

The background of the slide is composed of several large, overlapping triangles in various colors: red, orange, yellow, teal, blue, and purple. The triangles are arranged in a way that they fill the entire frame, with some overlapping others. The colors are vibrant and the shapes are geometric.

# MIN-Hash Example

By Malene Sjørsløv Søholm

$$h1(x) = x + 1 \bmod 5$$

id	<i>k</i> -shingle	baaa	accc	abba	baac	<i>h1</i>	<i>h2</i>	<i>h3</i>
1	aa	1	0	0	1			
2	ab	0	0	1	0			
3	ac	0	1	0	1			
4	ba	1	0	1	1			
5	bb	0	0	1	0			
6	cc	0	1	0	0			

$$h1(x) = x + 1 \bmod 5$$

id	<i>k</i> -shingle	baaa	accc	abba	baac	<i>h1</i>	<i>h2</i>	<i>h3</i>
1	aa	1	0	0	1	2		
2	ab	0	0	1	0	3		
3	ac	0	1	0	1	4		
4	ba	1	0	1	1	0		
5	bb	0	0	1	0	1		
6	cc	0	1	0	0	2		

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$$h2(x) = 3x + 1 \bmod 5$$

id	k-shingle	baaa	accc	abba	baac	<i>h1</i>	<i>h2</i>	<i>h3</i>
1	aa	1	0	0	1	2		
2	ab	0	0	1	0	3		
3	ac	0	1	0	1	4		
4	ba	1	0	1	1	0		
5	bb	0	0	1	0	1		
6	cc	0	1	0	0	2		

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id	k-shingle	baaa	accc	abba	baac	<i>h1</i>	<i>h2</i>	<i>h3</i>
1	aa	1	0	0	1	2	4	
2	ab	0	0	1	0	3	2	
3	ac	0	1	0	1	4	0	
4	ba	1	0	1	1	0	3	
5	bb	0	0	1	0	1	1	
6	cc	0	1	0	0	2	4	

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$$h3(x) = 2x + 4 \bmod 5$$

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1	aa	1	0	0	1	2	4	
2	ab	0	0	1	0	3	2	
3	ac	0	1	0	1	4	0	
4	ba	1	0	1	1	0	3	
5	bb	0	0	1	0	1	1	
6	cc	0	1	0	0	2	4	

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1	aa	1	0	0	1	2	4	1
2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1

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1	aa	1	0	0	1	2	4	1
2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1

	<i>s1</i>	<i>s2</i>	<i>s3</i>	<i>s4</i>
<i>h1</i>	∞	∞	∞	∞
<i>h2</i>	∞	∞	∞	∞
<i>h3</i>	∞	∞	∞	∞



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→

id	k-shingle	baaa	accc	abba	baac	<i>h1</i>	<i>h2</i>	<i>h3</i>
1	aa	1	0	0	1	2	4	1
2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1

	<i>s1</i>	<i>s2</i>	<i>s3</i>	<i>s4</i>
<i>h1</i>	∞	∞	∞	∞
<i>h2</i>	∞	∞	∞	∞
<i>h3</i>	∞	∞	∞	∞

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1	aa	1	0	0	1	2	4	1
2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1

	<i>s1</i>	<i>s2</i>	<i>s3</i>	<i>s4</i>
<i>h1</i>	2	∞	∞	2
<i>h2</i>	4	∞	∞	4
<i>h3</i>	1	∞	∞	1

$$h1(x) = x + 1 \bmod 5$$

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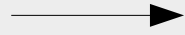
id	k-shingle	baaa	accc	abba	baac	<i>h1</i>	<i>h2</i>	<i>h3</i>
1	aa	1	0	0	1	2	4	1
2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1

	<i>s1</i>	<i>s2</i>	<i>s3</i>	<i>s4</i>
<i>h1</i>	2	∞	∞	2
<i>h2</i>	4	∞	∞	4
<i>h3</i>	1	∞	∞	1

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1	aa	1	0	0	1	2	4	1
2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1

	<i>s1</i>	<i>s2</i>	<i>s3</i>	<i>s4</i>
<i>h1</i>	2	∞	3	2
<i>h2</i>	4	∞	2	4
<i>h3</i>	1	∞	3	1

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1	aa	1	0	0	1	2	4	1
2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1

	<i>s1</i>	<i>s2</i>	<i>s3</i>	<i>s4</i>
<i>h1</i>	2	∞	3	2
<i>h2</i>	4	∞	2	4
<i>h3</i>	1	∞	3	1

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1	aa	1	0	0	1	2	4	1
2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1

	<i>s1</i>	<i>s2</i>	<i>s3</i>	<i>s4</i>
<i>h1</i>	2	4	3	2
<i>h2</i>	4	0	2	0
<i>h3</i>	1	0	3	0

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1	aa	1	0	0	1	2	4	1
2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1

	<i>s1</i>	<i>s2</i>	<i>s3</i>	<i>s4</i>
<i>h1</i>	2	4	3	2
<i>h2</i>	4	0	2	0
<i>h3</i>	1	0	3	0

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1	aa	1	0	0	1	2	4	1
2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1

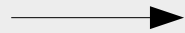
	<i>s1</i>	<i>s2</i>	<i>s3</i>	<i>s4</i>
<i>h1</i>	0	4	0	0
<i>h2</i>	3	0	2	0
<i>h3</i>	1	0	2	0



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1	aa	1	0	0	1	2	4	1
2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1

	<i>s1</i>	<i>s2</i>	<i>s3</i>	<i>s4</i>
<i>h1</i>	0	4	0	0
<i>h2</i>	3	0	2	0
<i>h3</i>	1	0	2	0

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2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1

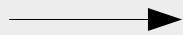
	<i>s1</i>	<i>s2</i>	<i>s3</i>	<i>s4</i>
<i>h1</i>	0	4	0	0
<i>h2</i>	3	0	1	0
<i>h3</i>	1	0	2	0

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1	aa	1	0	0	1	2	4	1
2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1



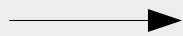
	<i>s1</i>	<i>s2</i>	<i>s3</i>	<i>s4</i>
<i>h1</i>	0	4	0	0
<i>h2</i>	3	0	1	0
<i>h3</i>	1	0	2	0

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1	aa	1	0	0	1	2	4	1
2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1



	<i>s1</i>	<i>s2</i>	<i>s3</i>	<i>s4</i>
<i>h1</i>	0	2	0	0
<i>h2</i>	3	0	1	0
<i>h3</i>	1	0	2	0

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2	ab	0	0	1	0	3	2	3
3	ac	0	1	0	1	4	0	0
4	ba	1	0	1	1	0	3	2
5	bb	0	0	1	0	1	1	4
6	cc	0	1	0	0	2	4	1

	<i>s1</i>	<i>s2</i>	<i>s3</i>	<i>s4</i>
<i>h1</i>	0	2	0	0
<i>h2</i>	3	0	1	0
<i>h3</i>	1	0	2	0