Notas práctico 7

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$k = 2$

$m = 4$

$\underbrace{0\,1}_{7/4}\quad \underbrace{1\,1}_{7 \text{ mód } 4}$

$$x^n : \overbrace{\underbrace{0\,0\,0\,0}_{w_1}\,\underbrace{0\,0\,0\,1}_{w_2}}^{u_1}\ \overbrace{\underbrace{0\,1}_{w_3}}^{u_2}\ \overbrace{\underbrace{0\,0\,0\,0}_{w_4}\,\underbrace{1}_{w_5}}^{u_3}\ \overbrace{\underbrace{0\,0\,0\,1}_{w_6}}^{u_4}$$

$$w_1 \xrightarrow{EG_k} 0 \qquad w_2 \to 111 \qquad w_3 \to 101 \qquad w_4 \to 0 \qquad w_5 \to 100 \qquad w_6 \to 111$$

$$u_i = 0^{l_i}\,1 = 0^{d \cdot m + r}\,1, \quad \text{donde} \quad d = l_i / m, \quad r = l_i \text{ mód } m$$

con EG_k genera d ceros, seguidos de un 1, seguido de $bin_k(r)$, que es lo mismo que $G_m(l_i)$

Parte 2

$N_1(k)$ = largo medio de w

$N_2(k)$ = largo medio de EG_k

$$N_1(k) = \sum_{i=1}^{m} q^{i-1}(1-q)\,i + q^m m = \frac{1-q^m}{1-q}$$

$$N_2(k) = q^m \cdot 1 + \sum_{j=1}^{m} q^{j-1}(1-q)(k+1) = 1 + (1-q^m)\,k$$

Parte 3

$$L(k) = (1-q)\left(k + \frac{1}{1-q^m}\right)$$

$$= (1-q)\left(k + 1 + \frac{q^m}{1-q^m}\right)$$

$$\frac{1-q^m + q^m}{1-q^m}$$

$m = 2^k$

$$L(k+1) = (1-q)\left(k + 2 + \frac{q^{2m}}{1-q^{2m}}\right)$$

$$L(k) = L(k+1) \iff \frac{q^m}{1-q^m} = 1 + \frac{q^{2m}}{1-q^{2m}}$$

$q^m = y$, $q^{2m} = y^2$