Görüntü Oluşumu

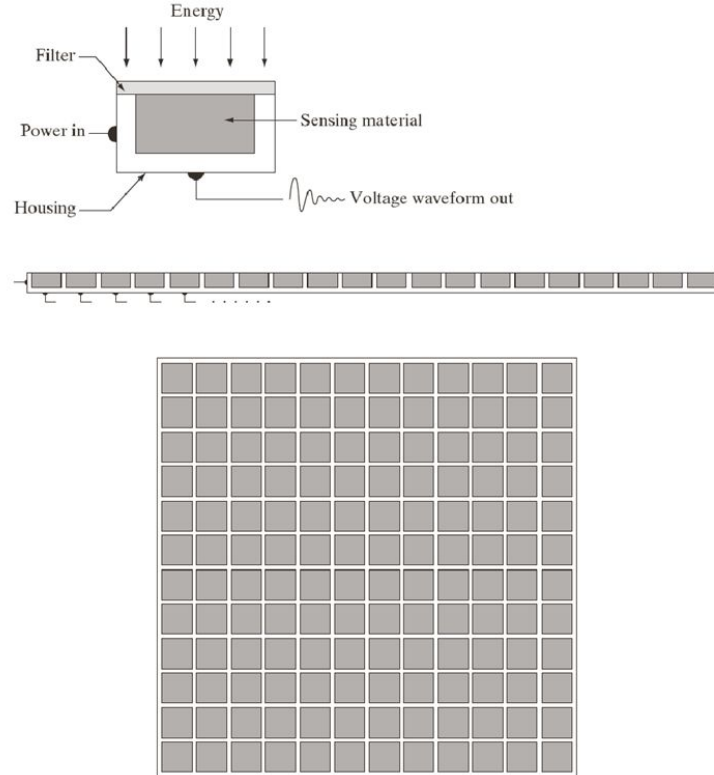# Görüntü oluşumu

Energy

Filter

Power in

Housing

Sensing material

Voltage waveform out

FIGURE 2.12
(a) Single imaging sensor.
(b) Line sensor.
(c) Array sensor.
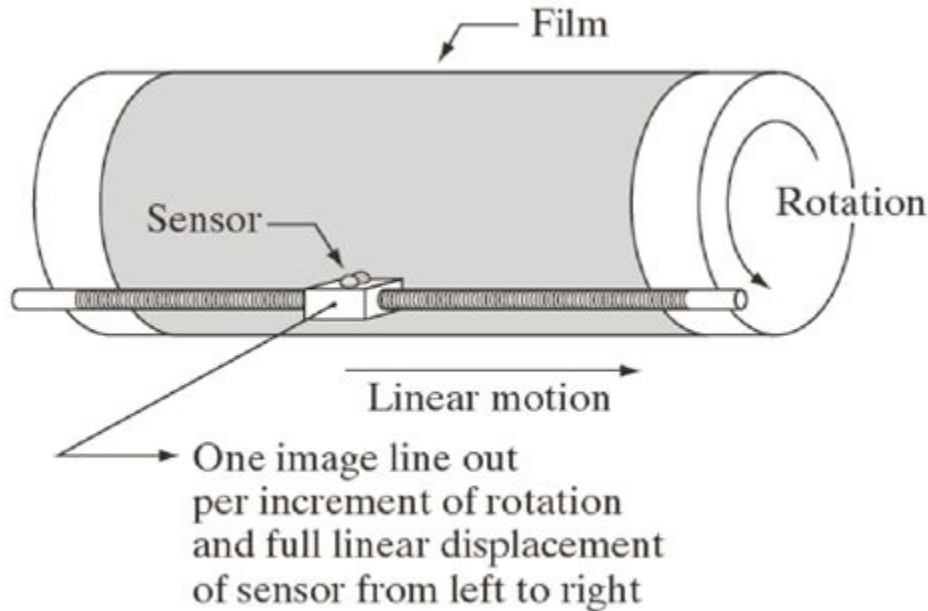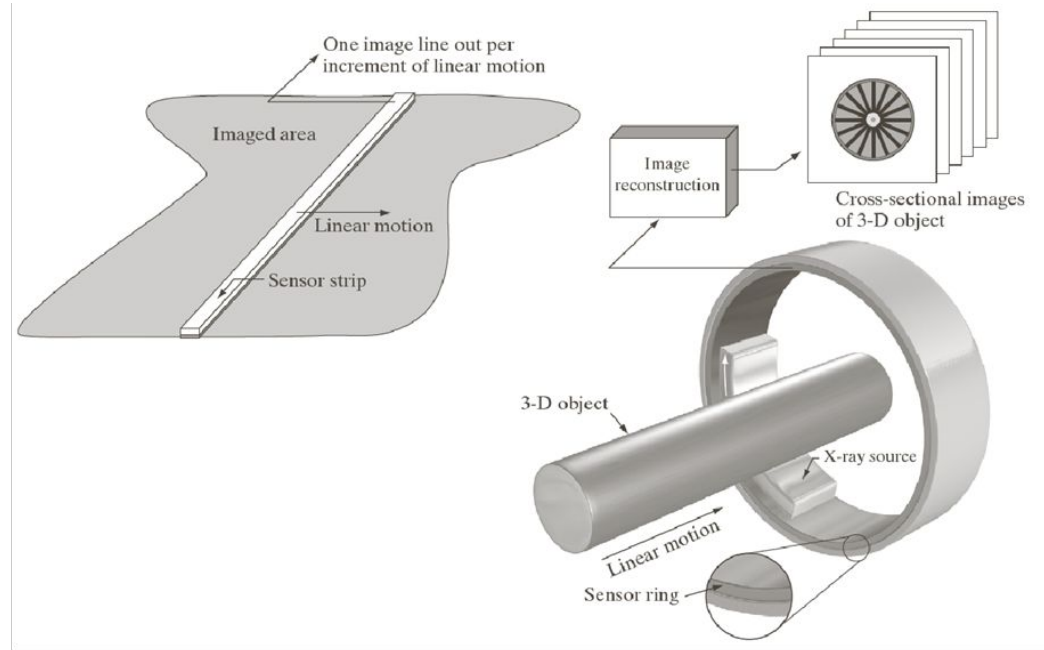
Line sensörle 2d görüntü

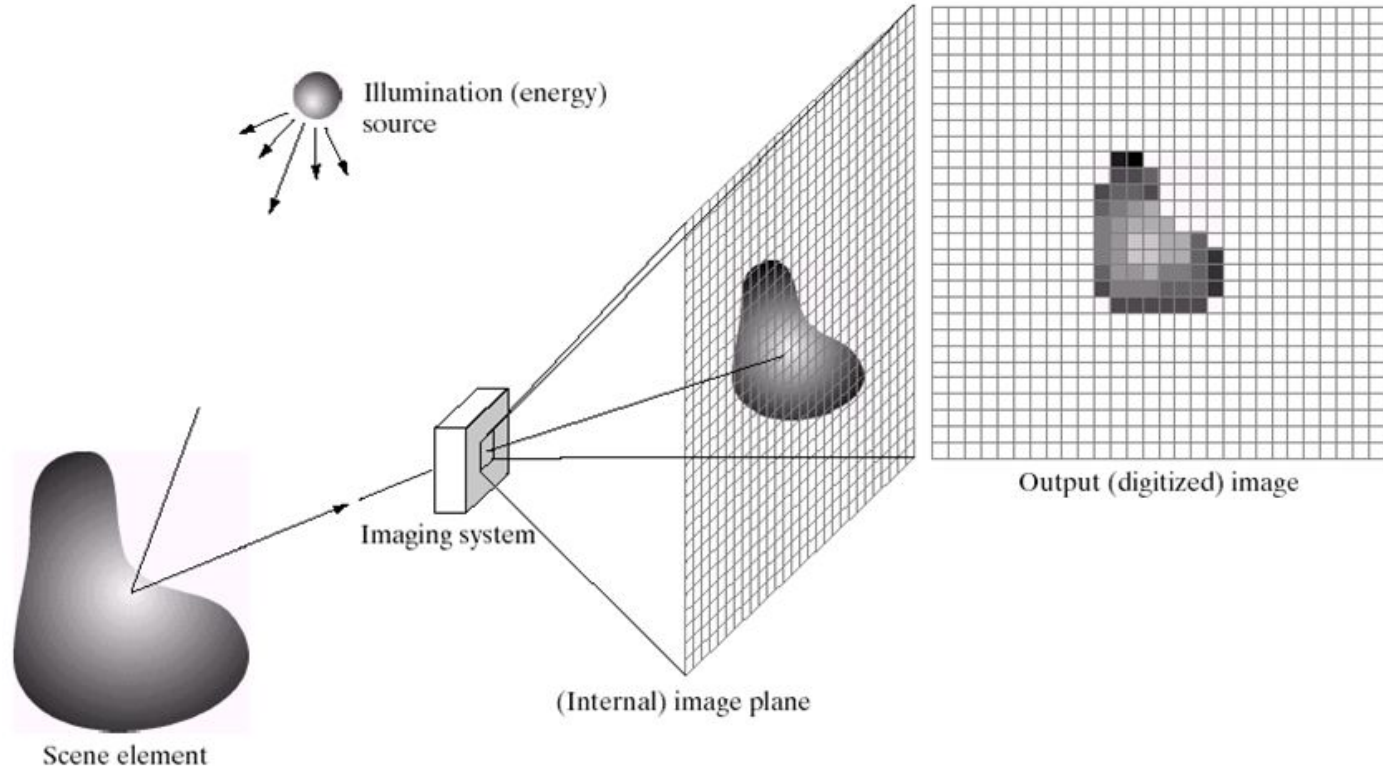FIGURE 2.13 Combining a single sensor with motion to generate a 2-D image.
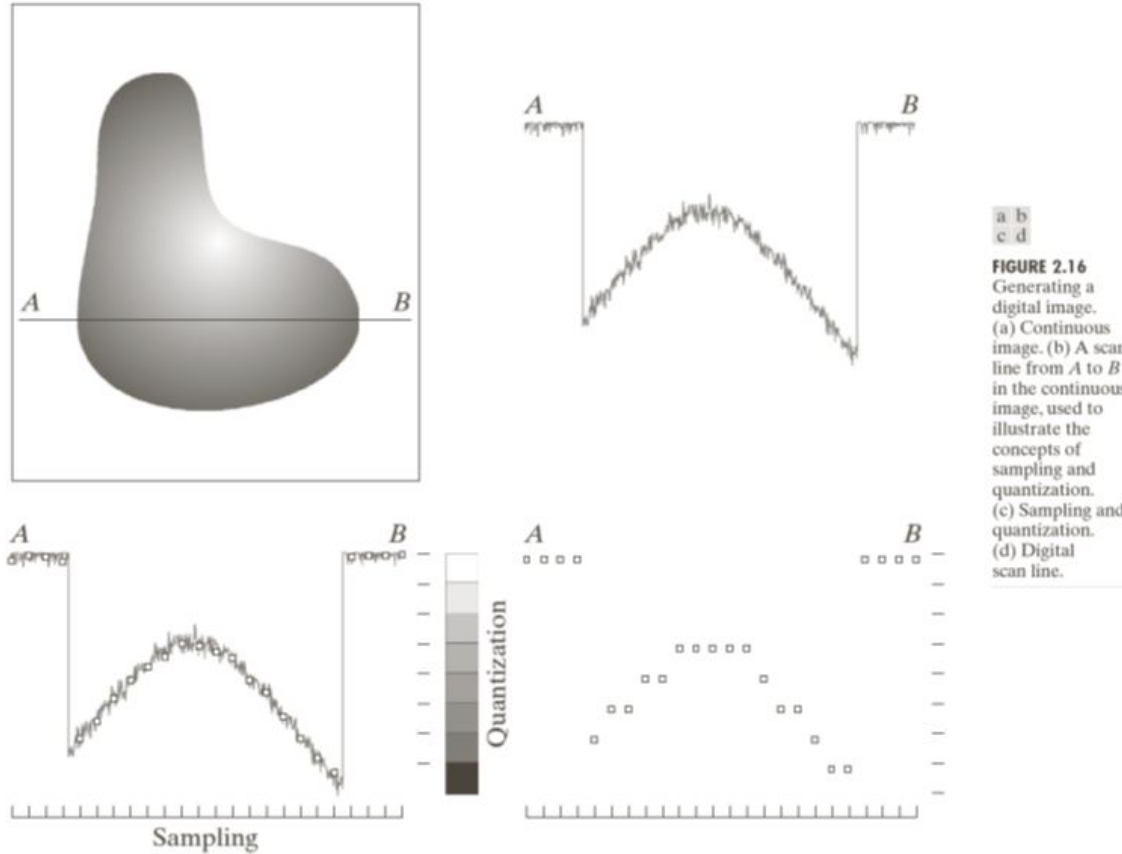
3d MRI verisinin elde edilmesi

a b

FIGURE 2.14 (a) Image acquisition using a linear sensor strip. (b) Image acquisition using a circular sensor strip.

Görüntü oluşumu

Illumination (energy) source

Imaging system

(Internal) image plane

Output (digitized) image

Scene element

Örnekleme (sampling) ve Niceleme (quantization)

a b
c d

FIGURE 2.16
Generating a digital image. (a) Continuous image. (b) A scan line from *A* to *B* in the continuous image, used to illustrate the concepts of sampling and quantization. (c) Sampling and quantization. (d) Digital scan line.

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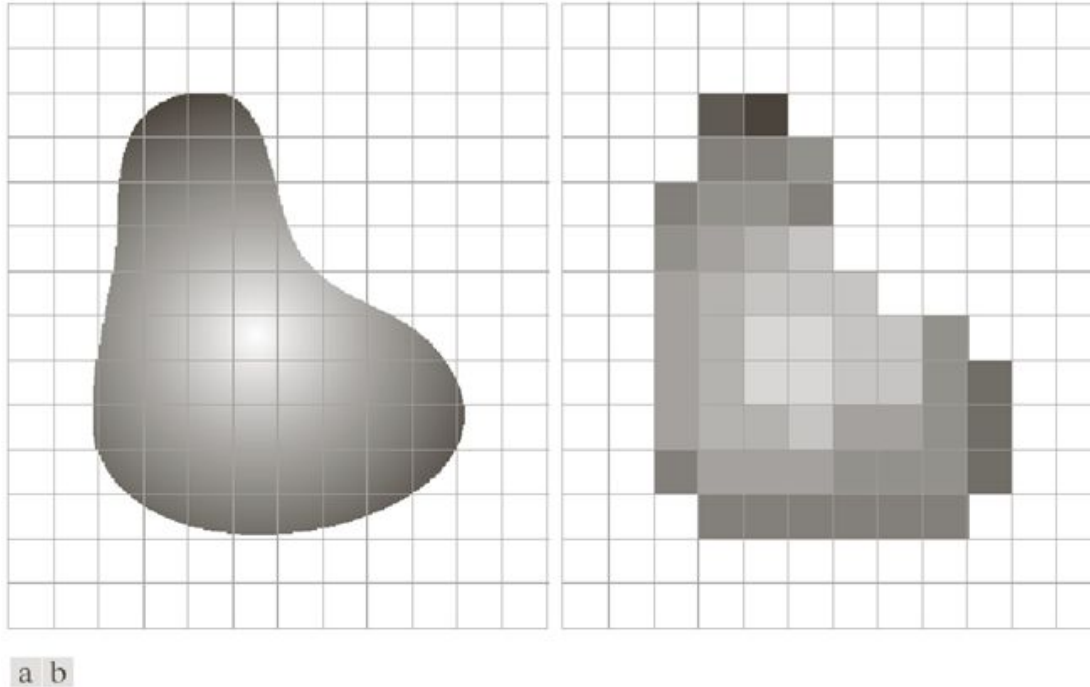# Örnekleme (sampling) ve Niceleme (quantization)

a b

FIGURE 2.17 (a) Continuous image projected onto a sensor array. (b) Result of image sampling and quantization.
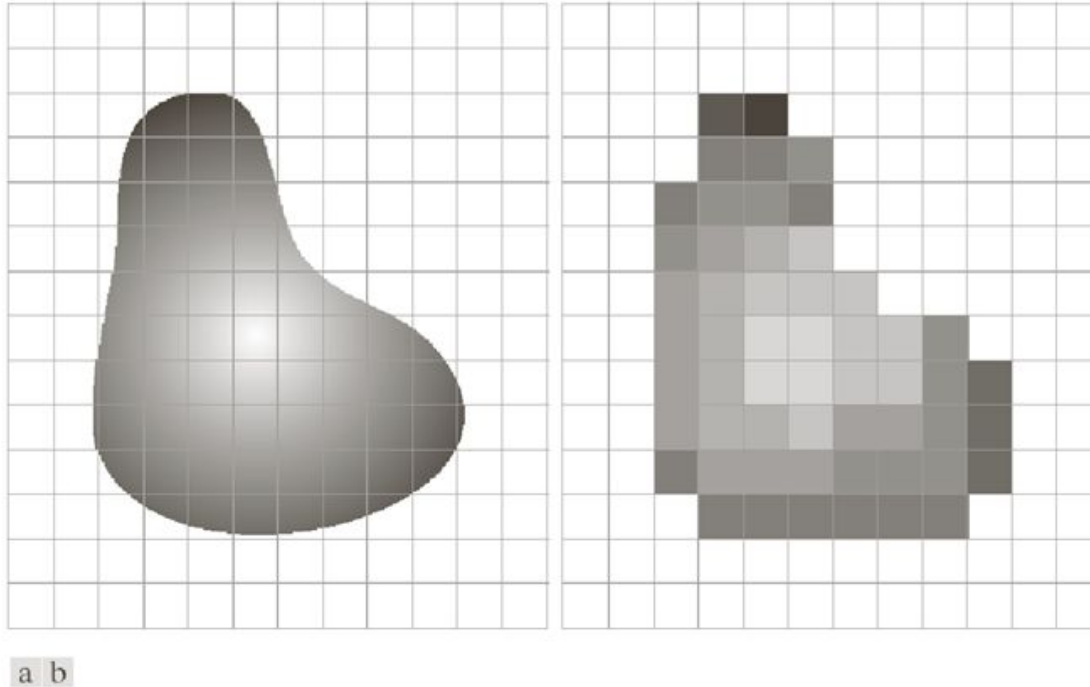
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Görüntü matrisi

a b

FIGURE 2.17 (a) Continuous image projected onto a sensor array. (b) Result of image sampling and quantization.
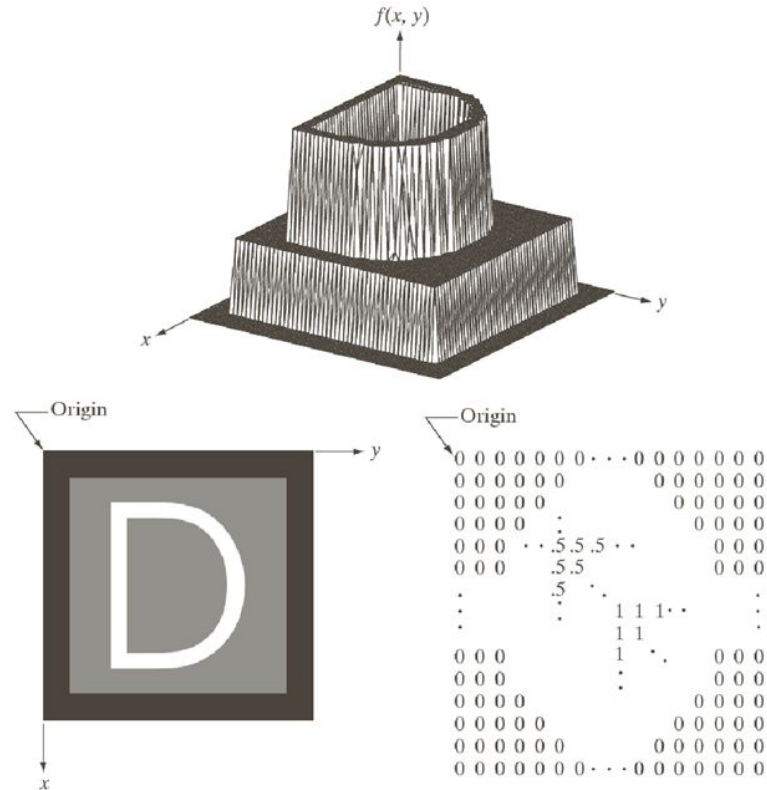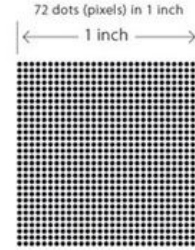
2b görüntü 3b çizilebilir

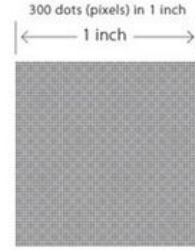# Çözünürlük Etkisi

"Çözünürlük" ile "Bit Derinliği" karıştırılmamalı

a b
c d

FIGURE 2.21
(a) 452 × 374,
256-level image.
(b)–(d) Image
displayed in 128,
64, and 32 gray
levels, while
keeping the
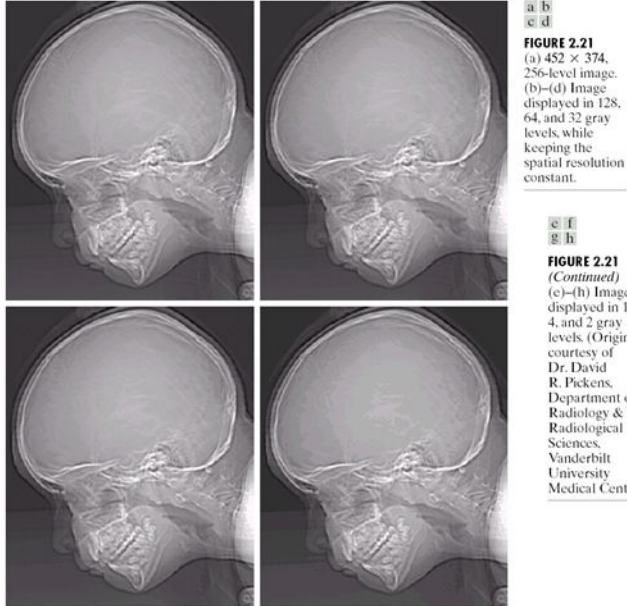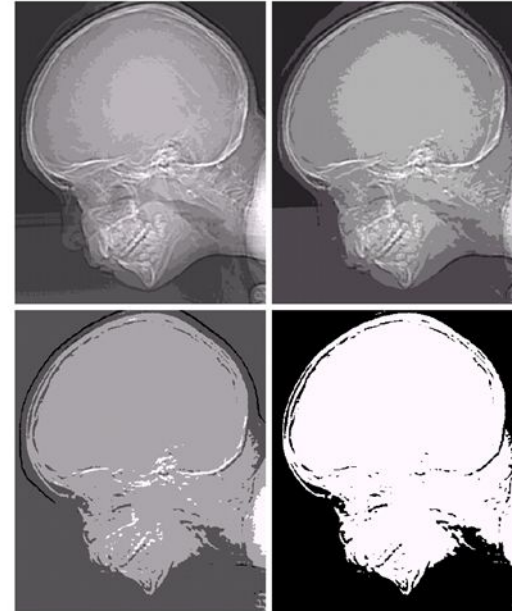spatial resolution
constant.

e f
g h

FIGURE 2.21
(Continued)
(e)–(h) Image
displayed in 16, 8,
4, and 2 gray
levels. (Original
courtesy of
Dr. David
R. Pickens,
Department of
Radiology &
Radiological
Sciences,
Vanderbilt
University
Medical Center.)

Hafızada kapladığı alan

M satır ve N sütuna (çözünürlüğe) sahip bir görüntü düşünelim. Her bir pikseli k bit veri depolayabilsin. Görüntünün hafızada işgal ettiği yer b bit olur:

$$b = M * N * k$$

M = N olarak düşünürsek,

$$b = N^2 * k$$

$L = 2^k$
en yüksek renk değeri

8MegaPiksel
(8 * 1024 * 1024 * 8 bit)

N/k	1 (L = 2)	2 (L = 4)	3 (L = 8)	4 (L = 16)	5 (L = 32)	6 (L = 64)	7 (L = 128)	8 (L = 256)
32	1,024	2,048	3,072	4,096	5,120	6,144	7,168	8,192
64	4,096	8,192	12,288	16,384	20,480	24,576	28,672	32,768
128	16,384	32,768	49,152	65,536	81,920	98,304	114,688	131,072
256	65,536	131,072	196,608	262,144	327,680	393,216	458,752	524,288
512	262,144	524,288	786,432	1,048,576	1,310,720	1,572,864	1,835,008	2,097,152
1024	1,048,576	2,097,152	3,145,728	4,194,304	5,242,880	6,291,456	7,340,032	8,388,608
2048	4,194,304	8,388,608	12,582,912	16,777,216	20,971,520	25,165,824	29,369,128	33,554,432
4096	16,777,216	33,554,432	50,331,648	67,108,864	83,886,080	100,663,296	117,440,512	134,217,728
8192	67,108,864	134,217,728	201,326,592	268,435,456	335,544,320	402,653,184	469,762,048	536,870,912