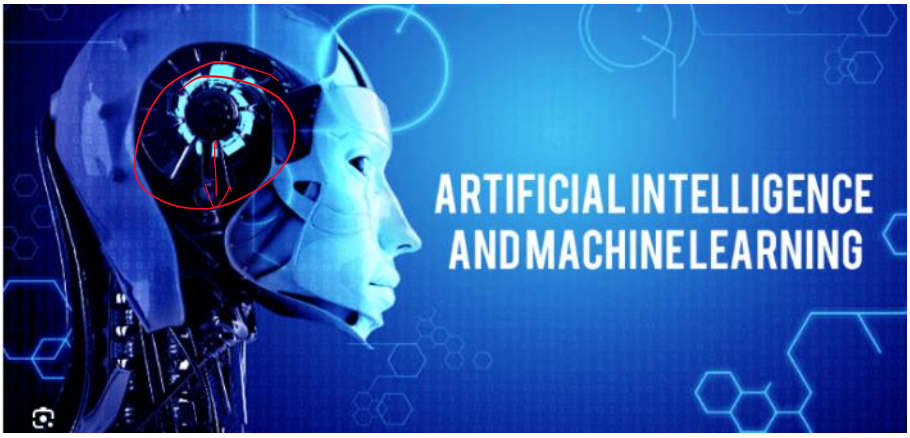
Session- 2

05 July 2024 07:00 PM

Agenda

1. Setup env
2. Introduction to AI & Machine learning
3. Introduction to python
4. Fundamentals in python
5. Variables & Identifiers
6. Keywords & Comments

Introduction to AI & Machine learning



Artificial Intelligence is a technique for building systems that mimic human behavior or decision-making.

Artificial intelligence, on the other hand, is a broader field that encompasses machine learning as well as other techniques for creating intelligent systems. AI involves the development of computer systems that can perform tasks that typically require human intelligence, such as understanding natural language, recognizing images, and making decisions.

Examples: Robotics

Machine Learning is a subset of AI that uses data to solve tasks. These solvers are trained models of data that learn based on the information provided to them. This information is derived from probability theory and linear algebra. ML algorithms use our data to learn and automatically solve predictive tasks.

Machine learning is a subset of AI that involves the process of teaching computers to learn from data, without being explicitly programmed to do so. This involves using algorithms and statistical models to find patterns in data, and then using these patterns to make predictions or decisions.

Examples: Recommendation system, forecasting

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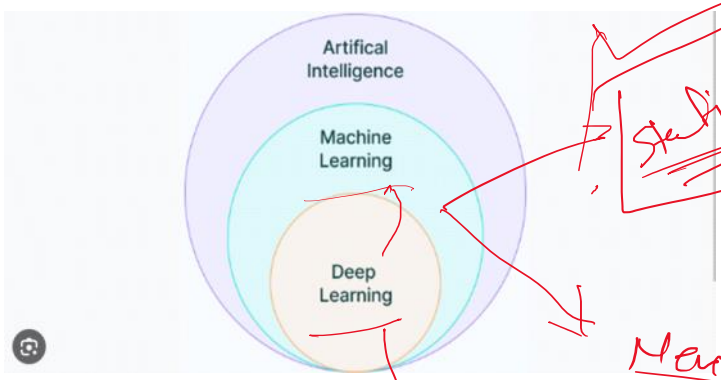

Introduction to python

Python is a high-level, general-purpose, and very popular programming language. Python programming language (latest Python 3) is being used in web development, and Machine Learning applications, along with all cutting-edge technology in Software Industry.

It is used for:

- web development (server-side),
- software development,
- mathematics,
- system scripting.
- Machine Learning
- Deep Learning
- AI

Feature Of Python

- Python is a high level language. It is a free and open source language.
- It is an interpreted language, as Python programs are executed by an interpreter.
- Python programs are easy to understand as they have a clearly defined syntax and relatively simple structure.
- Python is case-sensitive. For example, NUMBER and number are not same in Python.
- Python is portable and platform independent, means it can run on various operating systems and hardware platforms.
- Python has a rich library of predefined functions.
- Python is also helpful in web development. Many popular web services and applications are built using Python.
- Python uses indentation for blocks and nested blocks.

Variables

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A variable in a program is uniquely identified by a name (identifier). Variable in Python refers to an object — an item or element that is stored in the memory. Value of a variable can be a string (e.g., 'b', 'Global Citizen'), numeric (e.g., 345) or any combination of alphanumeric characters (CD67). In Python we can use an assignment statement to create new variables and assign specific values to them.

Identifiers

In programming languages, identifiers are names used to identify a variable, function, or other entities in a program. The rules for naming an identifier in Python are as follows:

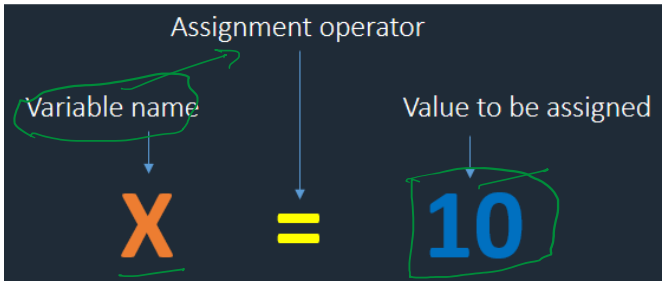
- The name should begin with an uppercase or a lowercase alphabet or an underscore sign (_). This may be followed by any combination of characters a–z, A–Z, 0–9 or underscore (_). Thus, an identifier cannot start with a digit.
- It can be of any length. (However, it is preferred to keep it short and meaningful).
- It should not be a keyword or reserved word given in Table 5.1.
- We cannot use special symbols like !, @, #, $, %, etc., in identifiers.

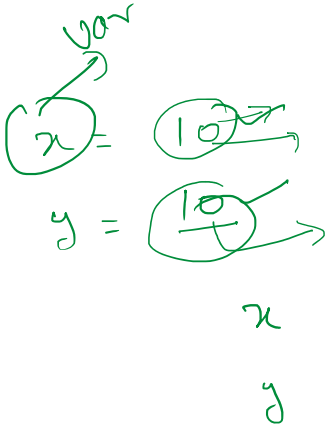
For example, to find the average of marks obtained by a student in three subjects, we can choose the identifiers as `marks1`, `marks2`, `marks3` and `avg` rather than a, b, c, or A, B, C.

```
avg = (marks1 + marks2 + marks3)/3
```

Similarly, to calculate the area of a rectangle, we can use identifier names, such as `area`, `length`, `breadth` instead of single alphabets as identifiers for clarity and more readability.

```
area = length * breadth
```

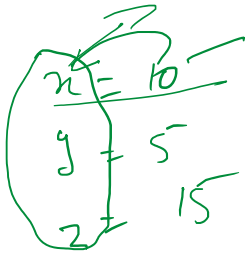




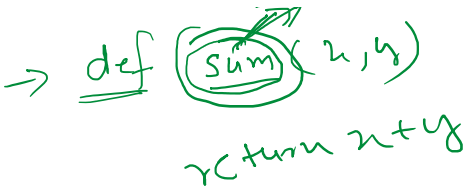
Keywords

Python keywords are special reserved words that have specific meanings and purposes and can't be used for anything but those specific purposes. These keywords are always available—you'll never have to import them into your code.

False	await	else	import	pass
None	break	except	in	raise
True	class	finally	is	return
and	continue	for	lambda	try
as	def	from	nonlocal	while
assert	del	global	not	with



as	def	from	nonlocal	while
assert	del	global	not	with
async	elif	if	or	yield



Comments

Comments are used to add a remark or a note in the source code. Comments are not executed by interpreter.

In Python, a comment starts with # (hash sign). Everything following the # till the end of that line is treated as a comment and the interpreter simply ignores it while executing the statement

```
# Single line comment
print('Hello Stechies')

'''
Python program to explain
multiple line comment
print('Hello')
'''

"""
Python program to explain
multiple line comment
print('Hello')
"""
```

Single-line Comment

Multi-line Comments