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CSE B4

Module 1 - Assignment 2

1. What are the data types in python? Explain

Ans: Data types are the classification or categorization of data items.
* Data types represent a kind of value which determines what operat-ions can be performed on that data.
* Python has the following built-in data types:

① Numeric:
+A numeric value is any representation of data which has a numeric value. Python identifies three types of numbers.
→ Integer: Positive or negative whole numbers (without a fractional part)
→ Float: Any real numbers with a floating point representation in which a fractional component is denoted by a decimal symbol or scientific notation.
→ Complex number: A number with a real and imaginary component represen-ted as $x+yj$. X and Y are floats and j is -1 (square root of -1 called an imaginary number).

② String:
* A string is an ordered sequence of characters. We can use single quotes or double quotes to represent strings. Multi-line strings can be represented using triple quotes, ''' or """.
* Strings are immutable.

Example:
```
Single = 'Welcome'
or
Multi = """Welcome"""
```

③ List:
A list can contain a series of values.
List variables are declared by using brackets [ ]. A list is mutable, which means we can modify the list.

④ Tuple:

* A tuple is a sequence of python objects separated by commas
* Tuples are immutable, which means tuples once created cannot be modified. Tuples are defined using parentheses ().

Example

```
Tuple = (50, 15, 25.6, "python")
Print ("Tuple[1] = ", Tuple[1])
```

⑤ Set:

* A set is an unordered collection of items. Set is defined by values separated by a comma inside braces {}.

Example:

```
Set = {5, 1, 2.6, "python"}
Print (Set)
```

⑥ Dictionary:

* Dictionaries are the most flexible built-in data type in python.
* Dictionaries items are stored and fetched by using the key. Dictionaries are used to store a huge amount of data.
* We use the key to retrieve the respective value. But not the other way around.

Example:

```
Dict = {1:"Hi", 2:7.5, 3:'class'}
Print (Dict)
```

2. Briefly explain history of python.

Ans: * Python laid its foundation in the late 1980s.
* The implementation of python was started in December 1987 by Guido Von Rossum at CWI in Netherland.
* In February 1991, Guido Van Rossum published the code (labeled version 0.9.0) to alt.sources.
* In 1994, Python 1.0 was released with new features like lambda, map, filter, and reduce.
* Python 2.0 added new features such as list comprehensions, garbage collection systems.
* on December 3, 2008, Python 3.0 (also called "Py3K") was released. It was designed to rectify the fundamental flaw of the language.

3. Explain all the Operators in python

Ans: Operators are used to perform operations on variables and values. Python divides the operators in the following groups:

* Arithmetic operators

Arithmetic operators are used with number values to perform common mathematical operations:

They are: +, -, *, /, %, **, //

* Assignment operators

Assignment operators are used to assign values to variables.

They are: =, +=, -=, *=, /=, %=, //=, **=, &=, |=

^=, >>=, <<=

* Comparision operators:

Comparison operators are used to compare two values.

They are: ==, !=, >, <, >=, <=

* logical operators:

Logical operators are used to combine conditional statements.

They are: and, or, not

* Identity Operators:

Identity operators are used to compare the objects, not if they are equal, but if they are actually the same object, with the same memory location.

they are: is, is not

* Bitwise operators:

Bitwise operators are used to compare (binary) numbers.

they are: &, |, ^, ~, <<, >>

4. Features of Python Explain.

Ans: 1) Python is a dynamic, high level, free open source and interpreted programming language.

2) Easy to code

3) Free and Open Source

4) Object-Oriented Language

5) GUI Programming Support

6) High-Level language

7) Extensible feature

8) Python is Portable language.

5. Justify why python is interactive interpreted language.

Ans: Unlike C/C++ etc, Python is an interpreted object oriented Programming language. By interpreted it is meant that each time a Program is run the interpreter checks through the code for errors and then interprets the instructions into machine readable bytecode. An interpreter is a translator in computer's language which translates the given code line by line in machine readable bytecodes.