$$H(z) = \frac{c + z^{-1}}{1 + c z^{-1}}$$

$$H(z) = \frac{Y(z)}{X(z)}$$

$$Y(z)(1 + c z^{-1}) = X(z)(c + z^{-1})$$

$$Y(z) + c z^{-1} Y(z)$$

$$= c X(z) + z^{-1} X(z)$$

$$y[n] + c\,y[n-1]$$

$$= c\,x[n] + x[n-1]$$

$$y[n] = c\,x[n] + x[n-1] - c\,y[n-1]$$

$\delta[n-1] \xleftrightarrow{z} z^{-1}$

$y[n] = -g\,x[n] + x[n-m] + g\,y[n-m]$

$Y(z) = -g\,X(z) +$

$v[n-m] = x[n] * \delta[n-m]$

$\xleftrightarrow{z} z^{-m}$

$X(z) = z^{-1} z^{-1} \cdots z^{-1}$

$$x[n-m] \xleftrightarrow{z} X(z) z^{-m}$$

$$Y(z) = -g X(z) + X(z) z^{-M} + g Y(z) z^{-M}$$

$$Y(z) - g z^{-M} Y(z) = -g X(z) + z^{-M} X(z)$$

$$Y(z)(1 - g z^{-m})$$

$$= X(z)(-g + z^{-m})$$

$$H(z) = \frac{Y(z)}{X(z)} = \frac{(-g + z^{-m})}{1 - g z^{-m}}$$

$$H(z) = \frac{-g.1\,0z^{-1} + 0z^{-2} + \ldots + 1z^{-M}}{1 + 0z^{-1} + \cdots - g z^{-m}}$$

In Matlab!

$$H(z) = \frac{b_1 + b_2 z^{-1} + b_3 z^{-2} + \dots}{a_1 + a_2 z^{-1} + a_3 z^{-2} + \dots}$$

$$H(z) =$$

$b = [-g \; 0 \; 0 \; \ldots \; 1]$

$a = [1 \; 0 \; 0 \; \ldots \; -g]$

---

b=[-g, zeros(1,M-2), 1];

instead:

```
b = zeros(1,M);
b(1) = -g;
b(m) = 1;
```