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Feedback and feed forward are two types of control schemes for systems that react automatically to changing environmental dynamics. Each utilizes sensors to measure important factors and a set of rules to react to changes in those factors. Feedback and feed forward controls may coexist in the same system, but the two designs function in very different ways.

**Feed Forward**

A feed forward system may measure a number of secondary variables in addition to the primary one. For example, a feed forward thermostat might measure external as well as internal temperatures, and it might sense whether doors and windows are open or closed. If the system senses that it is cold outside and someone opens a window, the system will proactively turn on the furnace in an attempt to prevent the temperature in the house from falling. Instead of waiting for the temperature to change at the thermostat, the system anticipates the effect of the open window and attempts to counteract the heat loss. Another example of a feed forward system is a video card that increases fan speed in response to intense graphics activity in an attempt to dissipate heat before the temperature actually begins to climb.

A feedback system measures a value and reacts to changes in that value. For instance, your thermostat measures the ambient temperature in your home, and if the temperature falls below its minimum setting, the thermostat activates the furnace to warm your home back to the appropriate temperature. The thermostat measures the temperature, but it also feeds that value back into its control scheme to maintain the temperature.

**Feedback**

In feedback control the systems outputs are measured and if they do not match the desired output (reference) the controlled parameter is recalculated. If the input does not change, these differences usually come from disturbances. The controller has a feedback from the systems output which quantifies "how far" it is from the desired state, regardless of what causes this difference.

**Differences**

In feed forward control, the disturbances are measured and the controlled parameter is calculated based on some mathematical (or logical) model. There is no feedback to see if the system is really in the desired state or "how far" it is form the desired state. If disturbances not measured cause the systems outputs to differ from the desired one, the controller will not react. So to formulate it with "reactive" I would say that feedback control is reactive since it reacts to changes in the systems output while feedforward is proactive since it possibly acts before the systems output change. The important factor in control theory is the controlled system output, that it probably why reactive is defined form the point of view of the change in the systems output.

Feedback-based systems have the advantage of being simple. The system measures a variable, and uses that variable to make decisions. Feed forward systems, on the other hand, have the ability to anticipate changes in the measured variable, working proactively instead of reactively. The more secondary factors the system measures, the more accurately it can work against these changes.