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Data Science for Managerial Decisions (MB 511)
A Short Course in Data Science using Python

Instructor
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Course

- Getting and setting
- A Quick Introduction
- Industry Products written in Python

- Data Types & Structure
- Loops and Decision Making
- Functions & Libraries
- Error Handling
- Working with Operating System and Dates
- Data Exchange
- Data Management
- Data Visualization
- Feature Engineering
- Quick Introduction to AI
- Model Development and Validation
- Model Deployment

- Case Study 1 – Data Management
- Case Study 2 - Bank Marketing
- Case Study 3 - Student Performance
- Case Study 4 - AI4I 2020 Predictive Maintenance

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Getting and setting

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Python from Python Website

VS Code

Managed Python Distribution

Collaboration and Version Control

A Quick Introduction

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What is Python?

- Python is a high-level, interpreted programming language known for its simplicity and readability.
- It was created by Guido van Rossum and first released in 1991.

Why Python?

- Ease of Learning: Python's straightforward syntax makes it an excellent language for beginners.
- Versatility: Python is used in various fields such as web development, data science, automation, artificial intelligence, and more.
- Large Community and Libraries: Python has a vast community and a rich ecosystem of libraries and frameworks, which accelerates development.

A Quick Introduction

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Key Features:

- Interpreted Language: Python code is executed line by line, which makes debugging easier.
- Dynamically Typed: You don't need to declare the data type of variables.
- Cross-Platform: Python runs on different operating systems like Windows, macOS, and Linux.

Applications of Python:

- Web Development: Using frameworks like Django and Flask.
- Data Science: With libraries such as Pandas, NumPy, and Matplotlib.
- Machine Learning: Through tools like TensorFlow and Scikit-learn.
- Automation: For scripting and task automation.
- Software Development: For writing complex softwares

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Web Applications:

- YouTube: Google's popular video-sharing platform uses Python for various functionalities including video playback, data analysis, and more.
- Instagram: The backend of Instagram, one of the largest social media platforms, is largely powered by Python, allowing for rapid development and scaling.

Data Science & Machine Learning:

- Spotify: Uses Python for data analysis, recommendations, and backend services. Python's libraries like NumPy and Pandas help in handling the large datasets Spotify deals with.
- Netflix: Python is used for everything from content recommendation algorithms to monitoring server performance.

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Finance & Trading:

- Quora: The Q&A platform relies on Python to manage its complex business logic and backend infrastructure, making it robust and scalable.
- JPMorgan Chase: The banking giant uses Python for data analysis, financial modeling, and quantitative analysis.

Automation Tools:

- Dropbox: Python is the backbone of Dropbox's desktop client. It’s used extensively for its server-side code and scaling operations.
- Reddit: Python powers the backend of Reddit, the popular social news aggregation site, enabling efficient handling of millions of users and posts.

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Game Development:

- Eve Online: A massive multiplayer online game that uses Python for scripting in its game engine.
- Battlefield 2: Python was used to write the core of the Battlefield 2 game server.

Other Examples:

- Pinterest: Uses Python for its backend web development and data processing.
- Uber: Python is utilized for backend services and data management, playing a key role in route calculation and data processing.

Data Types & Structure

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Data Types:

- **Integers (int):**
  - Whole numbers, positive or negative, without decimals.
  - Example: x = 10, y = -5
- **Floating-Point Numbers (float):**
  - Numbers that contain a decimal point.
  - Example: pi = 3.14, temperature = -5.6
- **Strings (str):**
  - A sequence of characters enclosed in quotes, used for text.
  - Example: name = "Alice", greeting = 'Hello'
- **Booleans (bool):**
  - Represents one of two values: True or False.
  - Example: is_valid = True, has_access = False

Data Types & Structure

Data Type Conversion

Data Type	Float	Integer	Character	Bool
Float	NA	Yes (Data Loss)	Yes	Yes
Integer	Yes	NA	Yes	Yes
Character	Yes	Yes	NA	Yes
Bool	Yes	Yes	Yes	NA

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Have a question?

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