1. Artificial Intelligence (AI) refers to the simulation of human intelligence processes by machines, particularly computer systems. These processes include learning (the acquisition of information and rules for using it), reasoning (using rules to reach approximate or definite conclusions), and self-correction. AI applications range from virtual assistants like Siri and Alexa to autonomous vehicles, recommendation systems, healthcare diagnostics, and gaming.
2. Supervised learning involves training a model on a labeled dataset, where each example is paired with a corresponding target label. The algorithm learns to map inputs to outputs based on the input-output pairs it is given. Examples include classification and regression tasks. Unsupervised learning, on the other hand, involves training a model on an unlabeled dataset where the algorithm tries to learn the patterns and structures in the data without explicit supervision. Clustering and dimensionality reduction are common tasks in unsupervised learning.
3. Python is a high-level, interpreted programming language known for its simplicity and readability. Its main features include a clear and concise syntax, dynamic typing, automatic memory management, extensive standard libraries, and strong community support. Python is versatile and can be used for web development, data analysis, artificial intelligence, scientific computing, and more.
4. Python is favored for AI and ML due to its simplicity, readability, and vast ecosystem of libraries and frameworks tailored for these domains. Libraries like TensorFlow, PyTorch, and scikit-learn provide efficient tools for implementing machine learning algorithms and building AI applications. Additionally, Python's ease of integration with other languages and systems, along with its strong community support, make it a preferred choice for AI and ML development.
5. In Python, indentation is crucial for defining the structure and hierarchy of code blocks. Unlike many other programming languages that use braces or keywords to denote block structure, Python uses indentation. Consistent indentation ensures that code is organized and readable, and it directly affects how the interpreter understands the program's logic, including control flow and scope.
6. In Python, a variable is a symbolic name that refers to a value. You can assign values to variables using the assignment operator "=" and then use these variables throughout your code. Variable names can contain letters, digits, and underscores but must begin with a letter or underscore. Examples of valid variable names include:
   * **age**
   * **name**
   * **my\_variable**
   * **var1**
   * **\_count**
7. In Python, a keyword is a reserved word that has a special meaning and purpose within the language. Keywords cannot be used as variable names or identifiers. Examples of keywords in Python include **if**, **else**, **for**, **while**, and **def**. On the other hand, an identifier is a name given to entities like variables, functions, classes, etc. Identifiers must follow certain rules, such as starting with a letter or underscore, followed by letters, digits, or underscores. Unlike keywords, identifiers are user-defined.
8. Basic data types available in Python include:
   * Integers (int)
   * Floating-point numbers (float)
   * Complex numbers (complex)
   * Strings (str)
   * Booleans (bool)
9. The syntax for an if statement in Python is:

python

if(condition)

{

// Execute if condition is TRUE

}condition: # code block to execute if condition is true

The **condition** is an expression that evaluates to either True or False. If the condition is True, the code block indented under the if statement is executed; otherwise, it is skipped.

1. The elif statement in Python stands for "else if." It allows you to check for multiple conditions after the initial if statement. If the condition specified in the if statement is False, Python evaluates the condition specified in the elif statement. If this condition is True, the code block associated with the elif statement is executed. This allows for branching logic where different code blocks are executed based on different conditions.