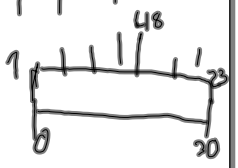
a)

0	1	2	3	4	5	6	7	8	9	10
11	1	2	3				7			
	12		14				18			
	1332		25							

b) $\lfloor n \cdot \log(n) \rfloor \bmod 31$

min = 23
max = 48
mean = 32,25
std deviation = 5,9



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Ex 2: $\ell \bmod 17$

(i)

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
53	1	2				n_0	42	29	63					47	32	16

(ii)

17	1	2	17			42	63	77			111		32	16

(iii)

51	1	2					42	43	111		177		32	16

$\ell'(\ell) = 1 + \ell \bmod 13$

(iv)

		2						63					32	16
51	1	2		63			42	59			17		32	16
51	1	2		63			42	111			179	59	32	16

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Ex 3: $U = \{0, \dots, 10\}$

$N = 11$, $m = 4$

$\rightarrow h_{a,b}(x) = ((ax+b) \bmod N) \bmod m$

a) $a = 8$, $b = 3$

σ	1	2	3
1	8	5	
	9		

c)

σ	1	2	3
8	1		
	5		
	9		

$a = 1$, $b = \sigma$

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Ex 4:

$$S(n) = \begin{cases} 1 & n = 0 \\ 2 + \sum_{i=2}^{n-2} S(i-2) & n \geq 1 \end{cases}$$

claim: if $n \geq 0$: $S(n) = F_{n+2}$

Proof: 1, 1, 2, 3, 5, ...

$n = 0$: $S(0) = 1 = F_2$

$n = 1$: $S(1) = 2 = F_3$

$n \geq 2$:

malware: $S(2) = F_{2+2}$ for all $2 \leq i \leq n-1$

$S(n) = 2 + \sum_{i=2}^{n-2} S(i-2)$

$= \left(2 + \sum_{i=2}^{n-3} S(i-2)\right) + S(n-2)$

$= S(n-1) + S(n-2)$

$= F_{n+1} + F_n$

$= F_{n+2}$

□

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n

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