

# **BIT DEPTHS**

## **A Brief History**

### **LECTURE 1**

## **Photoshop I**

# BIT DEPTHS

## Indexed:

**B/W** (the original 'bitmap')

**CGA**

**EGA**

**VGA\***

\*standard depth for Web graphics

$(2^1)$  1 bit = 2 colours

$(2^2)$  2 bit = 4 colours

$(2^4)$  4 bit = 16 colours

$(2^8)$  8 bit = 256 colours

## Grayscale

$(2^8)$  8 bit = 256 shades of gray (0=Black 255=White)

$(2^{16})$  16 bit = 65,536 shades of gray

## 'High' colour

$(2^{16})$  16 bit = 65,536 colours, 5Rx6Gx5B

## RGB ('True' colour)\*

\*provides for an Alpha channel

$(2^{24})$  24 bit = 256 shades of RGB = 16,777,216 colours

32-bit is RGBA which supports transparency & translucency

## 'Deep' colour

$(2^{30})$  30 bit = 1.073 Billion colours

$(2^{36})$  36 bit = 68.71 Billion colours

$(2^{48})$  48 bit = 281.5 Trillion colours

## CMYK (Print only)

0-100% = 100x100x100x100 = 100 million colours

**PPI = DPI**

Screen Paper

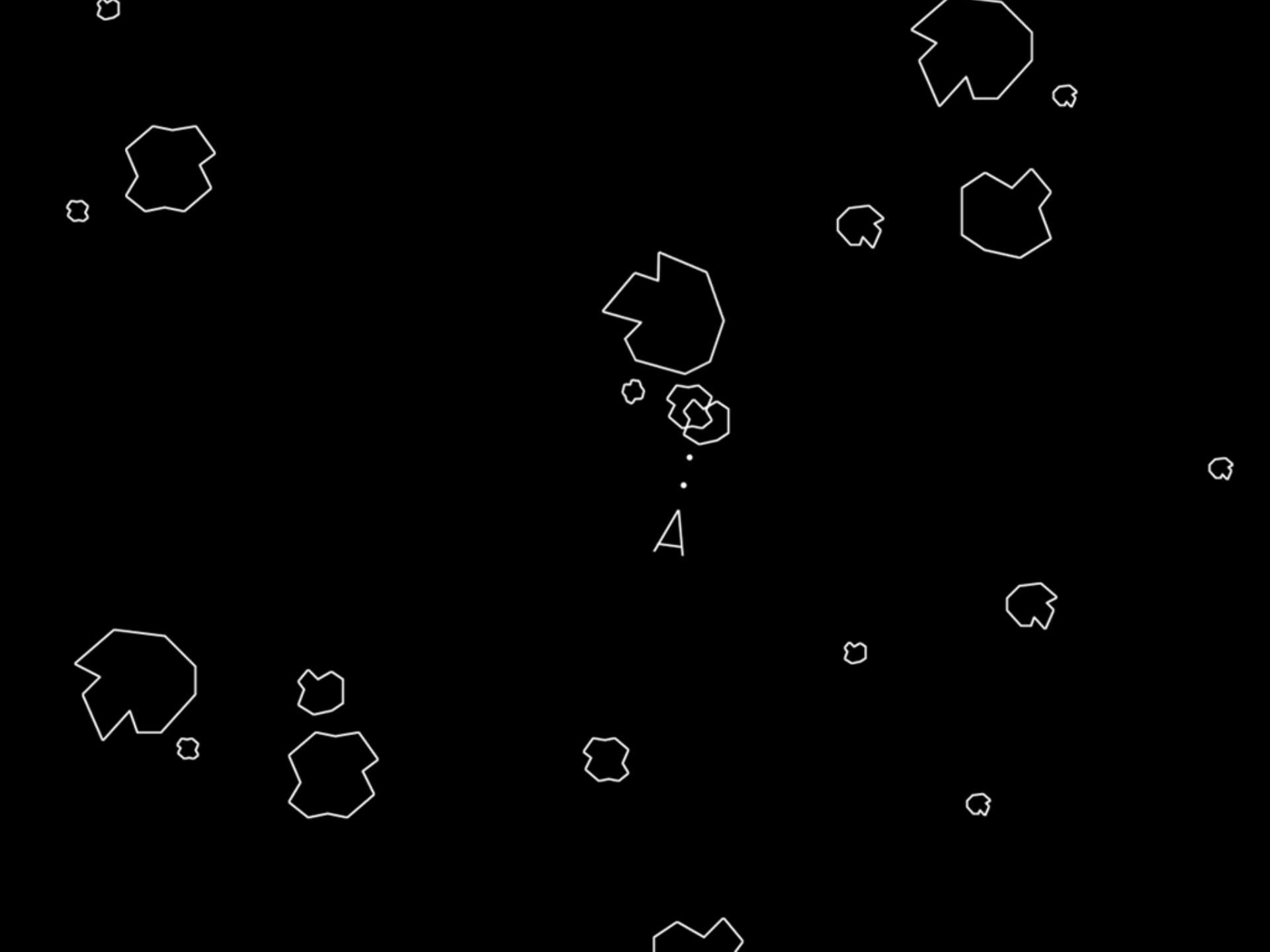
**LPI =  $\frac{1}{2}$ DPI**

Lines Dots

# **‘Ray-drawn’ Graphics**

## **(Vector Monitor)**

**1966**



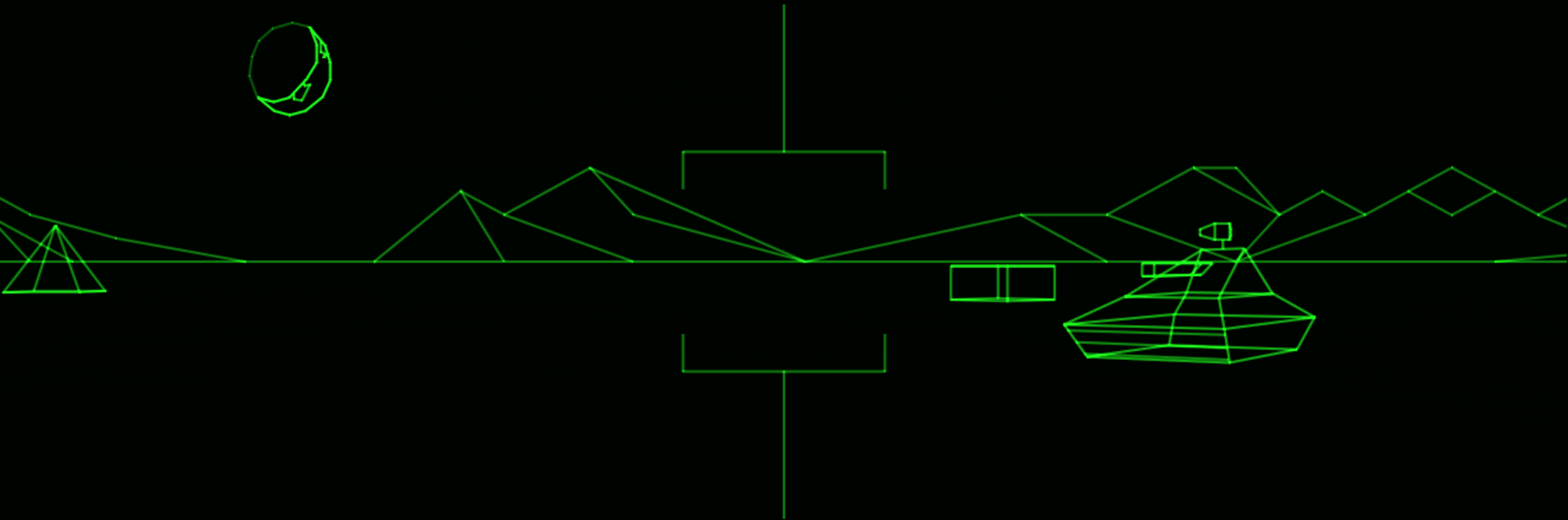


SCORE

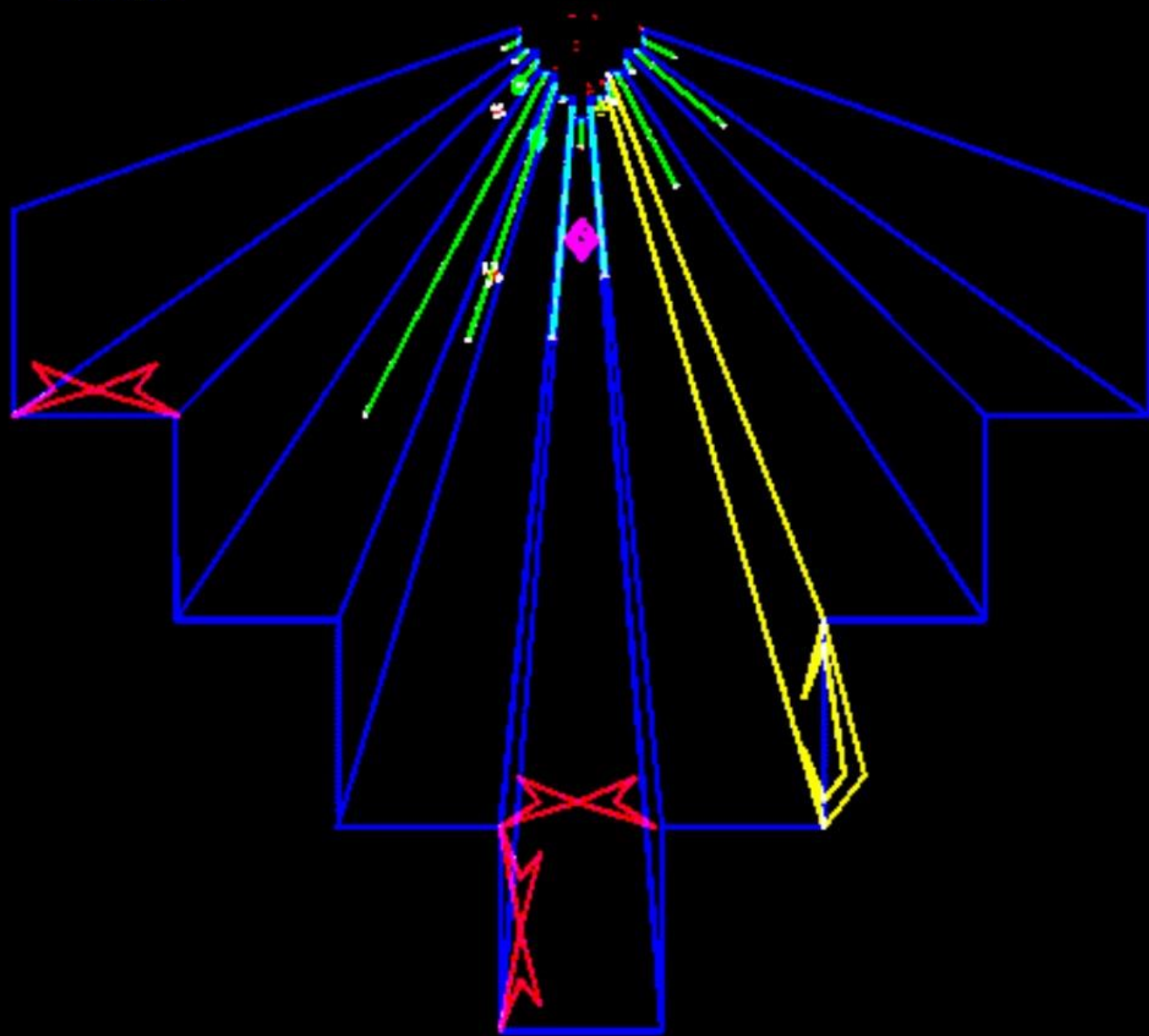
0000

HIGH SCORE

5000



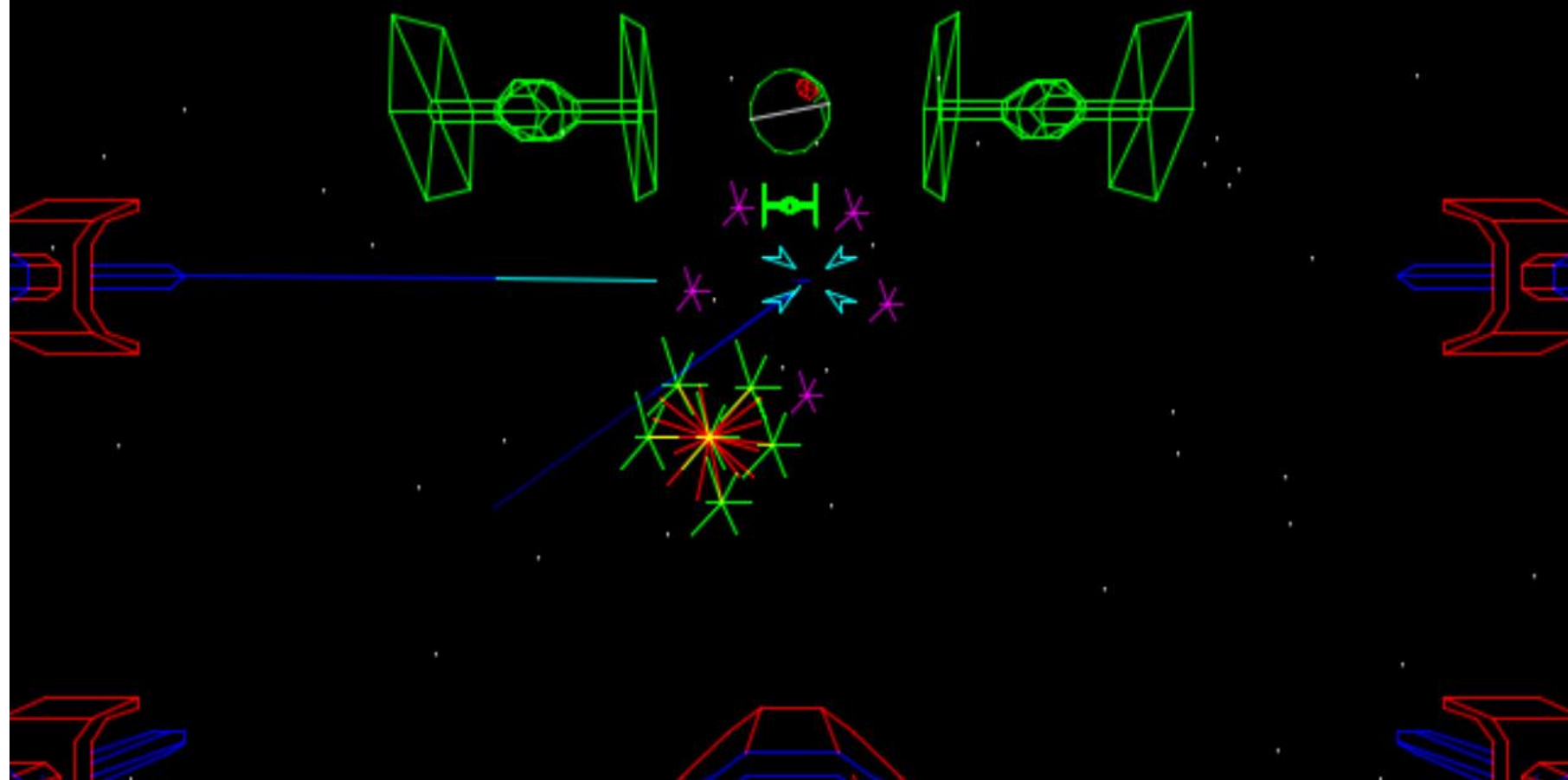
1412 11348 AAA  
9



SCORE  
58,066  
33

5  
SHIELD

2 WAVE



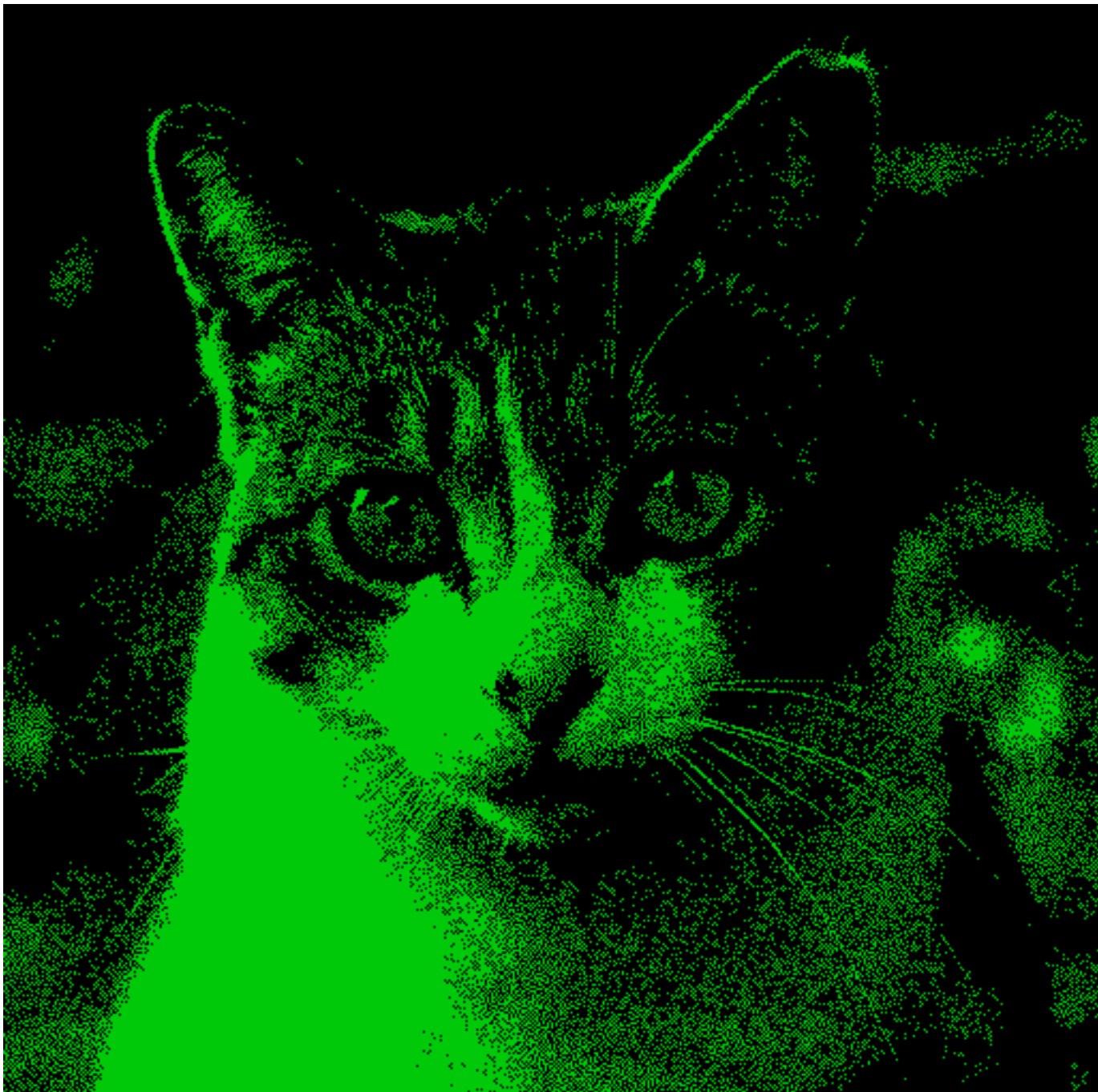
# **1 Bit graphics**

**(early graphics cards)**

**1977**

2 colours





SCORE<1>

254450

HI-SCORE

256000

SCORE<2>



2



CREDIT 02



# ROGUE INVADER

# **2 Bit graphics**

## **(CGA – Colour Graphics Adaptor)**

**1981**

4 colours





SCORE: 700

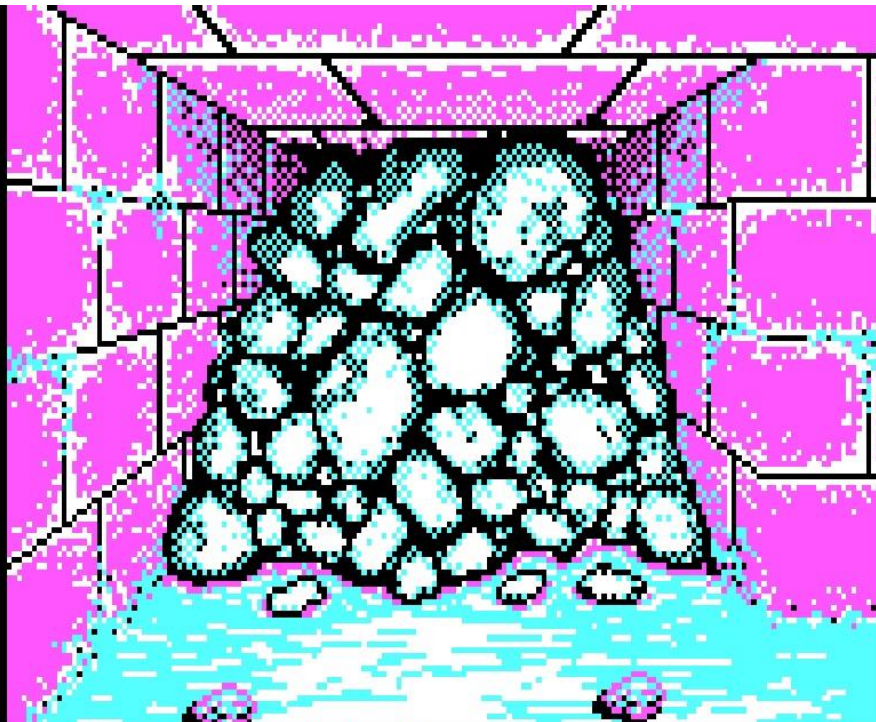
HOSTAGES: 00

LIVES: 8

146







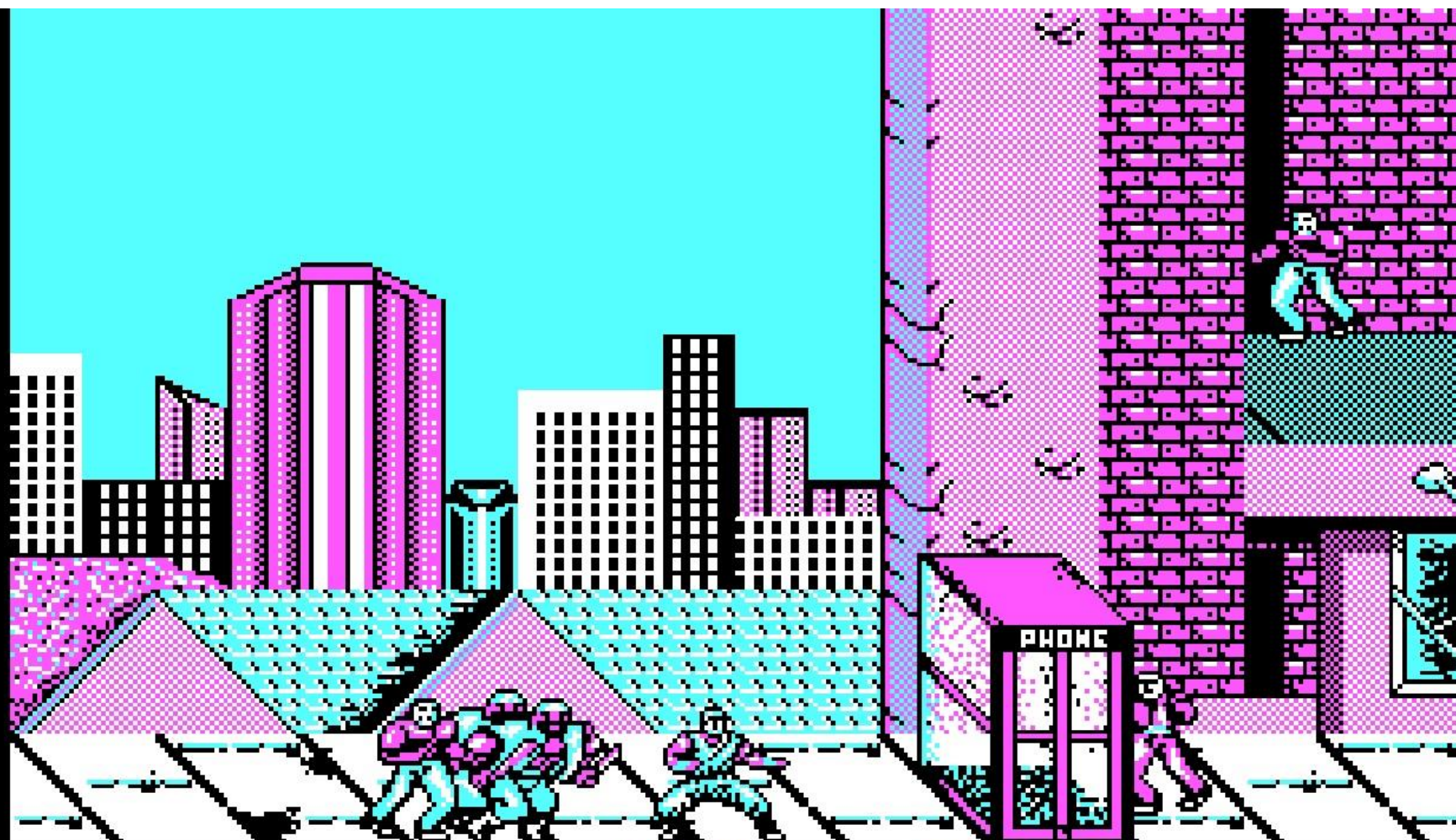
POPPY	
	
	
HP <div></div>	

NIBBLES	
	
	
HP <div></div>	

LT.	
	
	
HP <div></div>	

GODZILLA	
	
	
HP <div></div>	

CAMP



SCORE 000250

TIME  
81





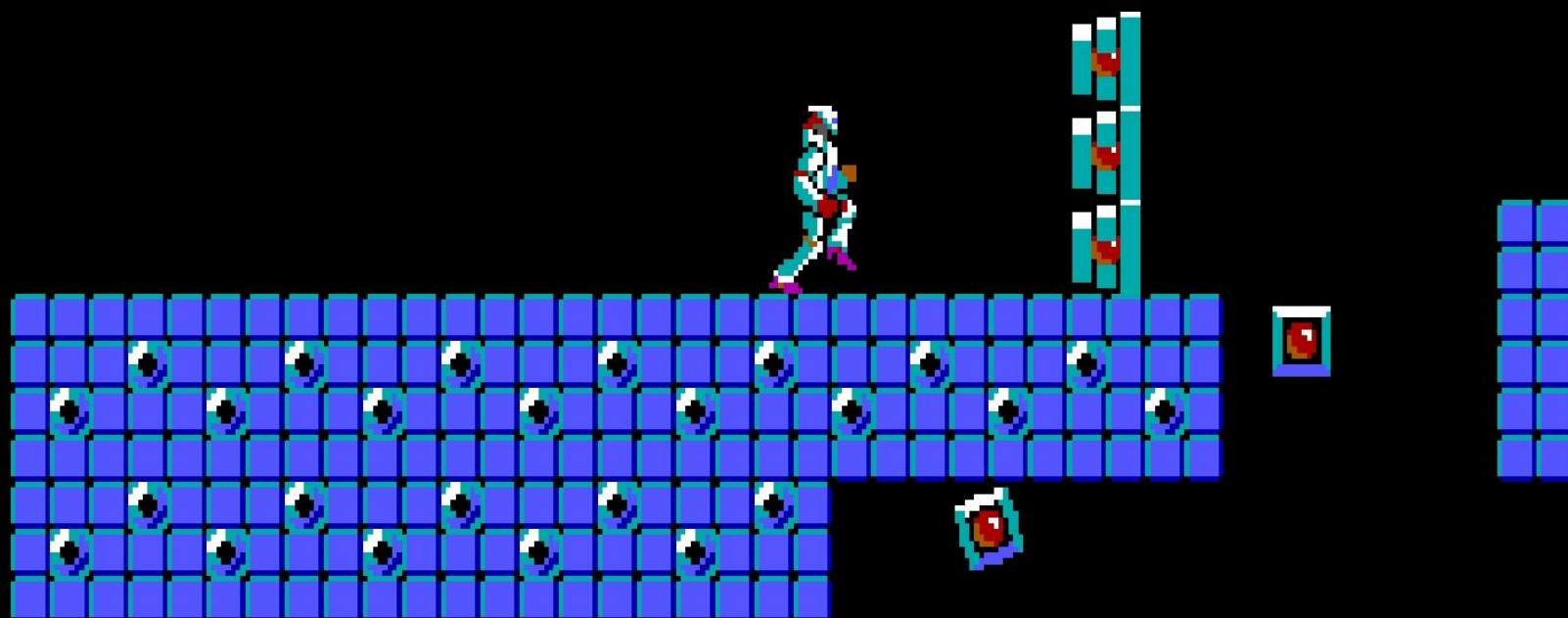
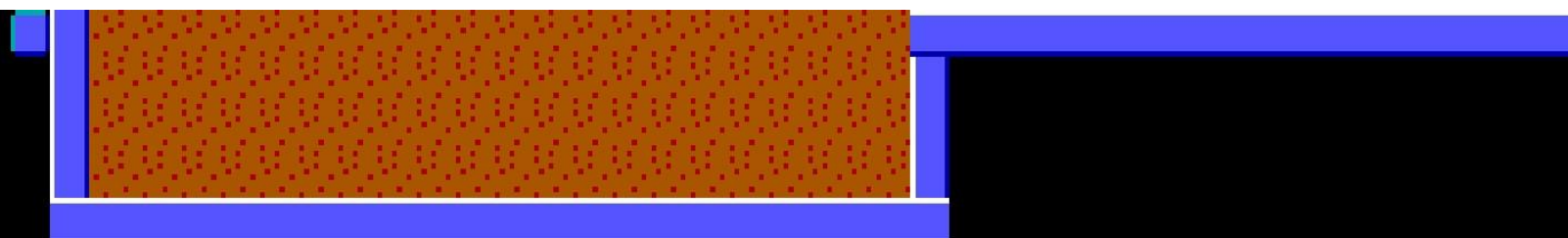
# **4 Bit graphics**

## **(EGA – Enhanced Graphics Adaptor)**

**1984**

16 colours





ENERGY  100%

SCORE 00000000 SHIELD OFF LEVEL 31 ENEMY 100%

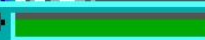




POPPY



HP



NIBBLES



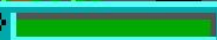
HP



LT.



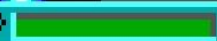
HP



GODZILLA



HP



CAMP

# **8 Bit graphics**

## **(VGA – Video Graphics Adaptor)**

**1987**

256 colours





101550

BOOY

=5

101550

TIME

44

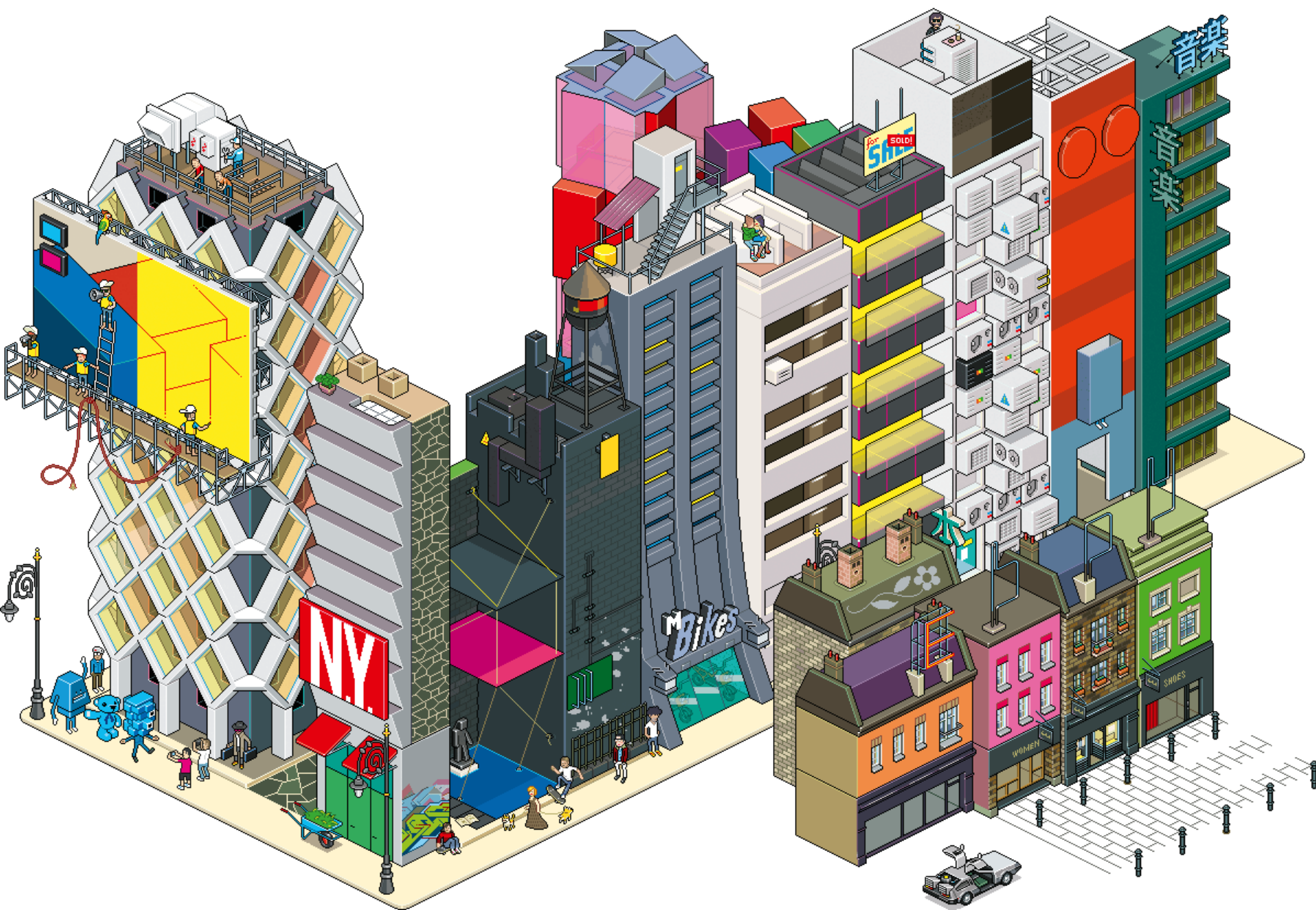
THRASHER











# **16 Bit graphics**

## **(SVGA – Super Video Graphics Adaptor)**

**1989-90**

16 million colours



# Examples of graduating resolution

## Image Quality

72 dpi – 300 dpi

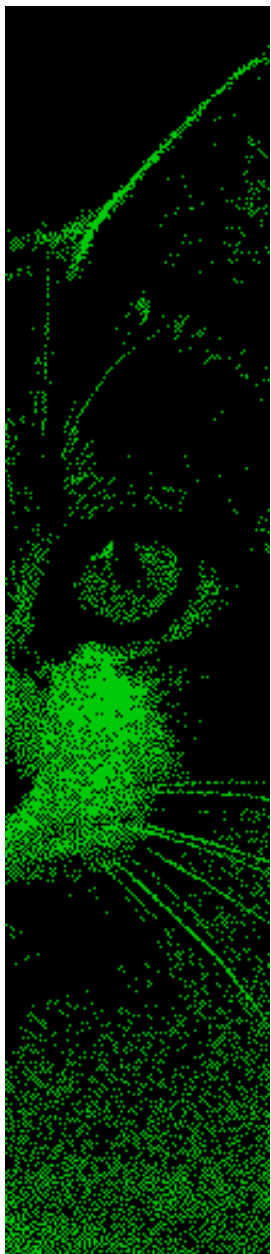




# Examples of graduating resolution

## Bit Depth

2 bit – 32 bit



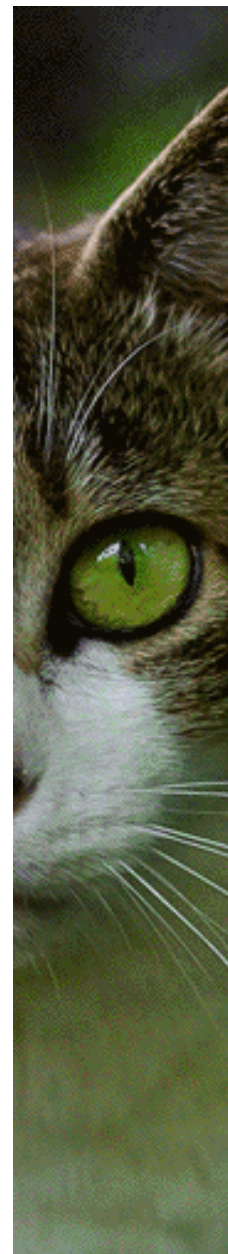
**2 colours**  
**32 colours**



**4 colours**  
**64 colours**



**8 colours**  
**256 colours**



**16 colours**

