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Exercise for the lecture

Distributed Storage and Computer Forensic

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Sheet 5

EXERCISE 5:

Ranged Hash Functions

Given a set of files with the keys $\{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ a set of servers $\{A, B, C, D\}$ and a hash function f that maps keys and servers to the interval $[0..1]$ as follows:

x	1	2	3	4	5	6	7	8	9	A	B	C	D
f(x)	0.23	0.02	0.34	0.56	0.49	0.79	0.36	0.86	0.91	0.1	0.4	0.7	0.9

Furthermore, consider the following views:

$V_1 = \{A, B, C\}$
$V_2 = \{B, C, D\}$
$V_3 = \{B, D\}$

- Calculate the load of each server.

- Calculate the spread of each file.

- For which constant c does the balance property hold?

- Server A crashes. Recalculate load, spread and c after rebalancing the keys/files.