**ASSIGNMENT-4**

1. **What is CPython and JPython?**

Ans. The default implementation of the Python programming language is Cpython. As the name suggests, python written in C language is CPython. Cpython compiles the python source code into intermediate bytecode, which is executed by the Cpython virtual machine. CPython is distributed with a large standard library written in a mixture of C and Python. CPython provides the highest level of compatibility with Python packages and C extension modules. All versions of the Python language are implemented in C because CPython is the reference implementation.  
Some of the implementations which are based on CPython runtime core but with extended behavior or features in some aspects are Stackless Python, wpython, MicroPython.

1. **Differences between Python2 and Python3**.

Ans.

| **Basis of comparison** | **Python 3** | **Python 2** |
| --- | --- | --- |
| Release Date | 2008 | 2000 |
| Function print | print ("hello") | print "hello" |
| Division of Integers | Whenever two integers are divided, you get a float value | When two integers are divided, you always provide integer value. |
| Unicode | In Python 3, default storing of strings is Unicode. | To store Unicode string value, you require to define them with "u". |
| Syntax | The syntax is simpler and easily understandable. | The syntax of Python 2 was comparatively difficult to understand. |
| Rules of ordering Comparisons | In this version, Rules of ordering comparisons have been simplified. | Rules of ordering comparison are very complex. |
| Iteration | The new Range() function introduced to perform iterations. | In Python 2, the xrange() is used for iterations. |
| Exceptions | It should be enclosed in parenthesis. | It should be enclosed in notations. |
| Leak of variables | The value of variables never changes. | The value of the global variable will change while using it inside for-loop. |
| Backward compatibility | Not difficult to port python 2 to python 3 but it is never reliable. | Python version 3 is not backwardly compatible with Python 2. |
| Library | Many recent developers are creating libraries which you can only use with Python 3. | Many older libraries created for Python 2 is not forward-compatible. |

1. **Differences between ASCII and Unicode**.

Ans. ASCII and Unicode are two character encodings. Basically, they are standards on how to represent difference characters in binary so that they can be written, stored, transmitted, and read in digital media. The main difference between the two is in the way they encode the character and the number of bits that they use for each. ASCII originally used seven bits to encode each character. This was later increased to eight with Extended ASCII to address the apparent inadequacy of the original. In contrast, Unicode uses a variable bit encoding program where you can choose between 32, 16, and 8-bit encodings. Using more bits lets you use more characters at the expense of larger files while fewer bits give you a limited choice but you save a lot of space.