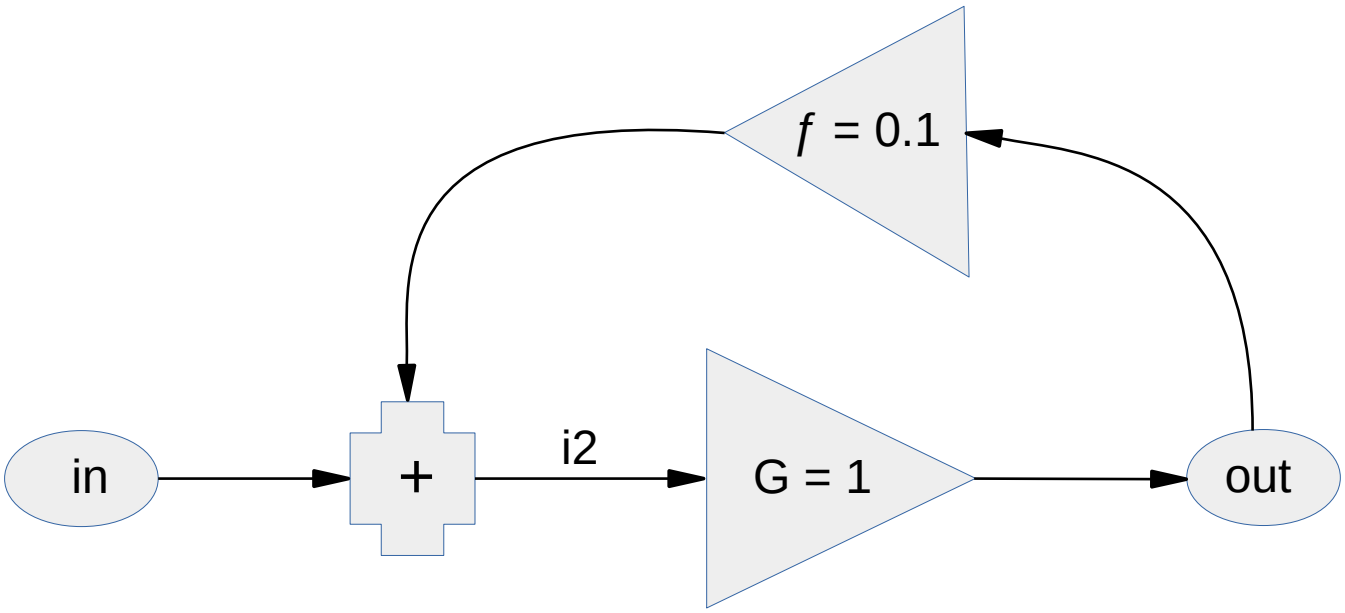
Linear feedback system



in = input
out = output
G = open-loop gain (assume 1.0 for simplicity)
f = feedback (shown as +10%)

i2 = in + (f × out)
out = i2 × G
= G × (in + (f × out))
assume G = 1, then:
out = in + (f × out)
out – (f × out) = in
out × (1 – f) = in
out = in / (1 – f)

if f = +10% then out = in / 0.9 = 1.11111...×in
if f = +50% then out = in / 0.5 = 2×in
if f = –50% then out = in / 1.5 = 0.66666...×in