

$$k=36220 ; c=2002 ; d=2 ; m=2 ; x=18$$

v1.

$$\varphi(k) = \varphi(36220) = \varphi(5) \cdot \varphi(4)^2 \cdot \varphi(1811) = 4 \cdot 2 \cdot 1810 = 14480$$

$$\varphi(c) = \varphi(2002) = \varphi(2) \cdot \varphi(11) \cdot \varphi(7) \cdot \varphi(13) = 1 \cdot 10 \cdot 6 \cdot 12 = 720$$

$$\varphi(d) = \varphi(m) = \varphi(2) = 1$$

$$\varphi(x) = \varphi(18) = \varphi(9) \cdot \varphi(2) = (3^2 - 3) \cdot \varphi(2) = 6 \cdot 1 = 6$$

$$v2 \quad (d+5)k^m \bmod x$$

$$(2+5)^{36220^2} \bmod 18 = 7^{36220^2} \bmod 18 = C$$

$$k = 36220^2$$

$$\varphi(18) = 6$$

$$K = 6n + b$$

$$7^{6n+b} \bmod 18 = 7^{6n} \bmod 18 \cdot 7^b \bmod 18 = 7^b \bmod 18$$

$$K = 36220^2 = 6n + b$$

$$b = 36220^2 \bmod 6 = 4 \bmod 6$$

$$36220 \bmod 6 = 4 \bmod 6$$

$$36220^2 \bmod 6 = 16 \bmod 6$$

$$16 \bmod 6 = 4 \bmod 6$$

$$\begin{array}{r} -36220 \overline{) 6} \\ \underline{36} \\ 022 \\ \underline{18} \\ 40 \\ \underline{36} \\ 4 \end{array}$$

$$C = 7^4 \bmod 18 = 49^2 \bmod 18 =$$

$$= 13^2 \bmod 18 = 169 \bmod 18 = 7 \bmod 18$$

№3 Экспоненциально возвести в степень

$$x^{d+k} \mod c = 18^{3622} \mod 2002 \equiv 610 \mod 2002$$

$m=2002$
 $a=18$

$$3622_{10} = 10001101011110_2$$

a_i	t	t^2	$t^2 a$	$t^2 a (m)$
1	1	1	18	18
0	18	324	324	324
0	324	104976	104976	872
0	872	760384	760384	1626
1	1626	2643876	47589768	226
1	226	51076	919368	450
0	450	202500	202500	298
1	298	88804	1598472	876
0	876	767376	767376	610
1	610	372100	6697800	1110
1	1110	1232100	22177860	1646
1	1646	2709316	48767688	970
1	970	940900	16936200	1282
1	1282	1643524	29583432	1980
1	1980	3920400	63649200	1646
0	1646	2709316	2709316	610

$$b = 610$$