BrightLight Tutorials

Learn

Data Analytics

Enroll Now

www.brightlighttutorials.co.za
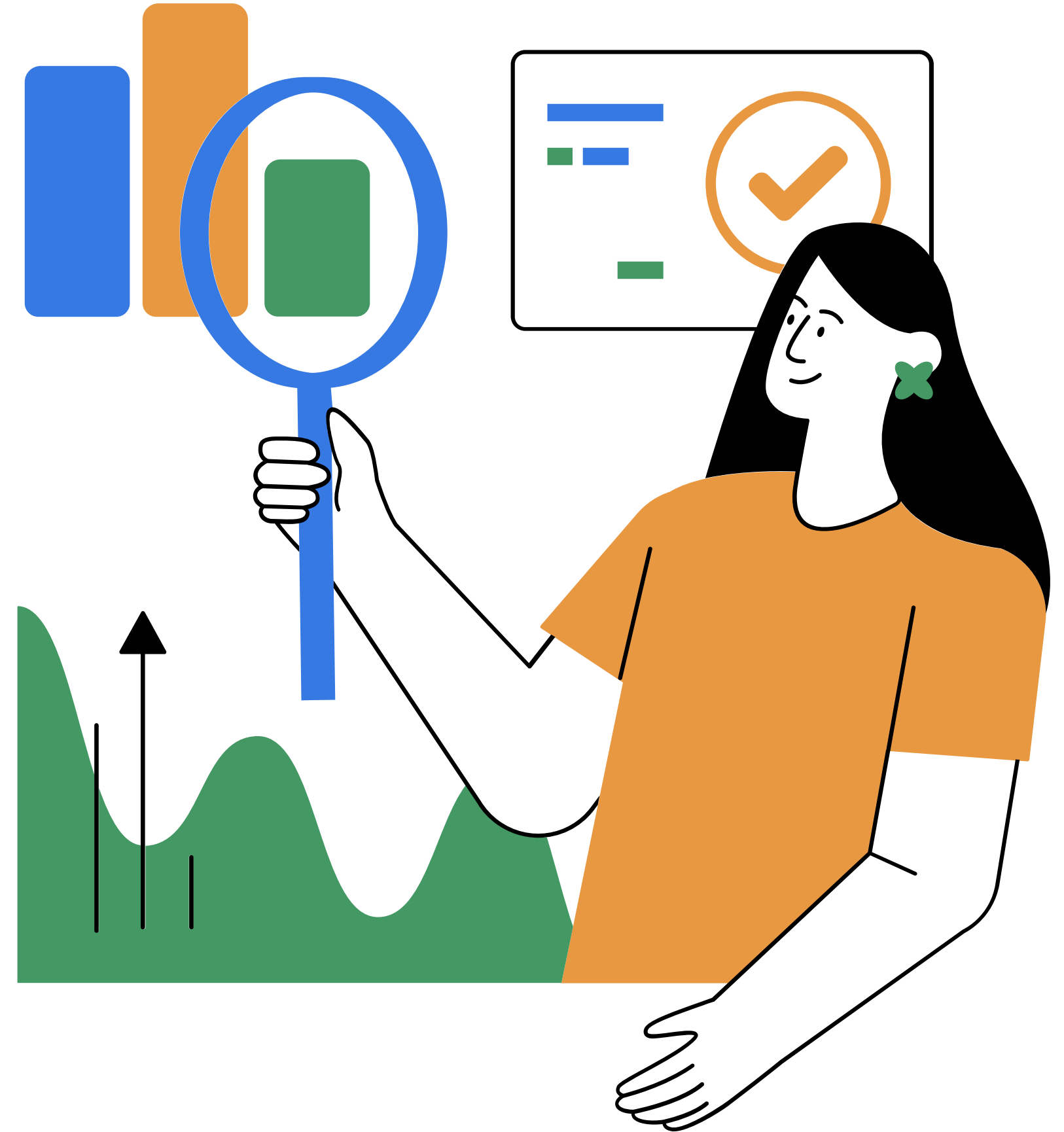
What is a Data Analyst?

Data Analyst is a professional responsible for **collecting, processing, and analyzing data** to help organizations make **informed business decisions**. They work with raw data from various sources, ensuring its accuracy and completeness before applying **statistical methods** and analytical tools to **extract valuable insights**. Using software like **Excel, SQL, or Python**, they identify trends, patterns, and correlations that **inform business strategies** and problem-solving.

Data Analysts also focus on **visualizing data** through **charts, graphs, and dashboards** to present complex information in an understandable format for **decision-makers**. Their role includes **reporting findings** and **offering actionable recommendations** based on **data insights,** collaborating with other departments to address business challenges and **improve overall performance.**

Types of Data Analysis

Descriptive Analysis

- **Purpose:** Summarizes and describes the main features of a dataset.
- **Methods:** Uses measures like mean, median, mode, standard deviation, and data visualization (e.g., histograms, pie charts).
- **Difference:** Focuses on providing a clear summary of past data without inferring or predicting future outcomes.
- **Example:** Analyzing sales data to understand the average monthly sales and sales distribution.

Diagnostic Analysis

- **Purpose:** Investigates the reasons behind past outcomes or events.
- **Methods:** Compares different variables and identifies cause-and-effect relationships using statistical techniques (e.g., correlation analysis).
- **Difference:** Goes beyond describing data to explore why something happened, often by comparing different data points.
- **Example:** Analyzing a drop in sales to identify if it was caused by changes in pricing, marketing campaigns, or external factors.
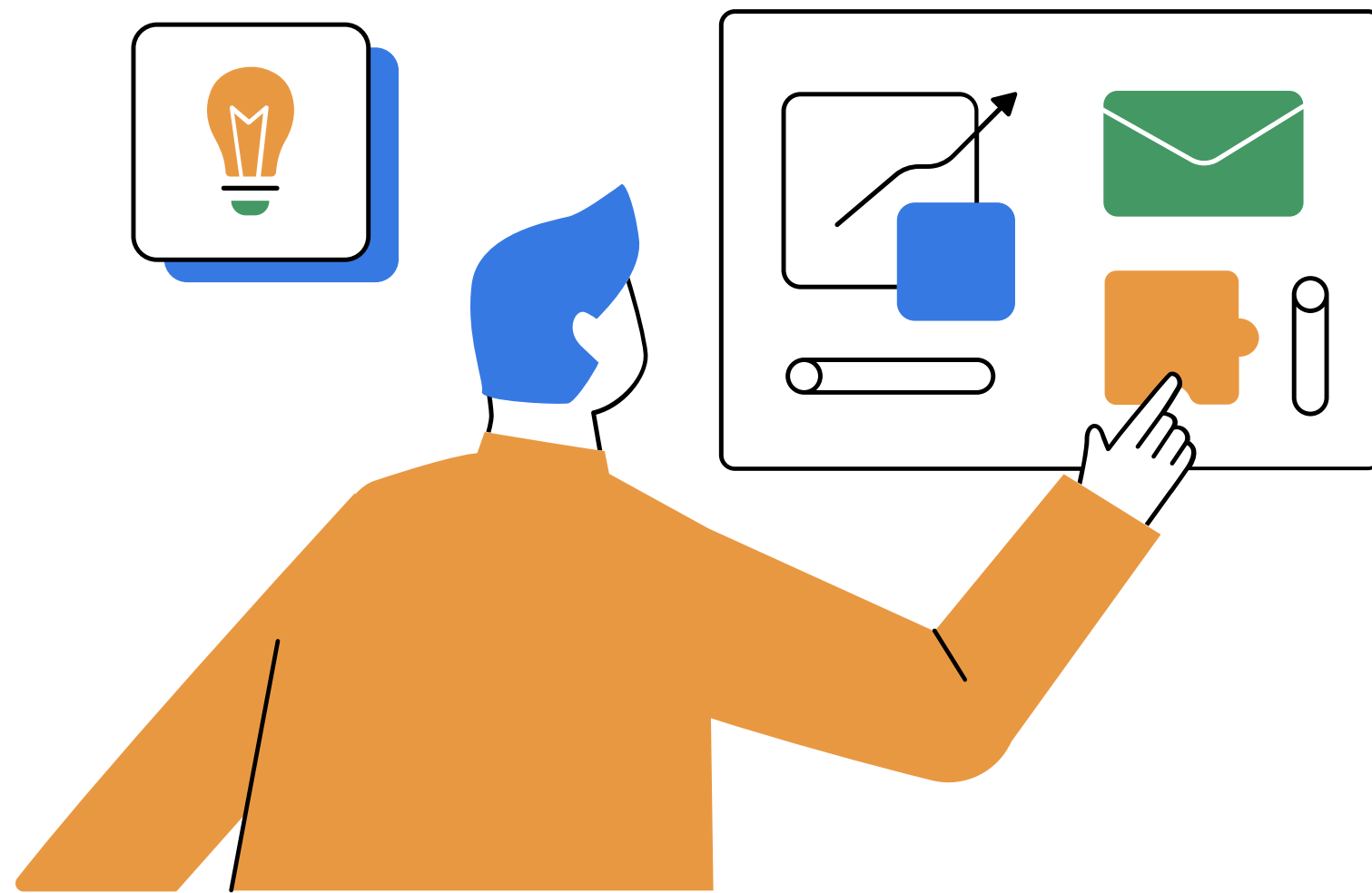
Types of Data Analysis
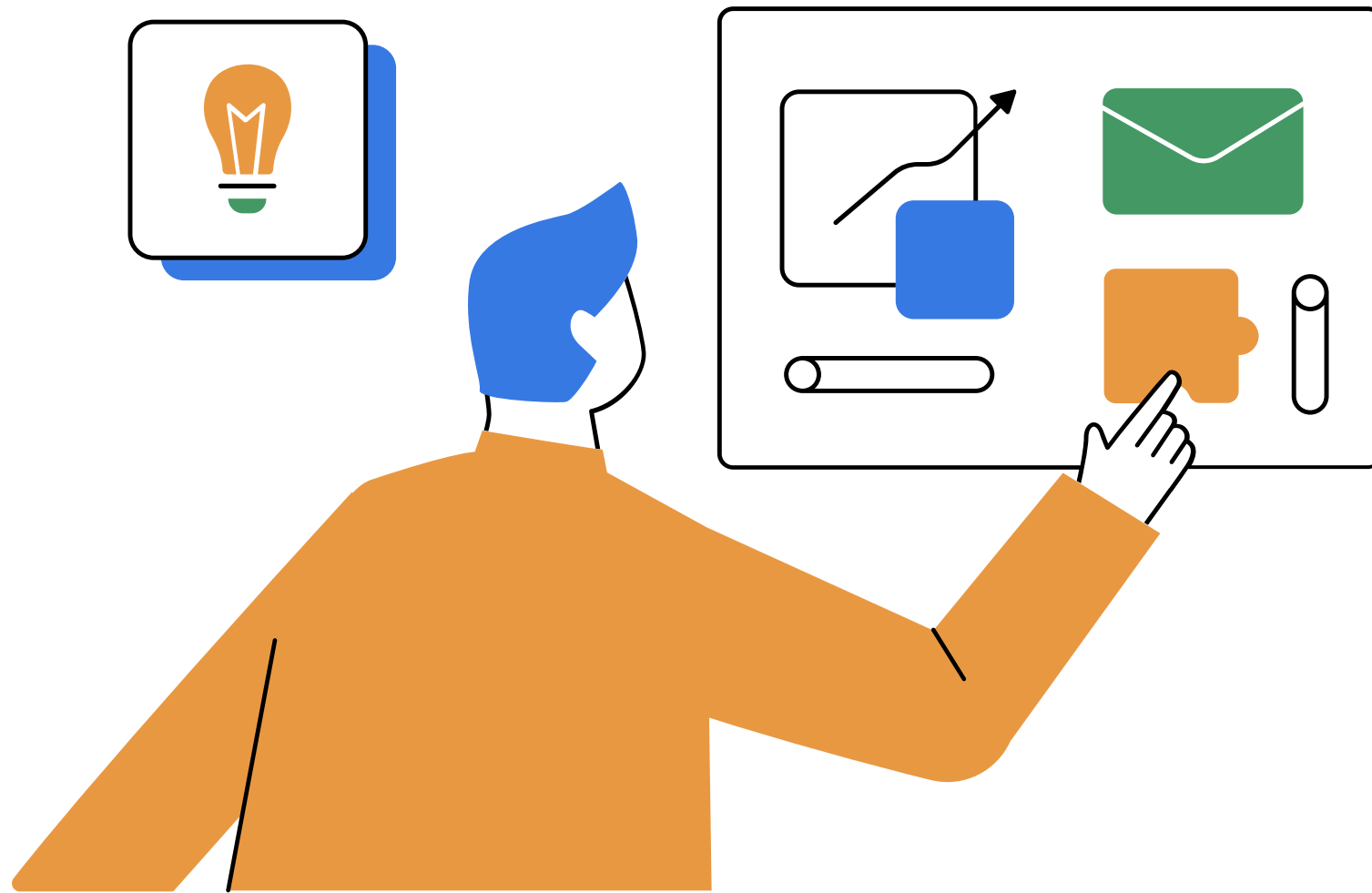
Predictive Analysis

- **Purpose:** Provides recommendations for actions to achieve desired outcomes.
- **Methods:** Uses optimization algorithms, simulation models, and decision analysis.
- **Difference:** Focuses not just on predicting future outcomes but advising on the best course of action to achieve specific goals.
- **Example:** Recommending the best marketing strategy to maximize ROI based on past data and current trends.

Causal Analysis

- **Purpose:** Identifies cause-and-effect relationships between variables.
- **Methods:** Uses techniques like regression analysis, controlled experiments, or A/B testing.
- **Difference:** Focuses on determining what causes certain outcomes, as opposed to just identifying correlations.
- **Example:** Studying how changes in advertising budget influence customer purchasing behavior.

Types of Data Analysis

Exploratory Data Analysis (EDA)

- **Purpose:** Uncovers hidden patterns, trends, and relationships in the data.
- **Methods:** Involves visualizations (scatter plots, box plots) and statistical summaries to discover insights without predefined hypotheses.
- **Difference:** Primarily used at the initial stages of analysis to explore the data and form hypotheses, rather than confirming them.
- **Example:** Investigating a new dataset to find potential trends and relationships that weren't initially obvious.

Prescriptive Analysis

- **Purpose:** Provides recommendations for actions to achieve desired outcomes.
- **Methods:** Uses optimization algorithms, simulation models, and decision analysis.
- **Difference:** Focuses not just on predicting future outcomes but advising on the best course of action to achieve specific goals.
- **Example:** Recommending the best marketing strategy to maximize ROI based on past data and current trends.

BrightLight Tutorials

Essential Skills for Data Analysts
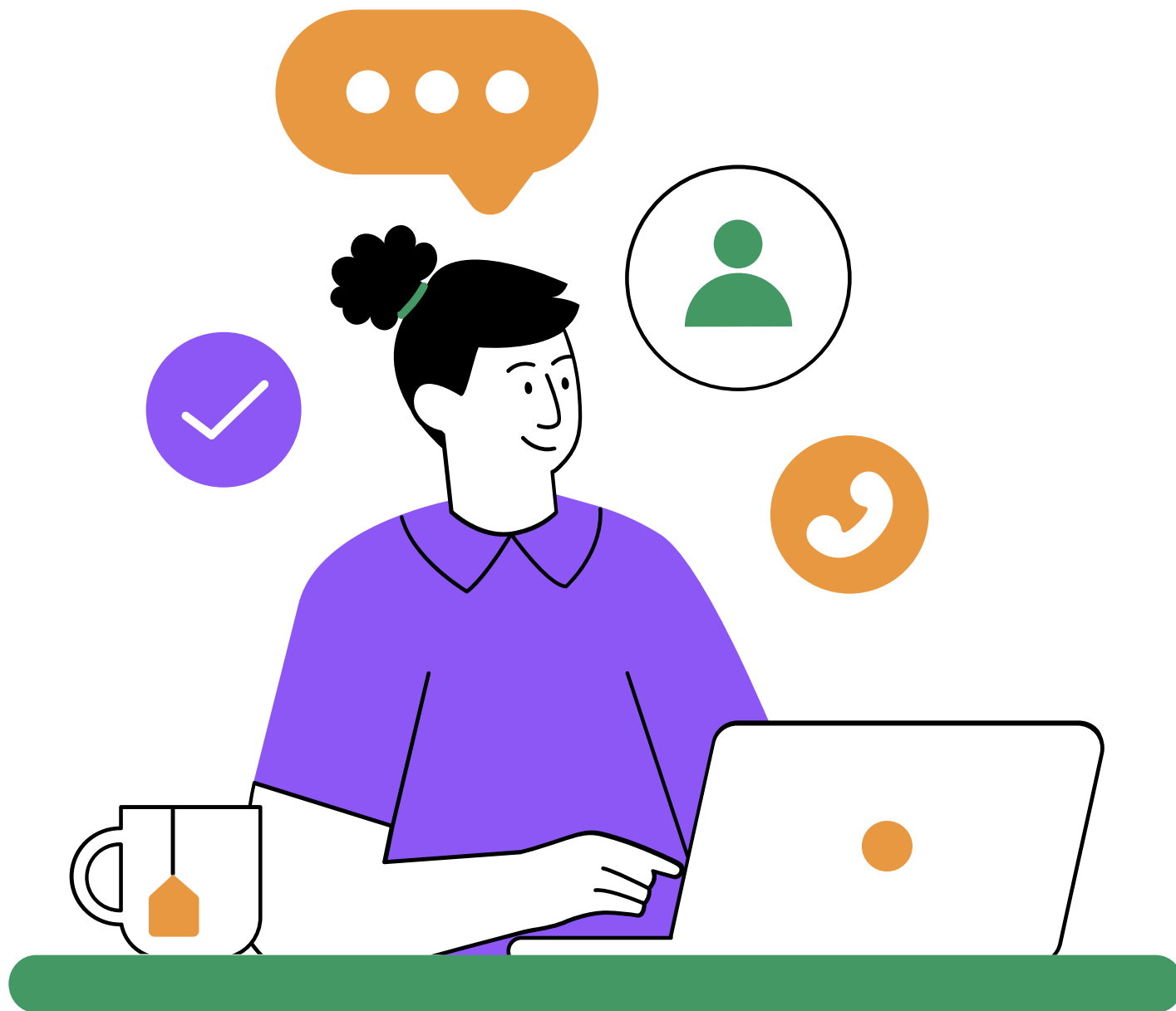
Technical Skills

- Data Manipulation & Cleaning
- Statistical Analysis
- Data Visualization
- Programming
- Database Management
- Data Integration and ETL Tools
- Version Control
- Business Intelligence Tools

Soft Skills

- Problem-Solving
- Attention to Detail
- Communication Skills
- Collaboration and Teamwork
- Time Management
- Critical Thinking
- Adaptability
- Curiosity and Learning Mindset
- Presentation Skills
- Ethical Thinking and Integrity
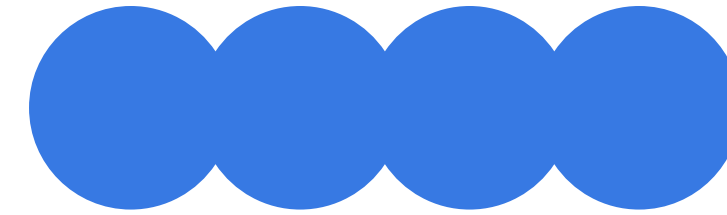
Key Responsibilities of a Data Analyst

- **Data Collection & Cleaning:** Gathering raw data from various sources (e.g., databases, spreadsheets) and ensuring it is accurate, complete, and formatted correctly for analysis.
- **Data Analysis:** Applying statistical methods, algorithms, and analytical tools (e.g., Excel, SQL, Python) to analyze the data and extract meaningful insights.
- **Data Visualization:** Creating visual representations of data (e.g., charts, graphs, dashboards) to simplify complex data and make it easier to interpret for stakeholders.
- **Reporting & Presentation:** Summarizing findings in reports or presentations, providing clear insights and recommendations based on the analysis to assist decision-making.
- **Problem-Solving:** Identifying business challenges and using data to propose actionable solutions or improvements to business operations.
- **Collaboration:** Working closely with teams from different departments (e.g., marketing, finance) to understand their data needs and deliver relevant insights to drive business growth.
- **Monitoring & Maintenance:** Continuously monitoring data sources to ensure accuracy and consistency, and updating reports or dashboards as needed to reflect new insights or business changes.

Data Analysis Process

BrightLight Tutorials
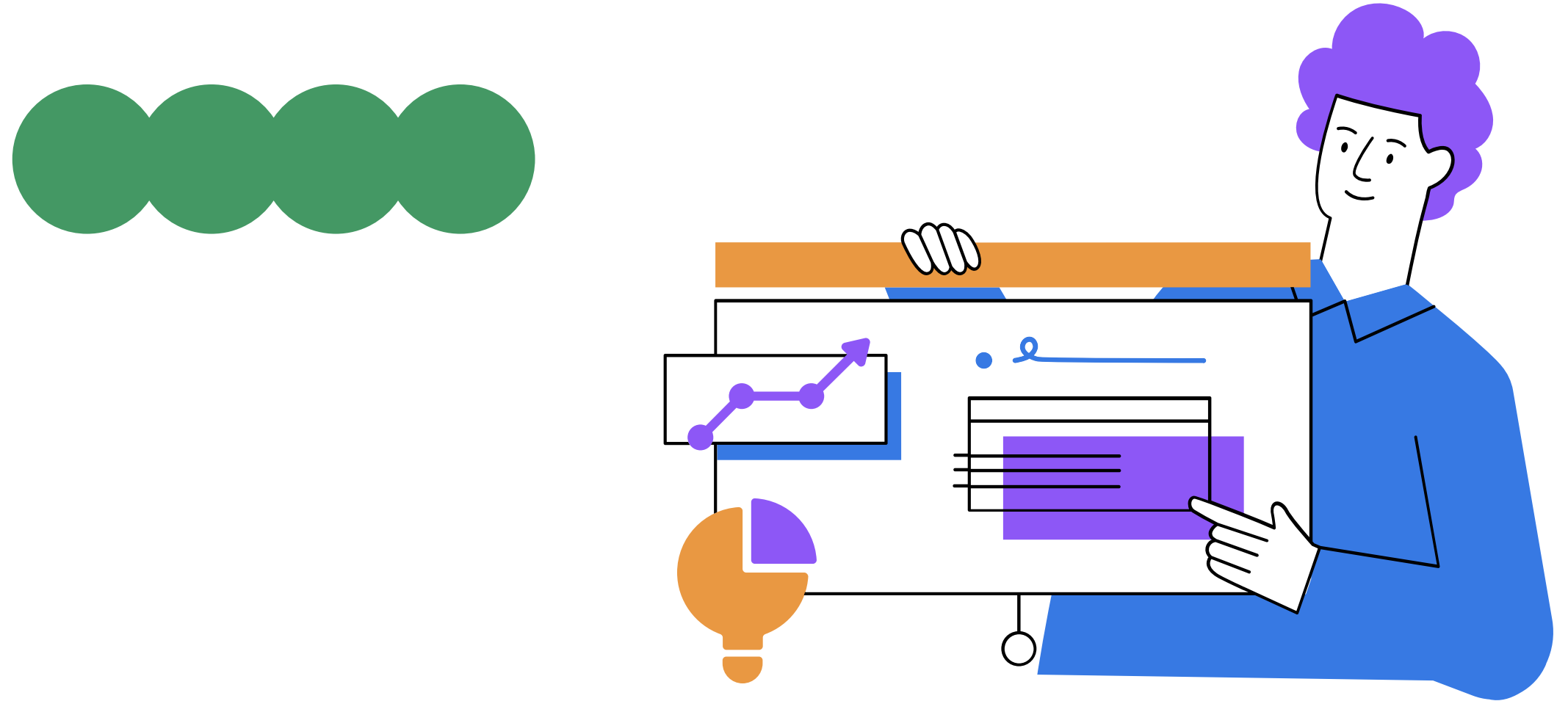
Data Collection & Preparation

- **Data Collection:** Gather raw data from sources like databases, spreadsheets, APIs, or surveys.
- **Data Cleaning:** Ensure data accuracy by handling missing values, removing duplicates, and fixing inconsistencies.
- **Data Transformation:** Convert data into an analysis-ready format (e.g., normalizing, aggregating, feature creation).
- **Data Exploration:** Conduct preliminary analysis to understand data structure, check for outliers, and identify patterns.

Data Analysis

- **Exploratory Data Analysis (EDA):** Use statistical and graphical techniques (e.g., histograms, scatter plots) to explore data and identify relationships.
- **Modeling & Analysis:** Apply advanced models (e.g., regression, classification) to identify trends, correlations, and insights.
- **Hypothesis Testing:** Test assumptions or hypotheses with statistical methods
- **Identifying Key Insights:** Analyze data to uncover actionable insights that address business questions or problems.

Data Interpretation & Reporting

- **Data Visualization:** Present analysis results using charts, graphs, and dashboards for clarity.
- **Reporting:** Summarize findings in reports or presentations, highlighting key insights and recommendations.
- **Decision-Making Support:** Offer data-driven recommendations to support business decisions and strategies.
- **Follow-Up & Refinement:** Revisit and refine analysis based on feedback or new questions.

✳ BrightLight Tutorials
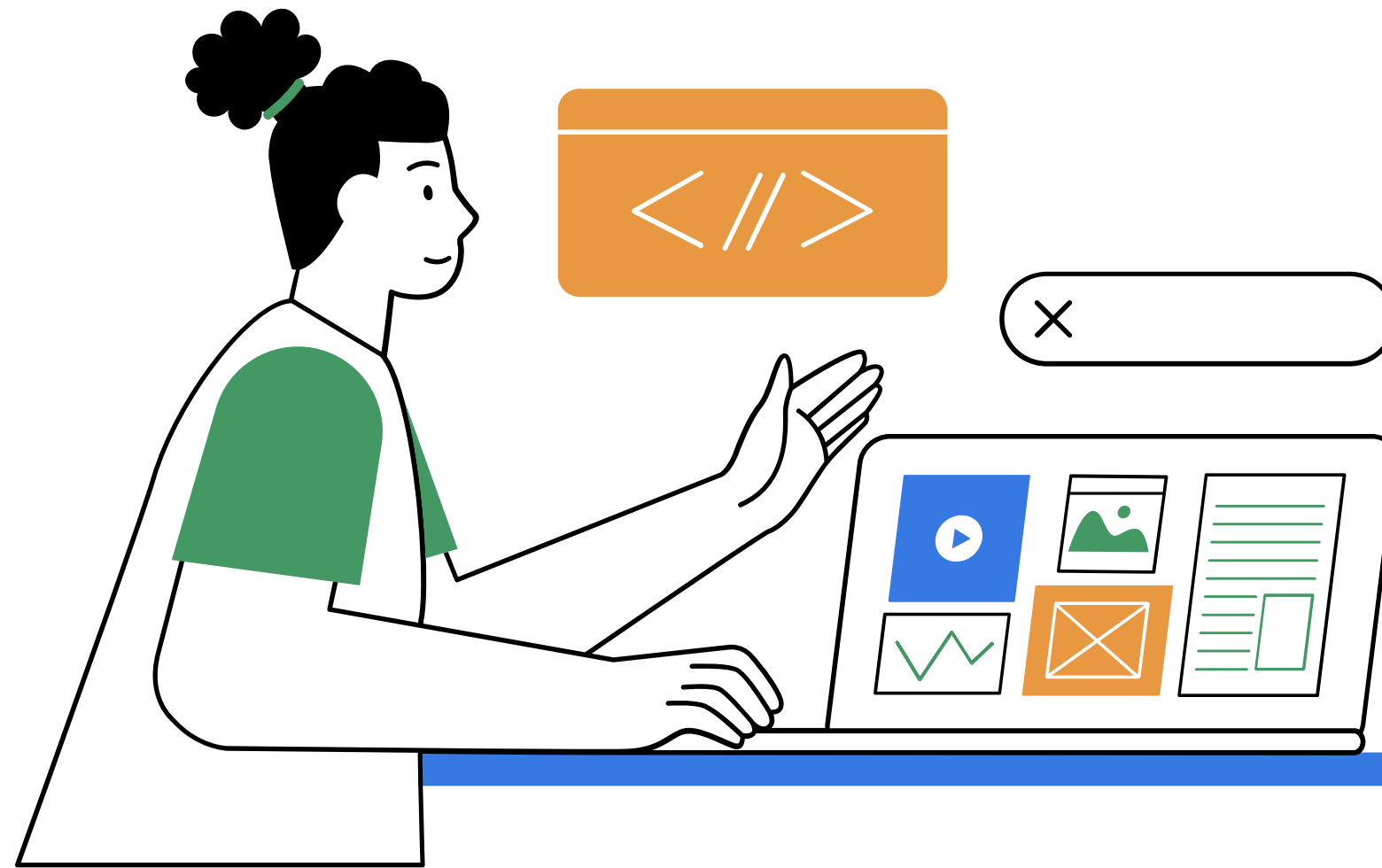
Tools & Technologies

1. **Data Analysis & Manipulation:**
   - Excel (Advanced functions, pivot tables, macros)
   - SQL (for querying relational databases)
   - Python (Pandas, NumPy, SciPy)
   - R (for statistical analysis)
2. **Data Visualization:**
   - Tableau
   - Power BI
   - Matplotlib, Seaborn (Python library)
3. **Data Cleaning & Processing:**
   - Pandas (Python library for data manipulation)
4. **Databases:**
   - MySQL
   - PostgreSQL,
   - Microsoft SQL Server
5. **Version Control & Collaboration:**
   - Git/GitHub
   - Jupyter Notebooks (for Python and R code sharing)
6. **Cloud Platforms:**
   - Google Cloud Platform (BigQuery)
   - Amazon Web Services (AWS)
   - Microsoft Azure

BrightLight Tutorials

Career Path

1. **Junior Data Analyst**
   - **Role:** Focuses on data collection, cleaning, and basic analysis.
   - **Qualifications:** A bachelor's degree
   - **Skills:** Proficiency in programming languages such as Python and SQL, and familiarity with data visualization tools like Tableau.
2. **Intermediate Data Analyst**
   - **Role:** Conducts more complex analyses, interprets data trends, and collaborates with other departments.
   - **Qualifications:** Several years of experience in data analysis.
   - **Skills:** Advanced statistical analysis, machine learning techniques, and proficiency in data visualization.
3. **Senior Data Analyst:**
   - **Role:** Leads data analysis projects, mentors junior analysts, and provides strategic insights to senior management.
   - **Qualifications:** Extensive experience and possibly advanced certifications or a master's degree.
   - **Skills:** Expertise in data modeling, predictive analytics, and strong leadership abilities.
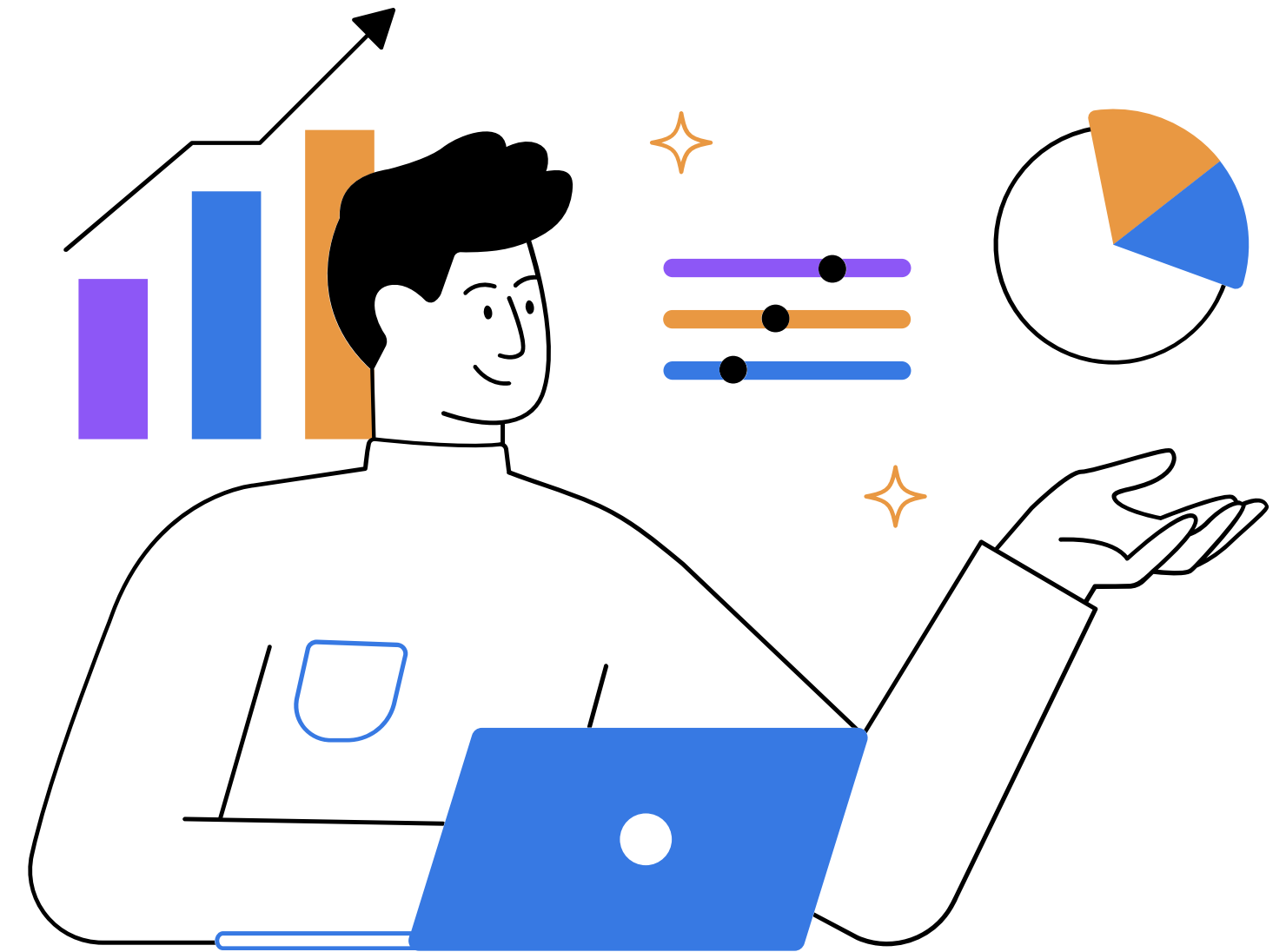
Data Analysts in South Africa can explore various specialized roles, including:
- **Data Scientist:** Focuses on advanced analytics and predictive modeling.
- **Data Engineer:** Designs and manages data infrastructure and architecture.
- **Business Intelligence Analyst:** Concentrates on analyzing business data to inform strategic decisions.
- **Quantitative Analyst:** Applies mathematical models to financial and risk management.**(Banks)**
- **Market Research Analyst:** Studies market conditions to examine potential sales of a product or service. (Retail)

❋ BrightLight Tutorials

Data Analytics Program

Course Overview

Duration: 5 months
Venue: Online via Google Meet
Tools Needed: Laptop & WiFi
Additional Tools: Notebook & Pen
For: Beginners with no prior coding experience
Class Schedule: Monday - Friday
Class Time: 21:00 - 22:00
Consultations: Saturday & Sunday

Pricing Options

- Monthly Membership: R500 per month
- Once-Off Membership: R2000 for the full course

Course Curriculum

Module 1: Introduction to Data Analytics
Module 2: Data Collection and Storage
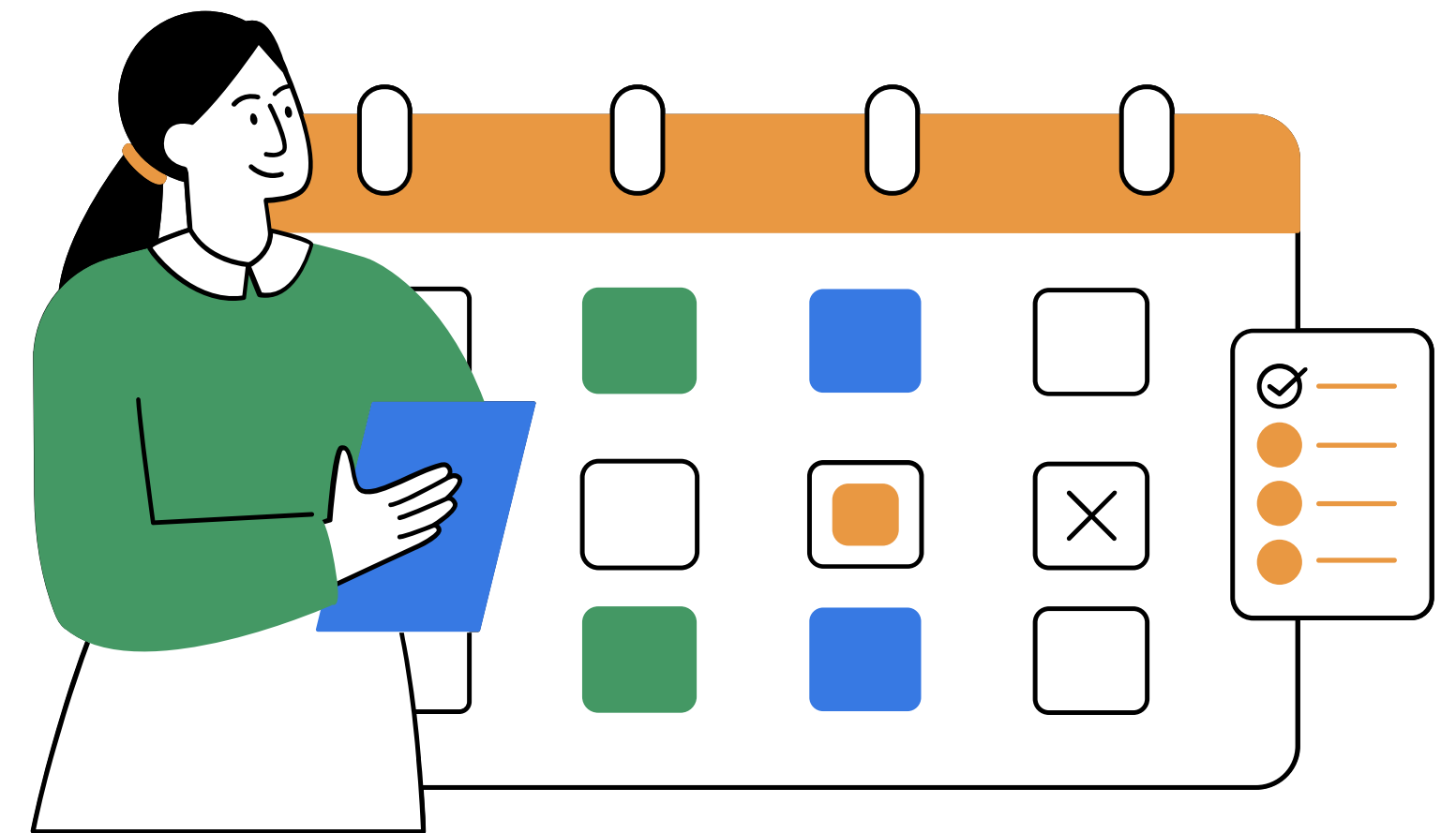**Module 3:** Data Wrangling and SQL Fundamentals
Module 4: Statistical Analysis in Data Analytics
Module 5: Data Privacy and Ethics
Module 6: Data Visualization with Microsoft Excel
Module 7: Advanced Data Visualization in PowerBI
Module 8: Developing a Data Analytics Portfolio

Skills You Will Gain

- Data analysis and interpretation
- Data cleaning, wrangling, and preparation
- Data aggregation and summarization techniques
- SQL for data manipulation and extraction
- Data Wrangling in Python
- Creating data visualizations in Excel
- Building interactive dashboards and reports in Power BI
- Developing a professional portfolio to demonstrate your skills

Thank You

BrightLight Tutorials

078 737 2893

rofhiwa@brightlighttutorials.co.za

www.brightlighttutorials.co.za