1. What characteristics define a computer?

A computer is just a device that accepts input, that is some sort of data or information, and processes it in some way to automatically produce a result or output. In the case of a traditional desktop computer, output might take the form of whatever is displayed on the user's screen. But output can take many other forms, such as producing sound or causing motion. When a computer is doing any kind of work, it is computing. Computing means calculating. In order for a computer to operate correctly, many different parts of the computer have to communicate and interact with one another in just the right way. Each part of the computer serves a specific function, and together they allow for computers to perform tasks. Computers require a combination of hardware, the physical parts that make up the computer, and software, the programs and instructions that run on the computer.

2. What is programming? Are there ways of "programming" a machine that do not involve writing code?

Computers need to translate inputs in to outputs, by processing the information in the input in order to generate the necessary output. This process takes the form of an algorithm, which is just a set of rules that a computer must follow in order to translate inputs into the desired outputs. Programming is the process of providing a computer with a set of instructions, or an algorithm, in order to perform a particular task. There are plenty of ways to give a machine instructions without coding. There are a lot of mechanical ways of doing it. For example, mechanical watches is driven by a spring (called a mainspring) which must be wound periodically. Its force is transmitted through a series of gears to power the balance wheel, a weighted wheel which oscillates back and forth at a constant rate. A device called an escapement releases the watch's

wheels to move forward a small amount with each swing of the balance wheel, moving the watch's hands forward at a constant rate.