Sol:

Q, What is python ? why is it called an interpreted language

→ A high-level, general-purpose programming language
  known for its simplicity & readability. It is called
  an interpreted language because the code is
  executed line by line by an interpreter
  rather than being compiled into a machine code.
  This makes debugging easier but execution
  slightly slower compared to compiler languages.

Q, key features of python ?

→ * Simple & readable syntax → easy to learn & write

   * Cross-platform → most platforms, mac, windows, linux etc.

   * Extensive standard library

   * Supports tasks like math, web dev and data handling.

- open source - free to use
- object oriented & functional programming support.
- Dynamic typing & mly management.
- Integration with other Languages (c, c++, Java).

Q, diff b/w python 2 & python 3

Python 2	Python 3
* Print stmt is print "Hello."	* Print stmt is print ("Hello").
* Partial unicode support	* full / default unicode support
* Division result didn't show decimals (5/2 = 2)	* Decimals are now shown (5/2 = 2.5)
* was backward compatible with 1.x version	* Not backward compatible
* older & less strict syntax	* cleaner & more consistent syntax.
* xrange () was used for mly efficient loops	* range () behaves like xrange ().

Q, Python's application in real-world projects.

→ * web development
  - Django, Flask
* Data science & AI
  - numpy, pandas, Tensorflow, scikit-learn.
* Automation & scripting
  - Automating tasks & testing.
* Cyber security
  - writing security tools, scanning scripts.

* Game development
  - Pygame.

* IoT & cloud computing
  - Device control, cloud automation.

Q. What is PEP 8 & its emp on python program.

→ Python's Enhancement Proposal 8 is official style guide for python code. It defines rules for indentation, naming, spacing & line length to ensure that code is clean, consistent & easy to read. basically it helps team to maintain uniform coding style across large projects.

Q. Who developed python & in which year was it released.

→ Python was developed by a dutch programmer called Guido van Rossum at CWI (centrum Wishunch & informatica) in Netherlands. First version of python was released in 1991. He made python in order to create a simple, readable and powerful scripting language inspired by ABC and C.

Q. what is dynamically typed in python.

→ Means, that you don't need to declare variable type when creating it as in c "int c" like that. Interpreter automatically determines the type and over at run time based on the assigned value. This make coding easier but can make runtime errors.
  eg: a = 1   #(int)
      b = "Hill." (string / star).

Q. diff b/w compiler & interpreter. and stuck

→

Compiler	Interpreter
× Translate entire code into machine code at once	× Translate execute codes line by line
× faster compilation	× Slower.
× Show all error after compiling	× Stops execution at the first error.
× produces a seperate machine code file	× runs directly no seperate file created.
× Need more mly for compiled o/p	× Need less mly since executs directly
× platform dependent	× platform independent
× Translation happens once before execution	× Happens every time the program runs.
× produce directli machine code	× Generate bytecode, then executes it
× eg: C, C++	× eg: Python, Ruby, Javascript.

Here python uses interpreter.