (mean, median, mode) and dropping missing values.
  - Practice filling missing values using `fillna()` in Pandas.
- **Day 3–4**: Handling outliers
  - Use the IQR (Interquartile Range) method and Z-scores to detect and handle outliers.
  - Practice cleaning messy datasets.
- **Day 5–6**: Explore data cleaning tools
  - Learn how to clean categorical data (e.g., handling incorrect categories, duplicates).
- **Day 7: Project:** Clean and prepare a messy dataset for analysis.

Week 2: Statistical Analysis

- **Day 1–3**: Descriptive statistics
  - Learn mean, median, variance, standard deviation, and percentiles.
  - Understand data distributions using histograms and boxplots.
- **Day 4–5**: Hypothesis Testing and Correlation
  - Understand correlation and covariance.
  - Learn about t-tests, chi-square tests, and ANOVA for hypothesis testing.
- **Day 6–7: Project:** Analyze relationships between variables using statistical tests (e.g., correlation, chi-square).

Week 3–4: Case Studies & Kaggle Competitions

- **Day 1–3**: End-to-end analysis
  - Work on a dataset from start to finish: clean, visualize, and interpret.
  - Apply the learned techniques to real-world datasets.
- **Day 4–7**: Kaggle competition
  - Participate in a beginner-level Kaggle competition to test your skills and improve.
  - Focus on data cleaning, exploration, and building simple models.

Month 4: Dashboard Creation & Reporting

Objective: Learn how to create professional dashboards and reports to present insights effectively.

Week 1–2: Advanced Tableau & Power BI

- **Day 1–3**: Learn advanced features in Tableau/Power BI
    - Create dynamic filters, slicers, and parameters.
    - Work with calculated fields, aggregated measures, and level of detail (LOD) expressions.
- **Day 4–6**: Design interactive dashboards
    - Build interactive dashboards for real-world business cases: e-commerce, customer retention, sales analysis.
- **Day 7: Project:** Create a complex dashboard using Tableau or Power BI (e.g., sales or marketing data).

Week 3–4: Reporting and Storytelling

- **Day 1–3**: Learn reporting techniques
    - Use tools like Power BI or Tableau to create reports.
    - Understand how to present data clearly and effectively for non-technical stakeholders.
- **Day 4–7: Project:** Create a professional report for a business problem, incorporating visualizations and insights.

Month 5: Portfolio Building & Career Preparation

Objective: Build a strong portfolio and prepare for a data analyst job or internship.

Week 1–2: Portfolio Projects

- **Objective:** Create 3–4 projects showcasing data analysis skills.
- **Action Steps:**
    - Choose diverse datasets to clean, analyze, and visualize. Example projects:
        - **Sales Analysis:** Identify trends in sales data.
        - **Customer Segmentation:** Use clustering to group customers.
        - **Predictive Analysis:** Build a model to forecast trends (e.g., sales or churn).
    - Create concise reports/presentations to communicate findings clearly.
- **Skills to Focus On:**
    - Data cleaning & transformation
    - Exploratory Data Analysis (EDA)
    - Data visualization
    - Report creation & presentation

Week 3–4: Interview Preparation

- **Objective:** Prepare for data analyst interviews and internships.
- **Action Steps:**
  - Update resume highlighting data skills and completed projects.
  - Create an online portfolio (e.g., GitHub) with project details and code.
  - Practice answering common interview questions (e.g., handling missing data, ensuring result accuracy).
  - Optimize LinkedIn profile to reflect skills and projects.
- **Skills to Focus On:**
  - Communication (explaining technical concepts)
  - Technical writing (for reports and presentations)

Month 6: Real-World Application & Continued Development

Objective: Apply skills in a real-world environment and continue learning.

Week 1–2: Internships or Volunteer Work

- **Objective:** Gain hands-on experience.
- **Action Steps:**
  - Look for internships or entry-level data analyst roles.
  - Volunteer for data analysis projects with nonprofits or startups.
  - Consider freelance platforms (e.g., Upwork) for small projects.
- **Skills to Focus On:**
  - Project management
  - Teamwork & collaboration
  - Client communication

Week 3–4: Continued Learning & Specialization

- **Objective:** Deepen knowledge and specialize in an area of data analysis.
- **Action Steps:**
  - Learn advanced tools like machine learning (e.g., scikit-learn), big data (e.g., Hadoop), or cloud platforms (e.g., AWS).
  - Pursue certifications (e.g., Google Data Analytics, Tableau, Microsoft).
  - Specialize in areas like healthcare, finance, marketing, or sports analytics.
  - Stay current by reading blogs, attending webinars, and taking online courses.
- **Skills to Focus On:**
  - Advanced technical expertise
  - Industry specialization
  - Ongoing education through certifications and courses