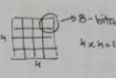
HOBAS Rohre für Kanalisation, Trinkwasserversorgung, Industrie und Kraftwerksbau, sowie Sonderanwendungen.

KAPACITET I HISTOGRAM SLIKE

A) KAPACITET

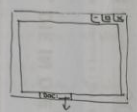
a — 1-bit, 2-bita, ⋮, 8-bita

"težina" /opterećenje slike



→ 8-bita = 1 B

4 × 4 = 16 piksela = 16 B



veličina slike

Image - Image Size

ILI

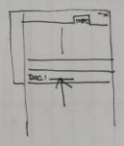
ILI

8-bitna

npr. Pixel Dimensions: 234,4 k = 234,4 kB

400 × 600 [p] = 240 000 [p]

$\boxed{1p = 1B}$ = 8 bita



$\boxed{1\ kB = 1024\ B = 2^{10}\ B}$

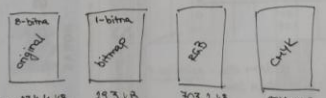
$240\,000\ p = 240\,000\ B = \frac{240\,000}{1024}\ kB = 234{,}375\ kB = 234{,}4\ kB$

BITMAPA - zapis slike u kojemu se troši 1 bit po pikselu za kodiranje

↳ Image - Mode - Bitmap ~ JEDNOKANALNA SLIKA (i original isto)

Image - Mode - RGB Color ~ TROKANALNI PRIKAZ

Image - Mode - CMYK Color ~ ~~BEŠKANALNI~~ ČETVERO KANALNI PRIKAZ



kapacitet: 234,4 kB | 29,3 kB | 703,2 kB | 937,6 kB

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1-bitna

$400 \times 600\ [p] = 240\,000\ [p] = 240\,000\ b = \frac{240\,000}{8}\ B = 30\,000\ B = \frac{30\,000}{1024}\ kB = 29{,}3\ kB$

$\boxed{1p = 1b}$

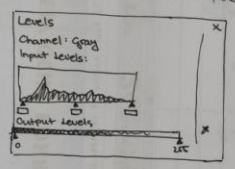
RGB

8 + 8 + 8 bita = 24 bita ~ $24 \cdot \overset{\text{1-bitna}}{29{,}3\ kB}$ ILI $3 \cdot \overset{\text{8-bitna}}{234{,}4\ kB} = 703{,}2\ kB$

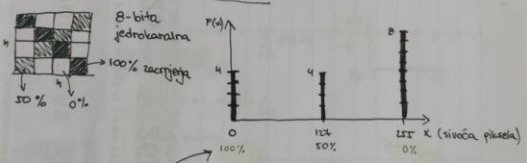
CMYK

8 + 8 + 8 + 8 bita = 32 bita ~ $4 \cdot 234{,}4\ kB = 937{,}6\ kB$

B) HISTOGRAM (normalizirana funkcija distribucije svih razina slike)



FUNKCIJA DISTRIBUCIJE SIVIH RAZINA



* svjetlina: 0% mrak → 0
100% svjetlo → 255

zacrnjenje: 100% crno → 0
0% bijelo → 255

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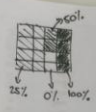
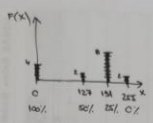




$\sum_{x=0}^{255} F(x)$ = broj piksela slike

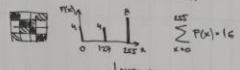
$4 + 2 + 8 + 2 = 16\ (4 \times 4)$

HISTOGRAM

- za potpuno bijelu sliku sa 8 × 8 piksela os y (F(x)) bio bi vrlo dugačak

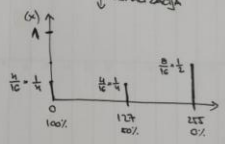
↳ mora funkcije distribucije pa je moramo NORMALIZIRATI

$$\boxed{f(x) = \frac{F(x)}{\sum_{x=0}^{255} F(x)}} = \frac{F(x)}{\text{ukupni broj piksela}}$$



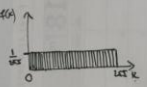
$\sum_{x=0}^{255} F(x) = 16$

↓ NORMALIZACIJA

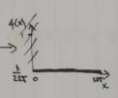


gradacija

sve sive razine su iste veličine



$\sum_{x=0}^{255} f(x) = 1$ →



$255 \cdot v = 1 \Rightarrow v = \frac{1}{255}$

↓

visina stupaca

$\int f(x) = 1$

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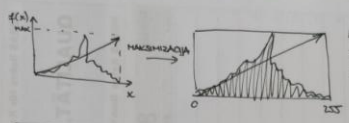
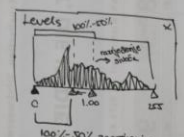


kako bismo mogli prikazati i najmanje stupce u grafu



100%-50% zacrnjenja

→

~ takve situacije izbjegavamo s većim brojem bitova za kodiranje svoća (i većom rezolucijom)