Question 2: Explain what happens at each step of the Fetch-Decode-Execute cycle.

The Fetch-Decode-Execute cycle is a process that the CPU engages in when running a program. The cycle is composed of three major steps:

- First, fetch the next instruction of the program from the RAM
- Next, decode the instruction to then then decide which operation to perform (using the control unit)
- Finally, execute the instruction or perform the operation

Question 3: Your friend tells you that she has a syntax error in her program; what does this mean? What might be the cause(s) of such an error?

If my friend were to tell me she has a syntax error in her program, this means that the program will not compile or execute, likely due to a typo or misclick when she was typing out her code. Since syntax is like the grammar or punctuation of programming, a typing error is almost always the cause of her syntax error.

Question 4: What is the difference between a compiler and an interpreter?

A compiler takes the code and compiles it into a machine language file, and the machine language file can be executed, like how a .java file is compiled into a .jar file. On the other hand, an interpreter instantly turns the code into machine language and then executes it. This means that a language like Python would be faster in the development process compared to something like C++, but when compiled a C++ runs it would be roughly 10-100 times faster than a Python program.