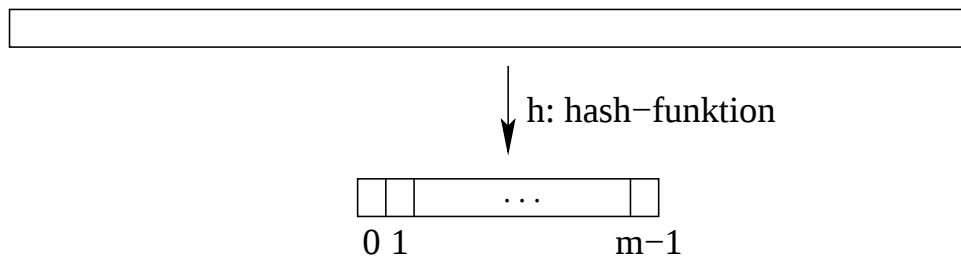


Hashing



Ønsker: Hash-funktion, som

- fordeler elementerne jævnt ud over tabellen
- kan beregnes i konstant tid.

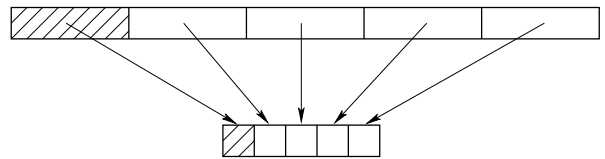
Simpel uniform hashing:

Forventet søgetid: $\theta(1 + \alpha)$, $\alpha = \frac{n}{m}$ load factor

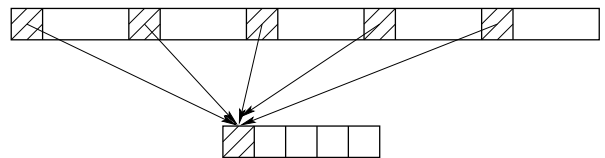
Eksempler på hash-funktioner

- $0 \leq k < 1$

$$h(k) = \lfloor km \rfloor$$

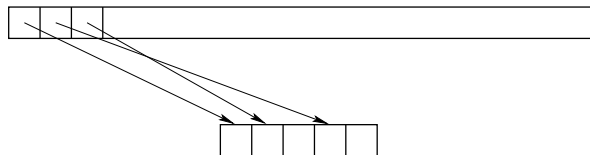


- $h(k) = k \bmod m$



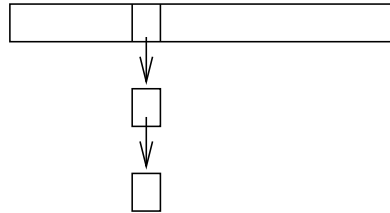
- $h(k) = \lfloor m(kA \bmod 1) \rfloor$, $0 < A < 1$

Eks: $A = \frac{\sqrt{5}-1}{2} \approx 0.618$



Kollisioner

- Chaining



- Åben adressering

Probe-sekvens: $\langle h(k, 0), h(k, 1), \dots, h(k, m - 1) \rangle$

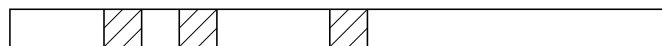
- Lineær probing

$$h(k, i) = (h'(k) + i) \bmod m$$



- Kvadratisk probing

$$h(k, i) = (h'(k) + c_1 i + c_2 i^2) \bmod m$$



- Dobbelt hashing

$$h(k, i) = (h_1(k) + i h_2(k)) \bmod m$$