

## Test Sheet 5

1. What does a Computer do? Relate your answer to the main components of a computer:

Component	What it Does

2. How long does it take?

Complete the following tables of times approximately for a modern computer.

How long it takes to?	Time Units	Number of CPU Instructions
Process a single instruction		1
Find data on disk (average)		
Type a character (average)		

3. What is stored on the memory of a computer? Relate you answer to the:

- The statements in a Python program.
- The values of variables when a program is run.

Explain how this makes a computer a 'universal' (or 'do anything') machine?

4. In the lecture, we described 'illusions' created by an Operating System. Explain the following illusions:

Illusion	Reality
The computer can run lots of different programs at once.	It only executes one process at a time, switching rapidly from one to the other.
Your program is the only one in memory.	
The disk is organised into files and directories.	
My flash memory card, USB memory stick and CDROM all store data in the same way.	

5. Analogies are very useful for explain computers. Propose analogies for the following ideas and explain them to someone else on the course.
- An interrupt
  - The computer switching rapidly between different programs running 'at the same time'
  - A cache memory.