$I_c = \alpha \cdot I_1$

$\max(I_1)$ is 42 $\Rightarrow$ new $\max(I_1)$ is 63 //

thus $\alpha = \frac{63}{42} = 1{,}5$ //

$$I_C = \begin{bmatrix} 0 & 0 & 0 \\ 15 & 31{,}5 & 30 \\ 30 & 63 & 60 \end{bmatrix} \xrightarrow{\text{integer}} \begin{bmatrix} 0 & 0 & 0 \\ 15 & 31 & 30 \\ 30 & (63) & 60 \end{bmatrix}$$

(63) ← max

25%

$$I_D = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$ LSB bit plane

25%

c) $I_{(3\times2)} = \begin{bmatrix} 12 & 10 \\ 30 & 11 \\ 29 & 28 \end{bmatrix}$, one of many possible solutions

75%, content
25%, resolution

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② a) Key advantages of biometric systems

1 - the user is identified/authenticated by what one is and/or how one behaves 50%

2 - there is no need to memorize PIN nor passwords. 50%

b) FTE happens when it is not possible to enroll an user into the system (not possible to register the user)
It may happen when the fingerprint image has no quality or sufficient content to register. 100%

c) (i) A is A. Negative authentication. 50% ⇒ False Negative. (Error)

(ii) B is A. Negative authentication. 50% ⇒ True Negative. (No Error)
↓ correct decision
The system rejected.