

Huffman - Algoritm de compresia datelor

"AEGROTO DUM ANIMA EST, SPES EST!"

1.

A°	A	E	G	R	O	T	_	D	U	M	N	i	S	,	P	!
N(n)	3	4	1	1	2	3	5	1	1	2	1	1	4	1	1	1

2.

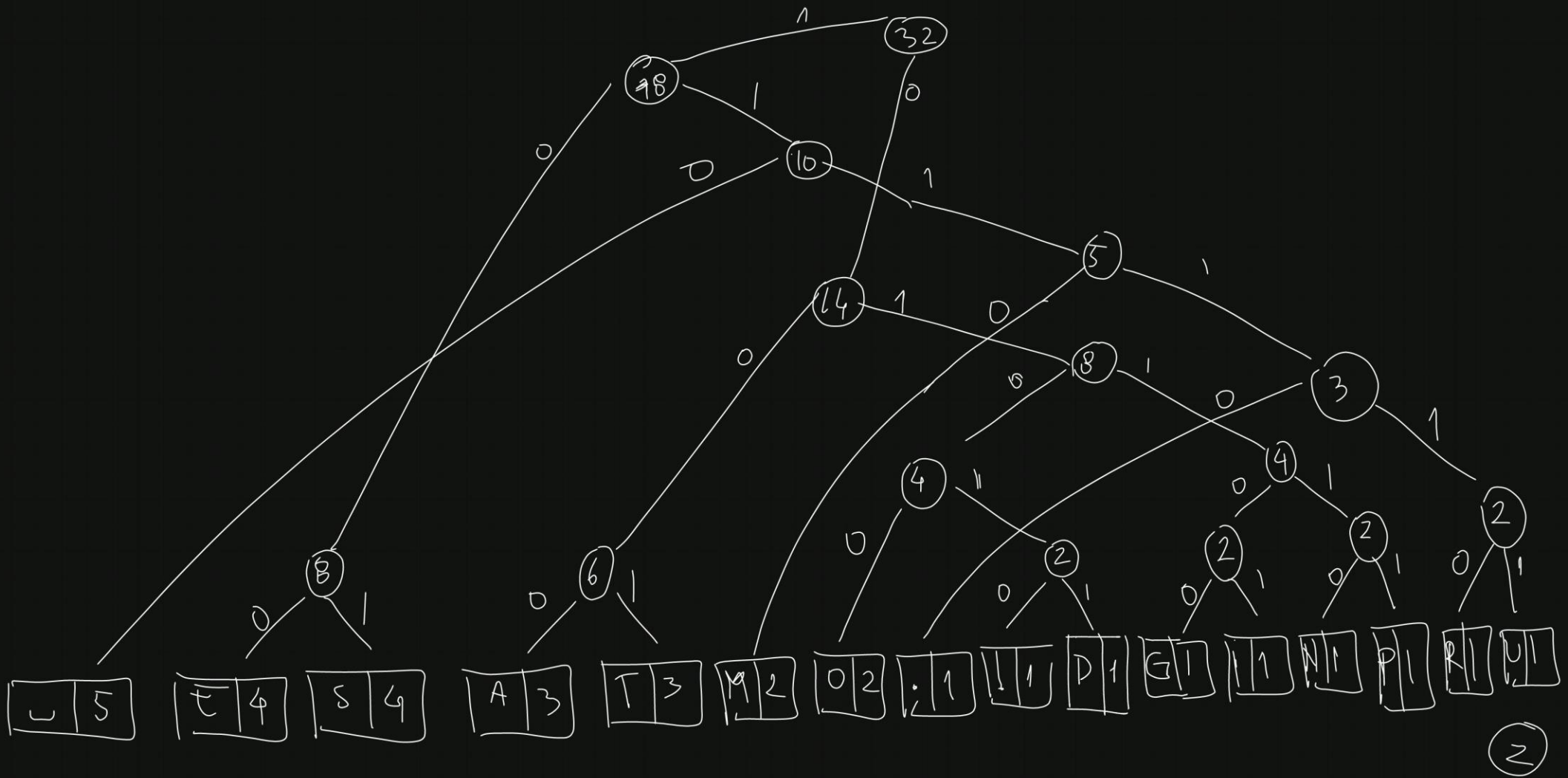
A°	space	E	S	A	T	M	O	,	!	D	G	I	N	P	R	U
N(n)	5	4	4	3	3	2	2	1	1	1	1	1	1	1	1	1

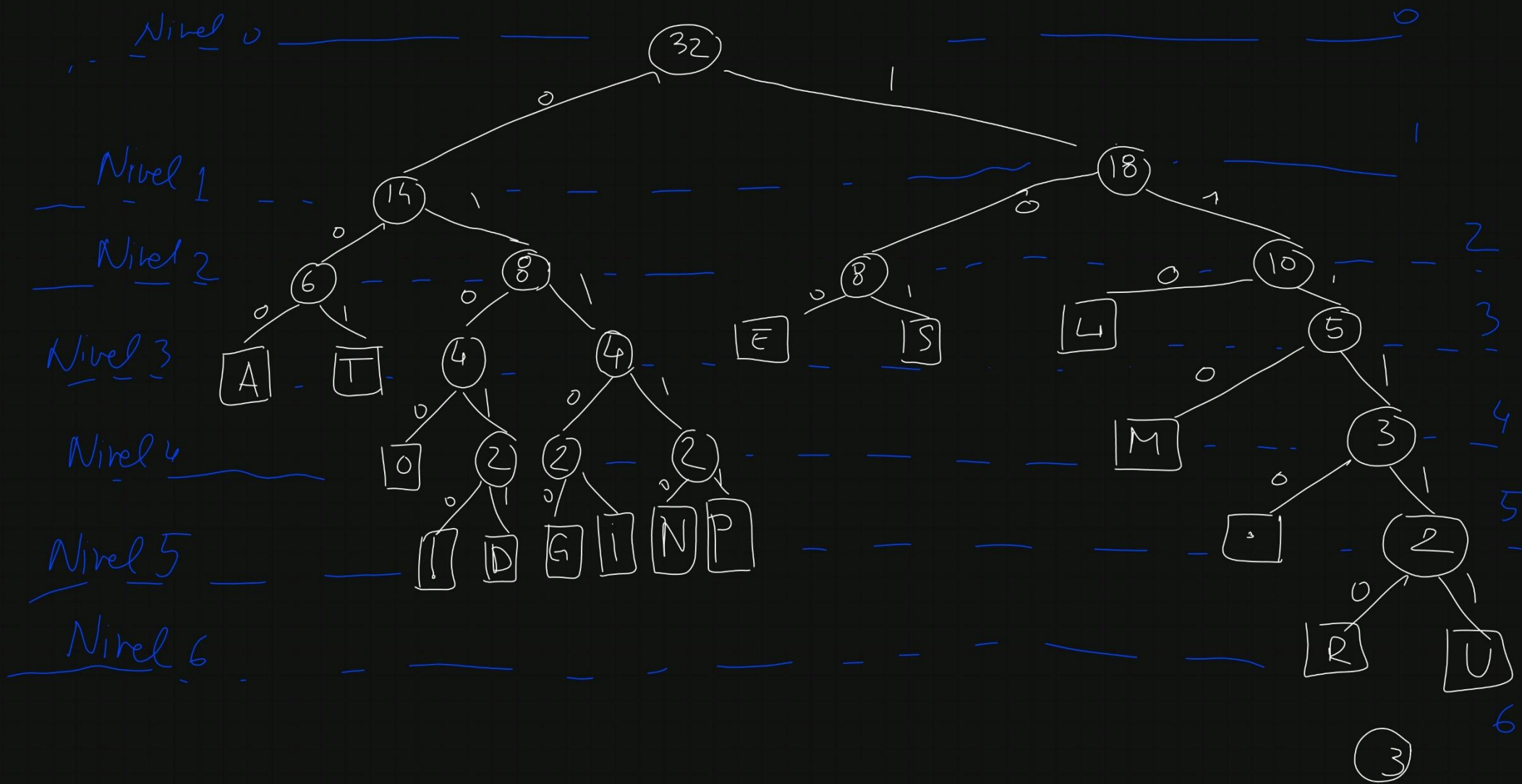
3. \downarrow simbol \swarrow $N(n)$ $N(n)$ - frecventa de aparitie.

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Obs:

- ordonare descrescătoare după $N(n)$
- dacă pt un $N(n)$ sunt mai multe simboluri atunci pt acel $N(n)$ se ordonează alfabetic (coduri ASCII)





A(i)	L	E	S	A	T	M	O	.	!	D	G	i	N	P	R	U
Cod Nr	110	100	101	000	001	1110	0100	11110	01010	01011	01100	01101	01110	01111	111110	111111
Nr de biti	3	3	3	3	3	4	4	5	5	5	5	5	5	5	6	6

$$\gamma = 1 - \frac{C}{\sigma} \quad \text{Rata de compresie}$$

C - nr. de biti necesari pt. reprezentarea textului comprimat
 σ - nr. de biti necesari pt. reprezentarea textului ne-comprizat

$$C = \sum_{i=1}^n N(i) \cdot \text{Nr. biti}(i) = 5 \cdot 3 + 4 \cdot 3 + 4 \cdot 3 + 3 \cdot 3 + 3 \cdot 3 + 2 \cdot 4 + 2 \cdot 4 + \boxed{7 \cdot 5} + 2 \cdot 6 = 120$$

n - nr. de simboluri distincte

$$\sigma = \sum_{i=1}^n N(i) \cdot 8 = 32 \cdot 8 = 256$$

$$\gamma = 0,53 \approx 53\%$$

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Algorithm Shannon-Fano

"AEGROTO DUM ANIMA EST, SPES EST!"

A°	L	E	S	A	T	M	O	.	!	D	G	I	N	P	R	U
N(n)	5	4	4	3	3	2	2	1	1	1	1	1	1	1	1	1

$$\sum N(n) = 32$$

A°L	L	E	S	A
	5	4	4	3

A°R	T	M	O	.	!	D	G	I	N	P	R	U
	3	2	2	1	1	1	1	1	1	1	1	1

A°LL	L	E
	5	4

A°LR	S	A
	4	3

A°LLL	L
	5

A°LLR	E
	4

A°LR L	S
	4

A°LR R	A
	3

A°RL	T	M	O	.
	3	2	2	1

A°RLL	T	M
	3	2

A°RLR	O	.
	2	1

A°RLLL	T
	3

A°RLLR	M
	2

A°RLRL	O
	2

A°RLRR	.
	1

A°RR	!	D	G	I	N	P	R	U
	1	1	1	1	1	1	1	1

A°RR L	!	D	G	I
	1	1	1	1

A°RRR	N	P	R	U
	1	1	1	1

A^0RLL	L	D
	1	1

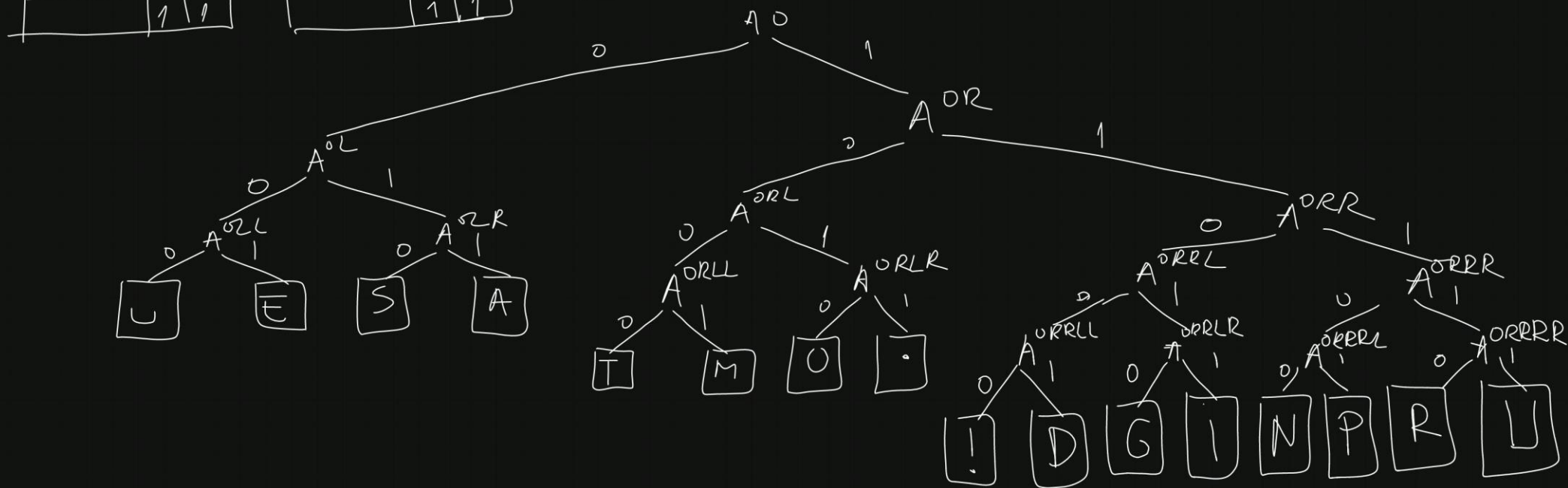
A^0RLLR	G	I
	1	1

A^0RLLLL	I	
	1	

A^0RLLLR	D	

A^0RRLRL	G	
	1	

$A^0RRLRLR$	I	
	1	



(6)

A°	L	E	S	A	T	M	O	.	!	D	G	,	N	P	R	U
Cod Noy	000	001	010	011	1000	1001	1010	1011	11000	11001	11010	11011	11100	11101	11110	11111
Nr. biti	3	3	3	3	4	4	4	4	5	5	5	5	5	5	5	5

$$\gamma = 1 - \frac{C}{\sigma}$$

$$C = \sum_{i=1}^n N(i) \cdot \text{Nr. bit}(i) = 5 \cdot 3 + 4 \cdot 3 + 4 \cdot 3 + 3 \cdot 3 + 3 \cdot 4 + 2 \cdot 4 + 2 \cdot 4 + 1 \cdot 4 + 8 \cdot 5 = 120$$

n - nr. de simboluri distincte

$$n = 16$$

$$\sigma = \sum_{i=1}^n N(i) \cdot 8 = 32 \cdot 8 = 256$$

$$\gamma = 1 - \frac{120}{256} = 0,53$$

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