Sampled Data Systems

We set the scene for this chapter with a useful definition from Wikipedia

Sampling (Signal Processing)

> In signal processing, sampling is the reduction of a continuous-time signal to a discrete-time signal. A common example is the conversion of a sound wave (a continuous signal) to a sequence of samples (a discrete-time signal).
>
> A sample is a value or set of values at a point in time and/or space.
>
> A sampler is a subsystem or operation that extracts samples from a continuous signal.
>
> A theoretical ideal sampler produces samples equivalent to the instantaneous value of the continuous signal at the desired points.

-- Sampling (Signal Processing) (https://en.wikipedia.org/wiki/Sampling_(signal_processing)), Wikipedia.

In this chapter we will cover Sampling Theory, the Z-Transform, the inverse Z-Transform and Models of Digital Systems.