Introduction to Python Programming and Machine Learning

Python is a high-level, interpreted programming language known for its readability and versatility.
Guido van Rossum created Python, and it was first released in 1991.
Python emphasizes code readability with its notable use of significant indentation.

Key Concepts:

1. Variables and Data Types:
In Python, variables are created when you assign a value to them.
Common data types include integers, floats, strings, and booleans.
For example, x = 5 creates an integer variable.

2. Control Structures:
Python supports usual control flow statements like if, for, and while.
The 'if' statement is used for conditional execution.
The 'for' loop is used for iterating over a sequence (that is either a list, a tuple, a dictionary, a set, or a strin

3. Functions:
A function is a block of code which only runs when it is called.
You can pass data, known as parameters, into a function.
A function can return data as a result.
In Python, a function is defined using the 'def' keyword.

4. Object-Oriented Programming (OOP):
Python is an object-oriented language.
Almost everything in Python is an object, with its properties and methods.
A Class is like an object constructor, or a "blueprint" for creating objects.

5. Libraries:
Python has a vast ecosystem of libraries.
NumPy is a library for the Python programming language, adding support for large, multi-dimensional arra
Pandas is a software library written for the Python programming language for data manipulation and analy

Machine Learning:
Machine learning (ML) is a field of study in artificial intelligence concerned with the development and study
Supervised learning is a machine learning paradigm for problems where the available data consists of labe
Unsupervised learning is a type of machine learning that looks for previously undetected patterns in a data
Reinforcement learning is an area of machine learning concerned with how intelligent agents ought to take

Natural Language Processing (NLP):
Natural language processing (NLP) is a subfield of linguistics, computer science, and artificial intelligence
SpaCy is an open-source software library for advanced Natural Language Processing in Python. It features
TF-IDF (Term Frequency-Inverse Document Frequency) is a numerical statistic that is intended to reflect h