TechLabs

Data Science

Program

Month 1: Python Programming & Data Analysis Basics

Week 1 - Python Fundamentals

Day 1: Introduction to Python, Jupyter Notebook

Day 2: Variables, Data Types, Operators

Day 3: Conditional Statements (if, elif, else)

Day 4: Loops (for, while)

Day 5: Functions and Modules

Week 2 - Data Structures & Libraries

Day 6: Lists, Tuples

Day 7: Dictionaries, Sets

Day 8: File Handling in Python

Day 9: Introduction to NumPy

Day 10: NumPy Arrays and Operations

Week 3 - Data Analysis with Pandas

Day 11: Pandas Series and DataFrames

Day 12: Indexing, Slicing, Filtering Data

Day 13: Merging, Joining, Concatenation

Day 14: GroupBy and Aggregations

Day 15: Handling Missing Data and Duplicates

Week 4 - Data Visualization

Day 16: Introduction to Matplotlib

Day 17: Line, Bar, Pie Charts

Day 18: Histograms, Boxplots

Day 19: Seaborn Basics

Day 20: Pairplots, Heatmaps

Month 2: Statistics, Probability, and Exploratory Data Analysis (EDA)

Week 5 - Descriptive Statistics

Day 21: Measures of Central Tendency (Mean, Median, Mode)

Day 22: Measures of Dispersion (Range, Variance, Std Dev)

Day 23: Skewness and Kurtosis

Day 24: Data Distributions

Day 25: Practice with Real Datasets

Week 6 - Probability Concepts

Day 26: Basic Probability Rules

Day 27: Conditional Probability

Day 28: Bayes Theorem

Day 29: Probability Distributions

Day 30: Normal, Binomial, Poisson Distributions

Week 7 - Inferential Statistics

Day 31: Sampling and Central Limit Theorem

Day 32: Confidence Intervals

Day 33: Hypothesis Testing

Day 34: t-test, z-test

Day 35: Chi-square, ANOVA

Week 8 - Exploratory Data Analysis(EDA)

Day 36: Understanding Dataset & Objectives

Day 37: Univariate Analysis

Day 38: Bivariate/Multivariate Analysis

Day 39: Outlier Detection

Day 40: Feature Engineering Techniques

Month 3: Machine Learning (Supervised & Unsupervised)

Week 9 - Machine Learning Basics

Day 41: What is ML? Types of ML

Day 42: ML Workflow and Model Lifecycle

Day 43: Train-Test Split and Cross Validation

Day 44: Performance Metrics (Accuracy, Precision, Recall)

Day 45: Overfitting and Underfitting

Week 10 - Supervised Learning (Regression)

Day 46: Linear Regression

Day 47: Multiple Linear Regression

Day 48: Polynomial Regression

Day 49: Evaluation of Regression Models

Day 50: Case Study: House Price Prediction

Week 11- Supervised Learning(Classification)

Day 51: Logistic Regression

Day 52: K-Nearest Neighbors (KNN)

Day 53: Decision Trees

Day 54: Random Forests

Day 55: Model Evaluation (Confusion Matrix, ROC-AUC)

Week 12 - Unsupervised Learning

Day 56: Introduction to Clustering

Day 57: K-Means Clustering

Day 58: Hierarchical Clustering

Day 59: PCA (Dimensionality Reduction)

Day 60: Case Study: Customer Segmentation

Month 4: Advanced Topics and Projects

Week 13 - Natural Language Processing (NLP)

Day 61: Text Cleaning and Preprocessing

Day 62: Tokenization, Stopwords

Day 63: Bag of Words, TF-IDF

Day 64: Sentiment Analysis

Day 65: NLP Mini Project

Week 14 - Time Series Analysis

Day 66: Time Series Components

Day 67: Moving Averages, Decomposition

Day 68: ARIMA Modeling

Day 69: Forecasting Techniques

Day 70: Time Series Project

Week 15 - Deep Learning Basics

Day 71: Introduction to Neural Networks

Day 72: Forward and Backpropagation

Day 73: Activation Functions

Day 74: Model Training using TensorFlow/Keras

Day 75: Build Your First ANN

Week 16 - Final Project and Deployment

Day 76: Capstone Project Planning

Day 77: Data Collection & Cleaning

Day 78: Model Building

Day 79: Model Evaluation & Tuning

Day 80: Deployment using Flask/Streamlit

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