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Programming of Graphics

Brief history of computer platforms

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1960 – 1969
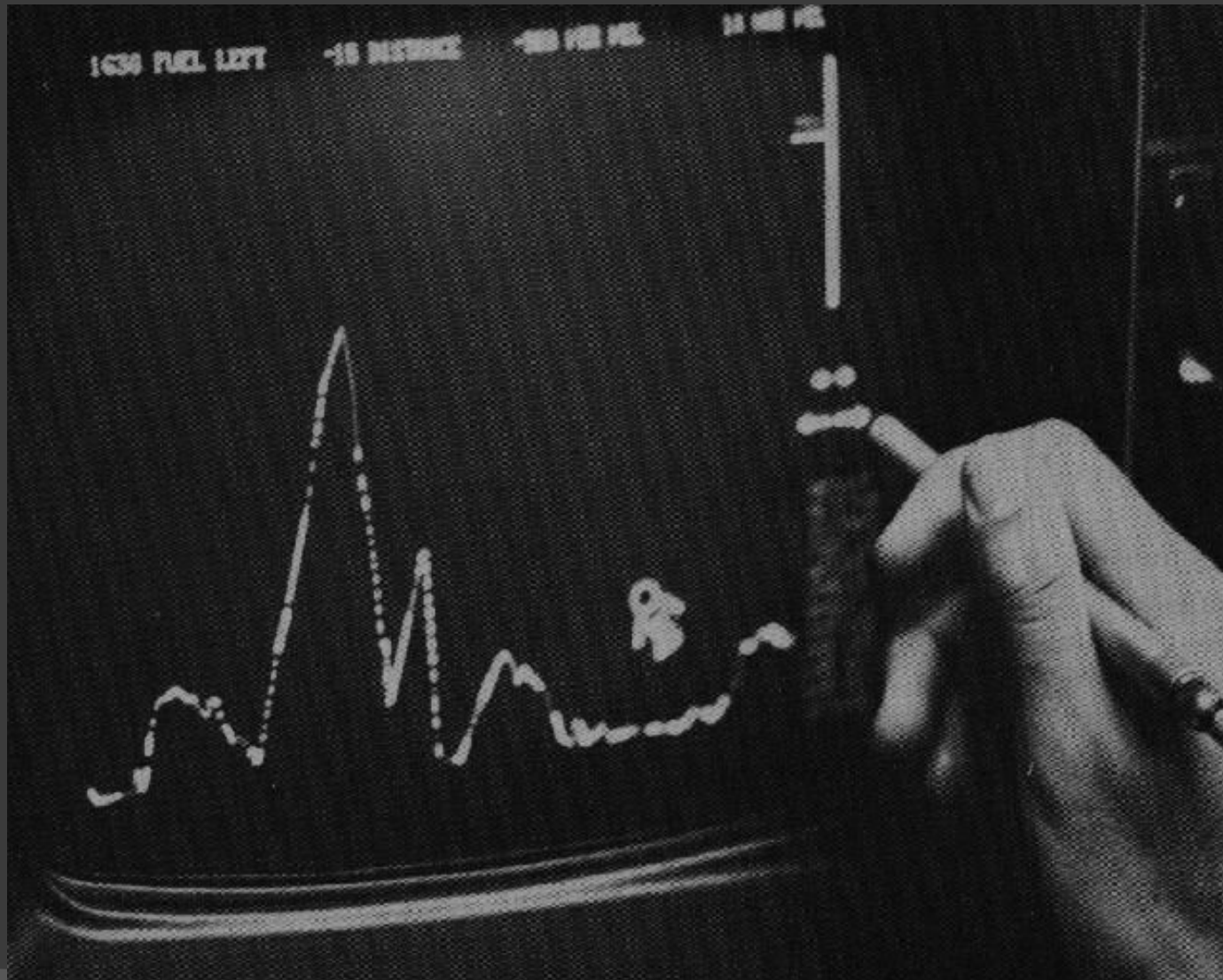
⊙ **The first true computer game appeared:**

Spacewar!

- was programmed by Steve Russell in 1962 at MIT
- The game ran on the DEC PDP-1 computer
    - The objective of the game was to avoid colliding with the star while trying to shoot the other ship with missiles
    - player controlled the game using control switches or a control box
    - Two players were supported
⊙ A number of other games were created on this machine by students
- E.g.: Lunar Landing

Spacewars!

Lunar Landing

1970 – 1980

- **The golden age for video arcade games:**

  - The arcade computers appeared
    - The first commercial exploitation of computer games!

  - 1971: the first arcade computer game: Computer Space
    - it was not a commercial success

  - 1972: the creators though did not give up, founded Atari, and produced the Pong game
    - Pong was a huge commercial success

PONG
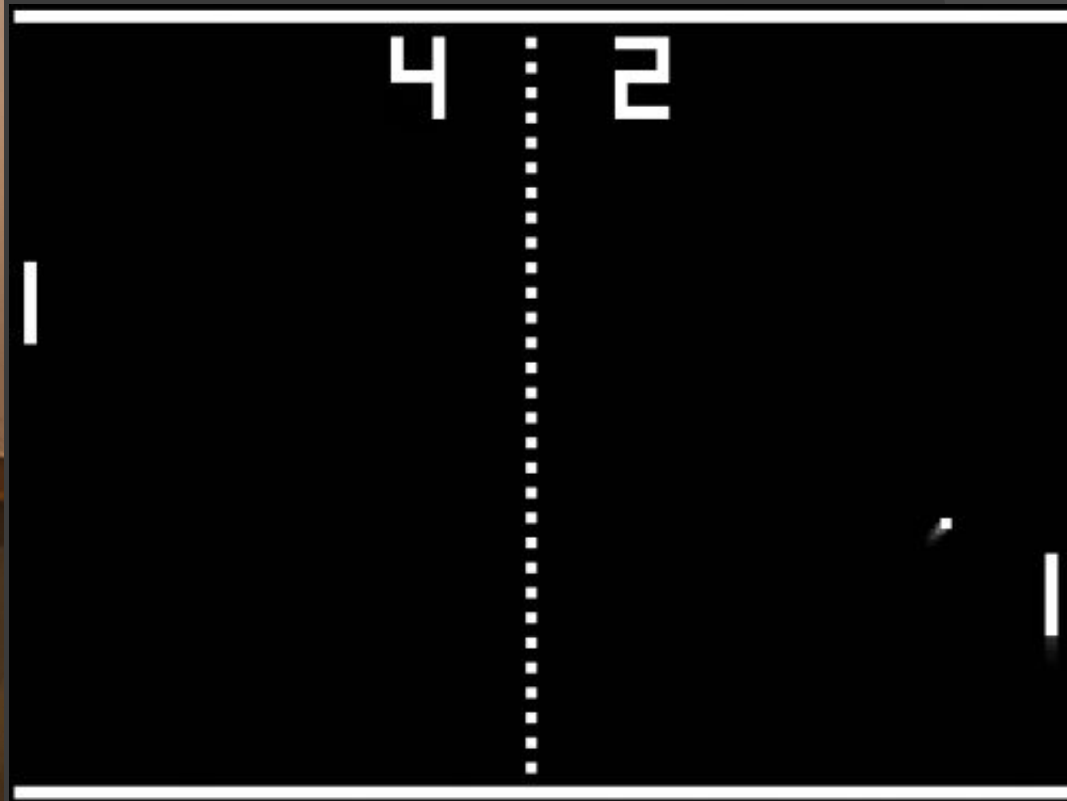
1970 – 1980

⦿ **Well-known games in this period:**

- 1976 - Breakout
- 1978 colors was introduced
  - Space Invaders by Midway
- 1979 - Asteroids
- **1980 - PacMan** was released

1970 – 1980

- ⊙ **Important milestone:**

  - In 1976 the Channel F system appeared
    - ○ the first time used cartridges for the games
    - ○ makes possible to play different games on the same system
      - ⊙ was a very important innovation
  - The big step though came in 1977
    - ○ Atari introduced the VCS system
      - ⊙ named the **Atari 2600**
      - ⊙ Over 30 million devices were sold and hundreds of millions of games

Atari 2600

1980 – 1989

- **Cheap personal computers appeared suited for games**
  - because of their memory, graphics and sound capabilities
  - Probably the most famous are
    - The VIC-20
    - 1981 - The IBM PC appeared
    - 1982 - The ZX Spectrum
    - The **Commodore 64**
      - **was incredibly popular. About 17 million systems were sold**

Commodore 64

Tape or Disk

Comparison

- **Commodore 64**
  - Processor: 1.023MHz
  - Memory: 64kb RAM
  - Display output: 320x200, 16 colours
  - Weight: 1.8kg
- **Samsung Galaxy S3**
  - Processor: 1.4GHz quad-core A9
  - Memory: 1GB RAM
  - Display: 1280x720px, 16m colours
  - Weight: 133g

Comparison

- ◉ **Commodore 64 inspired game developers and market**
  - Games for these computers were easier to copy, because of floppy disks or cassette tapes.
  - This also made it possible to save game progress, which allowed for more complex games

SCORE   STARS   TIME   1UP
001449650   213   250   x07

60 MINUTES LEFT

1985 – 1992

⊙ **The computer market began to flourish**

- 1985 - Commodore Amiga 1000

- 1987 - Commodore Amiga 500
  - one of the leading home computers of the late 1980s and early 1990s with four to six million sold

- 1985 - Nintendo Entertainment System (NES)
  - Famous for **Super Mario Bros**

- 1986 - SNES

- 1989 - GameBoy by Nintendo
  - first handheld gaming system. It came bundled with the game **Tetris**

- 1990 - Amiga 3000

- 1992 - Amiga 1200 and 4000

1994 – 1996

- **Next Generation consoles**
  - 1994 - Sega Saturn
  - 1994 - Sony Playstation
  - 1996 - Nintendo the N64

- They used faster 32 or 64 bit processors and had much more memory (2-4 Mb).
  - They also had special hardware for 3D graphics (although still rather limited).
    - The Saturn could draw 500.000 polygons per second, the PlayStation 360.000 and the N64 100.000
  - They also had much improved sound systems

1998 – 2013

- 1998 - Sega Dreamcast
- 2000 - Sony Playstation 2
- 2001 - Microsoft XBOX
- 2001 - Nintendo GameCube
- 2005 - XBox 360
- 2006 - Sony Playstation 3
- 2013 - Sony Playstation 4
- 2013 - Microsoft XBOX One

- **Of course PC is always here! :)**

Old computers are not dead…

Demoscene

- **The demoscene is an international computer art subculture that specializes in producing demos**

- ## What is a demo?

  - small, self-contained computer programs that produce audio-visual presentations.

  - The main goal of a demo is to show off programming, artistic, and musical skills.

Demoscene

- **What is a demoscene?**

  - it is mainly a European phenomenon, and is traditionally male-dominated.

  - It is a competition-oriented subculture,

  - groups and individual artists competing against each other in technical and artistic excellence.

- Today there are organized competitions called **demoparties around the world**

Demoscene

- <u>Demoscene still exists on many platforms</u>
  - including the PC, C64, MSX, ZX Spectrum, Amstrad CPC, Amiga, Atari, Dreamcast and Game Boy Advance, etc
- There are several categories demos are informally classified into
  - there are **"full-size" demos** and the **size-restricted intros**
  - Competition categories for intros are the 256b, 4K, 64K, 128K
  - <u>There can be other categories:</u>
    - For Graphics
    - For Musics
    - Browser based - Javascript
    - Games, etc

Demoscene

- **In case of old computers:**

  - demo developers try to reach the maximum of the hardware capabilities

    - In case of the C64 some undocumented hardware features was found

  - try to make something new that was impossible before

Or they just make for fun :)

GAME OVER