**TASK – 1(Python Batch A)**

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**Q1. What is JPython and CPython?**

**Ans-**

**1. CPython**

* This is because this is the one which is most widely used implementation of Python. This interpreter is the default interpreter which we use when we install Python on our machines and this interpreter is written in C-programming language.
* It is termed as CPython as this interpreter contains a lot of interfaces as foreign functions with languages like C itself.
* CPython is the recommended implementation for Python when all you need is compatibility and compliance with industry standards in Python than raw performance.
* As this is the most widely used version of Python, we can almost say that we all start by learning CPython and then probably move to other interpreted versions of CPython itself.
* CPython incorporates modules, exceptions, dynamic typing, very high-level dynamic data types, and classes

**With some extra features of CPython, it is possible to:**

1. Calls C and C++ code back and forth, directly from Python code, natively
2. Combine source code level debugging to dive into your Python code to find memory leaks, efficiency bottlenecks etc.
3. CPython can be termed as a superset of the Python programming language that additionally enables us to call C functions, declaring C data types in variables. Finally.
4. Cython is freely available under the open source Apache License.

**2 Jython**

* As it sounds, Jython is an implementation of the Python language to be able to run on the Java Virtual Machine. This means that we can make seamless use of third-party Java libraries and other Java-based applications.
* Even though almost all of the Python code be run on the JVM with Jython, there are some differences in some of the modules.

“**One of the major gaps between the normal Python code and one run on JVM is that Jython does not work with C extensions.**” This is however not a big problem because there are a lot fewer chances that you are actually using any of the C extensions in your Python program and in that case, the program will work just fine.

**Here are some features of Jython:**

1. Jython was first released in January 2001 and last stable version was released on July 2017.
2. Jython simply takes a Python code and compiles it to corresponding Java bytecode. This is why we can Jython on any system which runs a JVM.
3. We can extend Java classes with Jython as well to mention explicitly here, Jython works with JVM but CPython (which we mentioned in the last section) will not work with the JVM.
4. Finally, Jython code will work on CPython though, unless it doesn’t have any Java libraries used in it.

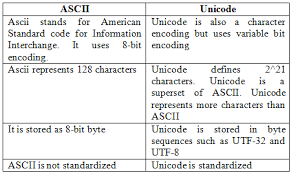
**Q2. What is the difference between Python2 and Python3 ?**

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| **BASICS** | **PYTHON3 (2008)** | **PYTHON2 (2000)** |
| 1. Function print | print ("hello") | print "hello" |
| 2. Division of Integers | Whenever two integers are divided, you get a float value | When two integers are divided, you always provide integer value. |
| 3. Unicode | In Python 3, default storing of strings is Unicode. | To store Unicode string value, you require to define them with "u". |
| 4. Syntax | The syntax is simpler and easily understandable. | The syntax of Python 2 was comparatively difficult to understand. |
| 5. Rules of ordering Comparisons | In this version, Rules of ordering comparisons have been simplified. | Rules of ordering comparison are very complex.  Iteration |
| 6. Iteration | The new function introduced to perform iterations. | In Python 2, the xrange() is used for iterations.  Exceptions |
| 7. Exception | It should be enclosed in parenthesis. | It should be enclosed in notations. |
| 8. Leak of variables | The value of variables never changes. | The value of the global variable will change while using it inside for-loop. |
| 9. 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. |
| 10. 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. |

**Q3. What is the difference between ASCII format and Unicode format ?**

**Ans-**

* ASCII is an acronym for American Standard Code for Information Interchange, a widely used standard for encoding text documents on computers While Unicode uses variable encoding.
* ASCII uses an 8-bit encoding while Unicode uses a variable bit encoding.
* Unicode is standardized while ASCII isn’t.
* Unicode represents most written languages in the world while ASCII does not.
* ASCII has its equivalent within Unicode.
* ASCII represents 128 characters While Unicode defines 2^21 characters.



**Q4. “ Python is an interpreted language ” explain this contradictory statement because there are many types of compilers present in python ?**

**Ans-**

In various books of python programming, it is mentioned that python language is interpreted**. But that is half correct the python program is first compiled and then interpreted.** The compilation part is hidden from the programmer thus, many programmers believe that it is an interpreted language.

**Background Working :**

The compilation part is done first when we execute our code and this will generate byte code and internally this byte code gets converted by the python virtual machine(p.v.m) according to the underlying platform(machine+operating system).

**Example :**

If you are writing code in the notepad just save the code with extension **“py”** inlet suppose you have created a folder named python\_prog in d drive.

Now as you press enter the byte code will get generated. A folder created and this will contain the byte code of your program. This folder is in the python\_prog folder where you will save your python codes.

Now to run the compiled byte code just type the following command in the command prompt:-

**the extension .pyc is python compiler..**

Thus, it is proven that python programs are both compiled as well as interpreted , but the compilation part is hidden from the programmer.

The End