Basic Questions :

Q1. What are components of a computer ?

CPU,monitor,Keyboard,Mouse

Q2. Which CPU are you using in you laptop / mobile / PC ?

Laptop : intel i5-1135G7

mobile : chip 15

Q3. What is size of RAM in your PC ?

Laptop : 16GB DDR5 RAM

Q4. Read Python documentation from

https://docs.python.org/3/tutorial/index.html

Q5. What are different implementations of Python ? Which implementation we are using ?

pypy, Stackless python, Micropython, Circutpython, Cpython, Rpython, pyjs, Brython, Transcrypt. we are using Cpython.

Q6. Who created python ? in which year ? where ?

Guido van Rossum

Q7. What is PVM ?

PVM stands for Python Virtual Machine It is a Compiler and Interpreter where the code is first compiled into bytecode and converted in .pyc file and the passed to PVM where it is executed line by line and we get the output for the code.

Q8. Python is platform independent or not ? Which platforms python can run ?

Python is platform independent. It works on multiple platfroms like Windows, Linux, MacOS, Andorid, Arduino, Raspberry Pi

Q9. Why python is platform independent ? What makes it platform independent ?

python is platform independent because it can can be write on one platfrom but can run on multiple platform. It's feature of converting it into bytecode and which can be transfered to another machine where we can run it without any complications.

Q10. WAP to Print "Hello IACSD" and write comment describing author of the program and date created

ptint ("Hello IACSD")

"""

Guido van Rossum

"""

Q11. Find working of various functions (min 7) from math library of python which is provided as standard library.

https://docs.python.org/3/library/math.html

You can also try it yourself.

Ex.

import math

print(math.factorial(4))

print(math.sin(90))

import math

print(math.factorial(4))

print(math.isqrt(9))

print(math.fsum([1,2,3,4,5,6,7,8,9,10]))

print(math.gcd(10,6))

print(math.pi)

print(math.cos(90))

print(math.radians(60))

Q12. Open spyder IDE and create a python program (.py file) to print Hello world!. Run the program and check the put on console.

runfile('D:/pythonprog/helloworld.py', wdir='D:/pythonprog')

Hello World

Q13.WAP using spyder IDE. Import math library and print the gcd, lcm of two numbers.

import math

print(math.gcd(100,8))

print(math.lcm(67,6))

Q14. WAP using spyder IDE. Use math library. Print number of options you have, when you are given 5 different characters and you need to select 3 of them without repeatitions. (find permutations)

import math

print (math.perm(5,3))

Q15. WAP using spyder IDE. Use math library. Print number of options you have to select 20 students out of 60 without repeatitions. ( Obviously here order doesn't matter, so find combinations)

import math

print (math.comb(60,20))

Q16. WAP using spyder IDE. Use math library. Try to find log of zero. Which error is given ?

Also try to find square root of any negative number. What error is give?

Q17. WAP to create a variable v1 and store any number. Find the square root of that number by using v1 in math.sqrt() function.

import math

v1 = 50

print (math.sqrt(v1))

Q18. Why python is considered as slow compared to C, C++ ?

python is a interpreter while C,C++ is compiler type programming hence python requires more time to execute

Refer : https://stackoverflow.com/questions/3033329/why-are-python-programs-often-slower-than-the-equivalent-program-written-in-c-or

Q19. Check where .pyc files are stored after you run the program for Q15.

D:\pythonprog\comb.py

Advanced Assignments

Q. What are different extensions supported by python?

What is meaning of .py , .pyc, .pyz, .pyo, .pyd , etc extensions supported by python ?

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.py: This is the most common Python file extension and is used for regular Python source code files

.pyc: These are compiled Python files, also known as Python bytecode files.

.pyz: This is not a standard Python extension, but it's often used for Python archive files.

.pyo: This extension was used in older versions of Python for optimized

.pyd: This extension is not a standard Python extension.t is used for Python dynamic-link library files on Windows. These files contain compiled Python code that can be loaded and used by other programs or applications.

Q. Check what happens if we print math.sqrt without any parnthesis ? What happens if we print math.sqrt() without passing any number to it?

Q. Can we convert .pyc file to python code? How?

Q. What is Global Interpreter Lock (GIL)?

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The Global Interpreter Lock (GIL) is a mutex (short for mutual exclusion) in CPython, the reference implementation of Python.

It is a mechanism used to synchronize access to Python objects, preventing multiple native threads from executing Python bytecodes simultaneously. In simpler terms, the GIL ensures that only one thread executes Python code at a time, even on multi-core processors. This design is primarily a feature of CPython and does not exist in all Python implementations.

Q. Which language is used to write python interpreter?

Q. What is advantage of garbage collector over manual memory management by the programmer ?

Q. When variable is created what is on stack and what part is on heap ?

Q. What is garbage collector ? How reference counting works ?

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A garbage collector is a component in programming languages and runtimes that automates the management of memory by identifying and reclaiming memory that is no longer in use. The primary goal of a garbage collector is to free up memory occupied by objects that are no longer accessible by the program, thus preventing memory leaks and ensuring efficient memory utilization.