

**Exercise for *Datenbanksystemimplementierung*
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Adnan Alhomssi (adnan.alhomssi@uni-jena.de)
<https://dbis1.github.io/courses/ws20/dbimpl/>

Sheet Nr. 02

Exercise 1

Consider a **linear hashtable** with bucket size 1 and chained overflow records. Also assume that each insert triggers a bucket split and linear extension of the table. Use a *split* marker to annotate the current point of linear extension.

As hash function use the identity-function: $h(x) = x$

Insert the following items into the linear hashtable:

Key	Value
10	A
25	B
30	C
18	D
40	E
45	F
15	G

Questions:

1. How big is the linear hashtable *after* the inserts?
2. How big would an *extendible* hashtable be (using the least significant bits)?

Exercise 2

Consider an **extendible hashtable** with bucket size 4 and no chained overflow records. Also assume that a split is triggered whenever a bucket overflows. As hash function use the identity-function: $h(x) = x$ and the least significant bits of the hash value.

Insert the following items into the extendible hashtable:

Key	Value
4	A
24	B
16	C
6	D
22	E
10	F
7	G
31	H

Questions:

1. How big is the extendible hashtable *after* the inserts?
2. What differences would arise if we use the most significant bits of the hash value instead?