lll e

$1/7 = .\dot{1}4285\dot{7}$

$2/7 = .285714$

$3/7 = .428571$

$4/7 = .571428$

$5/7 = .714285$

$6/7 = .857142$

1 4 2 8 5 7

```
let rec expand num den radix =
    StCons ((num * radix)/den,
        lazy (expand ((num * radix) mod den) den radix))

let searches_twins (s : int stream) =
  let rec helper current st =
    match st with
    | Eos -> Eos
    | St (x, xs) ->
        if x = current + 2 then
          StCons((current, x),
                lazy(helper x (force xs)))
        else - - -
  in
    match s with

let twin_primes = search_twins primes
```

$$1729 = 10^3 + 9^3 = 12^3 + 1^3$$

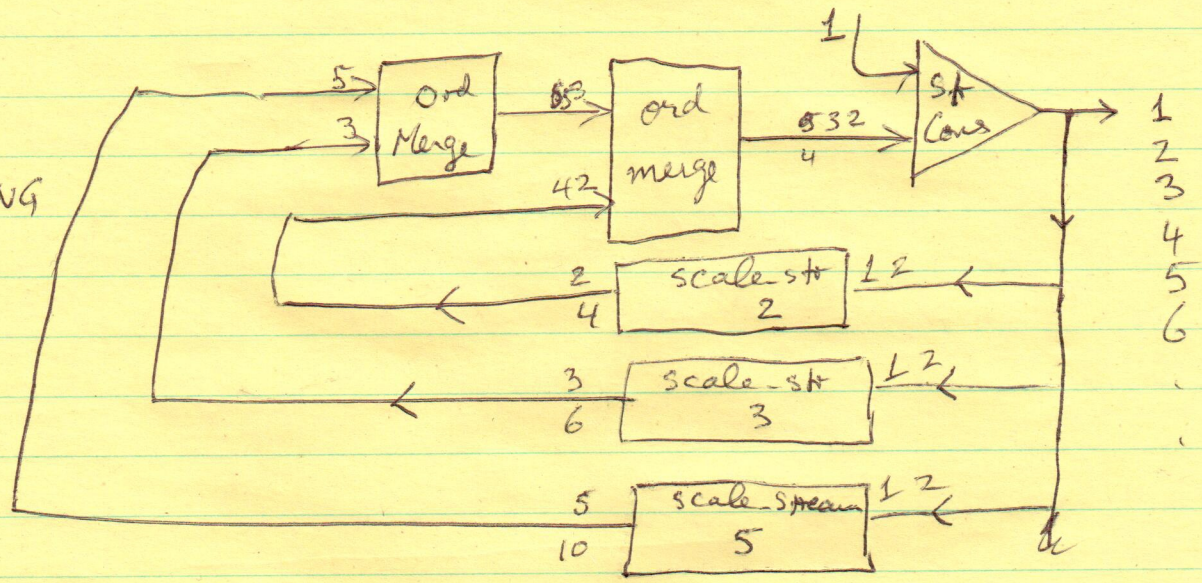
HAMMING – DIJKSTRA NUMBERS

$$Ham = \{ 2^i 3^j 5^k \mid i, j, k \geq 0 \}$$

1 2 3 4 5 6 8 9 10 12 15 . . . .

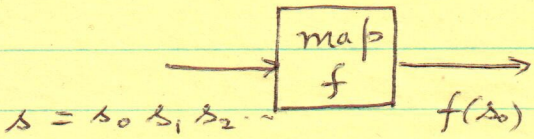
```
let rec om s1 s2 =
    match s1 with
    | Eos -> s2
    | StCons (h1, t1) ->
        match s2 with
        | Eos -> s1
        | StCons(h2, t2) ->
            if h1 = h2 then StCons(h1, lazy(om (force t1)(force t2)))
            else - - -

let scale-stream n s = mapSt (fun x -> n * x) s
```

DATAFLOW PROGRAMMING

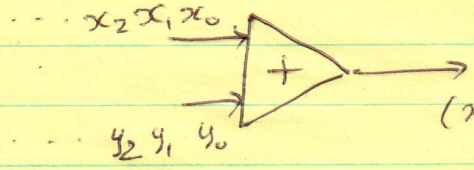


SIGNAL PROCESSING

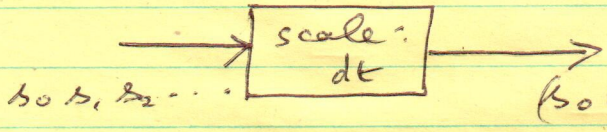
LUSTRE SIGNAL ESTEREL



map f s



A signal is a time-series, a sequence of values in time.

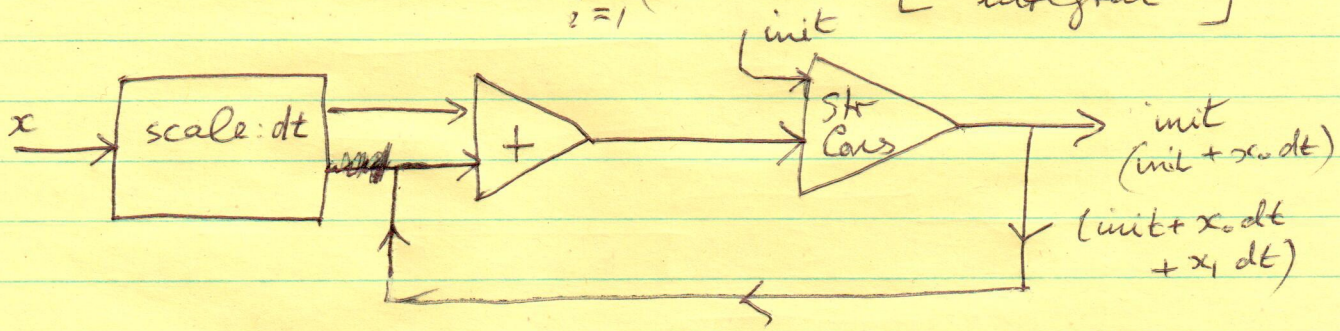


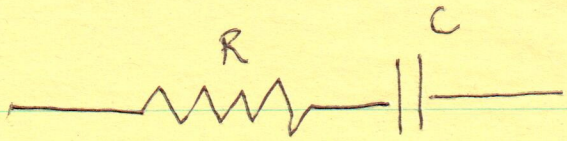
$\int f(t)\,dt = init + \ldots$

$x = x_0 \; x_1 \; x_2 \ldots x_i \ldots$

$s = (init) \ldots$

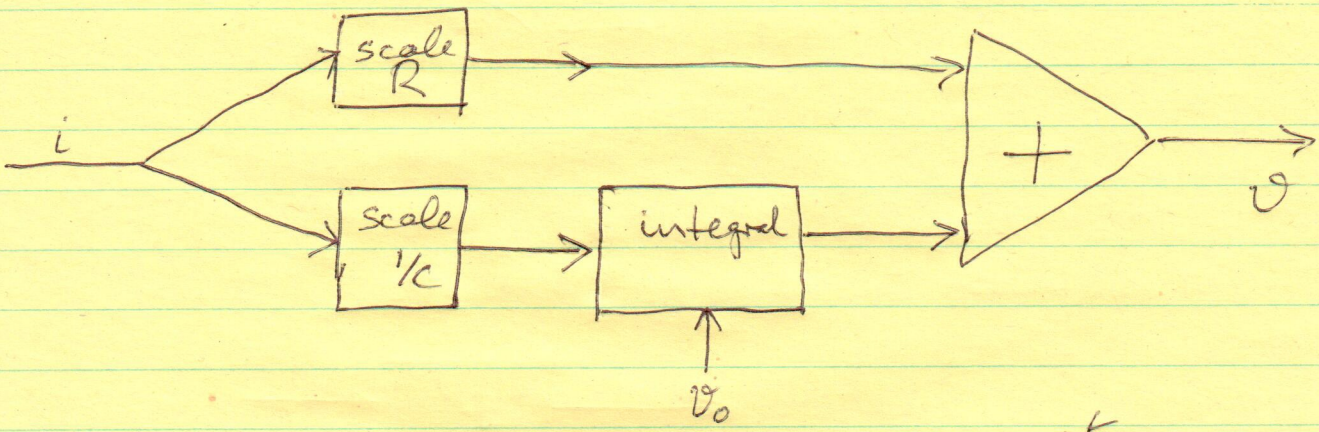
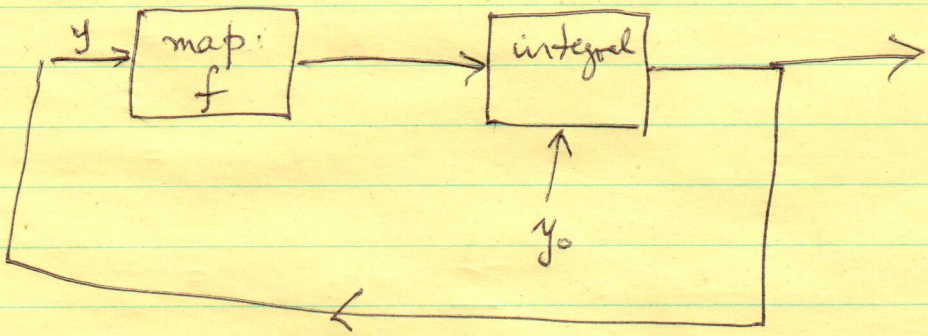
$$s_j = init + \sum_{i=1}^{j} (x_i * dt) \quad \left[\begin{array}{c}\text{Discretized}\\ \text{integral}\end{array}\right]$$





$$v = \left(v_0 + \frac{1}{C}\int_0^t i\,dt\right) + Ri$$

$V = I * R \qquad V/R = I \qquad V/I = R$



$$\frac{dy}{dt} = f(y) \quad \sim \quad y = \int_0^t f(y)\,dt + y_0$$