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TBC/PBC202 Python

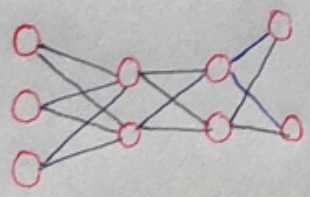
Assignment 1

① Write 10 points to represent the differences between C Programming and Python Programming.

1. C is a procedural programming language whereas Python supports OOPs.
2. C supports pointers whereas Python doesnot.
3. C is mainly used for hardware related purposes but Python is used as general purpose.
4. C comes with compiler where Python supports interpreter
5. C have limited number of built in function but Python have a very humagous library of functions.
6. C is close to computers thats why faster whereas Python is slower.
7. Syntax of C is tough whereas Python is more like pseudocodes.
8. C uses header files whereas Python doesnot
9. C supports in line variable assignments whereas Python doesnot.
10. C doesn't keep any provision of indentation but Python keeps child block indented.

② Explain any one feild of computer science in detail with some examples where Python is used.

Machine Learning - Neural Networks are the processing units of a ML system. They try to simulate the the real network of the neurons in our brain



Python is most powerful tool as well as popular to program these neural ML models. One of the most popular libraries used by developers around the world to work with Python applied to Machine learning is Tensorflow. Its a free open source library developed by the Google Brain Team. This library is used for reasearch and production at Google. Other popular libraries used are

- Keras
- PyTorch

③ Is Python used for research purpose also. Support your answer in detail with some examples.

Python is general-purpose programming language and is becoming increasingly popular tool in research. It is intuitive to learn, has a flourishing online community and is open source. Its popularity partly arises from its easy to use, versatile functionality Instead of using different software programs to accomplish different tasks, Python can save researchers a significant amount of time and frustration. Python have a huge list of open source packages, that helps researchers with -

- Data collection (Psychopy)
- Data Processing and organization (os, Pandas)
- Data Analysis & Visualization (Numpy, Scipy, Matplotlib, Seaborn)

④ Find out the difference between a compiler and an interpreter.

Compiler - Compiler scans the entire program and convert it into machine code at once and gives all the errors at the same time (if any), the compiler generates an intermediate object coded entity which is further linked.

Interpreter - Interpreter translates the program into machine code line by line without generating an object code. It stops whenever an error is encountered and corrected.

⑤ Investigate the difference between a header file in C and module in Python.

C header files use a #include statement, which is a pre-processor directive, essentially a pre compilation copy and paste. Using header files you still need to link in the corresponding compiled libraries, if any into the executable.

Modules in Python are files containing Python code. It is considered as a Python object with arbitarily named attributes that you can bind and reference.

Python is not a compiled language. When you say import X, you're giving command to interpreter to run some code and make some name.
#include is more like telling the compiler what to do to continue compiling at this point.