ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

DAY – 7   **1 July 2025**

Vim :

Vim (short for **Vi IMproved**) is a highly configurable, efficient, and powerful **text editor** built for use in the terminal. It's an improved version of the classic UNIX editor **Vi**, and it's a favorite among developers, sysadmins, and power users.

- **Normal mode**: for navigation and commands
- **Insert mode**: for typing/editing text
- **Visual mode**: for selecting text
- **Command-line mode**: for saving, quitting, etc.

Step-by-Step Installation

1. Update package list

sudo apt update

2. Install Vim

sudo apt install vim

Vim Workflow

1. **Open Terminal**

   Launch the terminal in Ubuntu.

2. **Open or Create a File**

   vim filename.py

   If the file exists, it opens for editing. If not, Vim creates it.

3. **Enter Insert Mode to Start Editing**

   - Press i to enter **Insert mode**
   - Now you can type or edit text.

4. **Exit Insert Mode**

   - Press Esc to go back to Normal mode.

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5. **Save and Quit**

- Press : to enter Command mode, then type:
  - ➢ :w → Save (write) the file
  - ➢ :q → Quit
  - ➢ :wq → Save and quit
  - ➢ :q! → Quit without saving

6. **Run the File (Example: Python Script)**

   python3 filename.py

Kaggle

Kaggle is an online platform that serves as a central hub for data science and machine learning practitioners. It offers a wide range of resources, including real-world datasets, cloud-based coding environments (called Kaggle Notebooks), educational courses, and a strong community.

Python

Python is a high-level, interpreted, general-purpose programming language known for its simplicity, readability, and versatility. Created by Guido van Rossum and first released in 1991, Python has become one of the most popular programming languages in the world.

It is widely used in:

- Web development (using frameworks like Django, Flask)

- Data science & machine learning (with pandas, NumPy, TensorFlow)

Python syntax can be executed by writing directly in the Command Line:

```
>>> print("Hello, World!")
Hello, World!
```

Python Indentation

Indentation refers to the spaces at the beginning of a code line.

Where in other programming languages the indentation in code is for readability only, the indentation in Python is very important.

Comments

Python has commenting capability for the purpose of in-code documentation.

Comments start with a #, and Python will render the rest of the line as a comment:

```
#This is a comment.
print("Hello, World!")
```

Variables

Variables are containers for storing data values.

Creating Variables

Python has no command for declaring a variable.

A variable is created the moment you first assign a value to it.

```
x = 5
y = "John"
print(x)
print(y)
```

Variable Names

A variable can have a short name (like x and y) or a more descriptive name (age, carname, total_volume).

Rules for Python variables:

- A variable name must start with a letter or the underscore character

- A variable name cannot start with a number

- A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9, and _)

- Variable names are case-sensitive (age, Age and AGE are three different variables)

- A variable name cannot be any of the Python Keywords.

Built-in Data Types

In programming, data type is an important concept.

Variables can store data of different types, and different types can do different things.

Python has the following data types built-in by default, in these categories:

```
Text Type:          str
Numeric Types:      int, float, complex
Sequence Types:     list, tuple, range
Mapping Type:       dict
Set Types:          set, frozenset
Boolean Type:       bool
Binary Types:       bytes, bytearray, memoryview
None Type:          NoneType
```

Casting :

There may be times when you want to specify a type on to a variable. This can be done with casting. Python is an object-orientated language, and as such it uses classes to define data types, including its primitive types.

Casting in python is therefore done using constructor functions:

- int() - constructs an integer number from an integer literal, a float literal (by removing all decimals), or a string literal (providing the string represents a whole number)

- float() - constructs a float number from an integer literal, a float literal or a string literal (providing the string represents a float or an integer)

- str() - constructs a string from a wide variety of data types, including strings, integer literals and float literals

```python
x = int(1)   # x will be 1
y = int(2.8) # y will be 2
z = int("3") # z will be 3
```

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