MAD101--Assignment 02

Exercise 01/. A sequence of pseudorandom numbers is generated as follows

$$x_0 = 4$$

$$x_k = (6x_{k-1} + 5) \bmod 13 \quad \text{if } k = 1, 2, 3, \ldots$$

a) Compute x_3

b) Find the minimum positive value of k such that $x_k - 1 = x_0$

c) Find the minimum positive value of k such that $x_k = 3x_1 - 1$.

Exercise 02/

- **exercise 08 at the page 191** (Kenneth_Rosen_Discrete_mathematics_6th)
- **exercise 31 at the page 209** (Kenneth_Rosen_Discrete_mathematics_6th)

  Cryptography.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

- **exercise 18 at the page 230** (Kenneth_Rosen_Discrete_mathematics_6th)

Exercise 03/.

- **exercise 08 at the page 308** (Kenneth_Rosen_Discrete_mathematics_6th)
- **exercise 29 at the page 309** (Kenneth_Rosen_Discrete_mathematics_6th)

Exercise 04/. **How many comparisons are needed to merge two ordered lists:**

a) 1, 3, 5, 7, 9; 2, 4, 6, 8, 10
b) 1, 2, 3, 4, 5; 6, 7, 8, 9, 10
c) 1, 5, 6, 7, 8; 2, 3, 4, 9, 10

Exercise 05/

- **exercise 35 at the page 345** (Kenneth_Rosen_Discrete_mathematics_6th)