G54GAM - Games

- Introduction
- A Brief History of Computer Games

Who am I?

- Dr. Martin Flintham
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- slides: http://www.cs.nott.ac.uk/~mdf/teaching_G54GAM.html

Module Structure

- 10 credits
- 1 lecture a week
  - Friday 1-2pm A08 BSS
- 1 practical lab session a week
  - Tuesdays 10-12 C11 CS (beginning next week)
- No exam ☺
- 3 courseworks ☹

Module Overview

- Education Aims
  - Provide an appreciation of the range of gaming applications available
  - Enable students to chart the emergence of computer games as a prevalent form of entertainment
  - Consider design issues such as the development of narrative-oriented structures in gaming
  - Consider technical issues associated with networking games
  - Consider strategies for evaluating games and game design

Module Overview

- Learning Outcomes
- Knowledge and understanding
  - A2 the use of computers in a variety of social, work, educational and business contexts, socio-technical systems, models of work flow and organisations, cooperative work and learning
  - A3 a range of application domains and areas, including communications oriented interfaces (email, www, telephony), continuous control systems (process control, virtual reality systems), document oriented systems (desktop publishing, spreadsheets), embedded systems (consumer electronics, home appliances), learning technologies
  - A7 ergonomic issues in relation to technologies, workplace and environments, including human anthropometry, human cognitive and sensory limitations, sensory and perceptual effects of display technologies, control design, health and safety, lighting, temperature and noise issues, designing for disability
  - A8 the characteristics, design and use of a variety of input and output devices, both physical and virtual
  - A9 the basic software architectures and terminologies…

Module Expectations

- “Games” = computer / video games
- “Games” is a vast and fast moving industry, market revenue worth ~$65 billion (2011)
- We have 12 lectures
- We won’t cover <your favourite game>
- We’ll talk about the building blocks of games as interactive systems
  - academically, technically
- We won’t be making the next World of Warcraft
- We will make some small games to understand some of the key concepts

Module Overview

- Computer Games and Technological Entertainment
  - History
  - Development
  - State of the art
- Understanding Game Design
  - HCI
  - In theory
  - In practice
- Game Development
  - System architecture of games
  - Networked games
  - Production process
- Games and Society
  - Serious games
  - Games and culture

Recommended Reading

- Books
  - **Rules of Play: Game Design Fundamentals. Salen, K. and Zimmerman, E.** (2003)
  - Patterns in Game Design. Bjork, S. and Holopainen, J. (2004)
- Online
  - Guardian Games Blog http://www.guardian.co.uk/technology/gamesblog
  - Gamasutra http://www.gamasutra.com
  - The Independent Gaming Source http://www.tigsource.com/
  - IndieGames http://www.indiegames.com/

Lecture 1

- Introduction and Admin
- A Brief History of Computer Games

Lecture 2

- Understanding games and play
  - Properties of computer games
  - Game rules and core mechanics
  - Categorising games by genre

Lecture 3

- Game Design (1)
  - Frameworks for game design
  - Games as Interactive Systems
  - Meaningful play, interaction and choice
  - Mechanics, dynamics and aesthetics

Lecture 4

- Game Design (2)
  - What is game play?
  - Formal elements of game play
  - Dramatic elements of game play
  - Creating challenge

Lecture 5

- Game Design (3)
  - Narratives and story telling
  - Progression and flow
  - Balance

Lecture 6

- The architecture of a game
  - Building highly interactive systems
  - Components and terminology
  - Game software architectures
    - The game loop
    - Events and state machines

Lecture 7

- Online and Multiplayer Games
  - Player interaction patterns
  - Technical challenges
  - Lag, scalability, replication
- Social challenges
  - Types of players
  - Cheating and griefing

Lecture 8

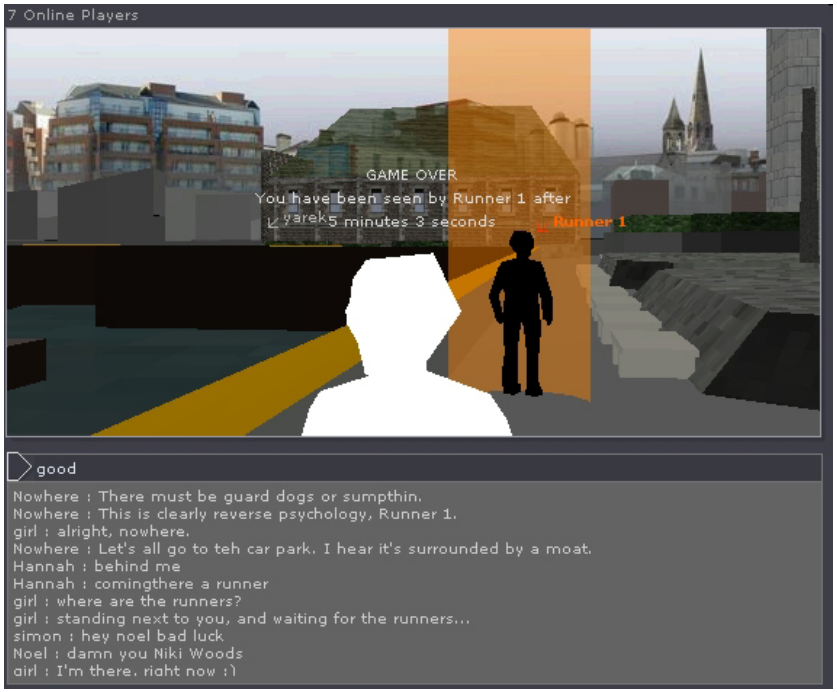
- Game Production
  - How the games industry works
    - Roles, process and documents
    - Franchises and licenses
  - Platforms, development kits and middleware
  - Distribution and business models

Lecture 9

- Serious Games
  - Educational games
  - Training and simulation
  - Games as art and performance
  - Games as political statement and satire
- Games and society
  - Controversy and morality

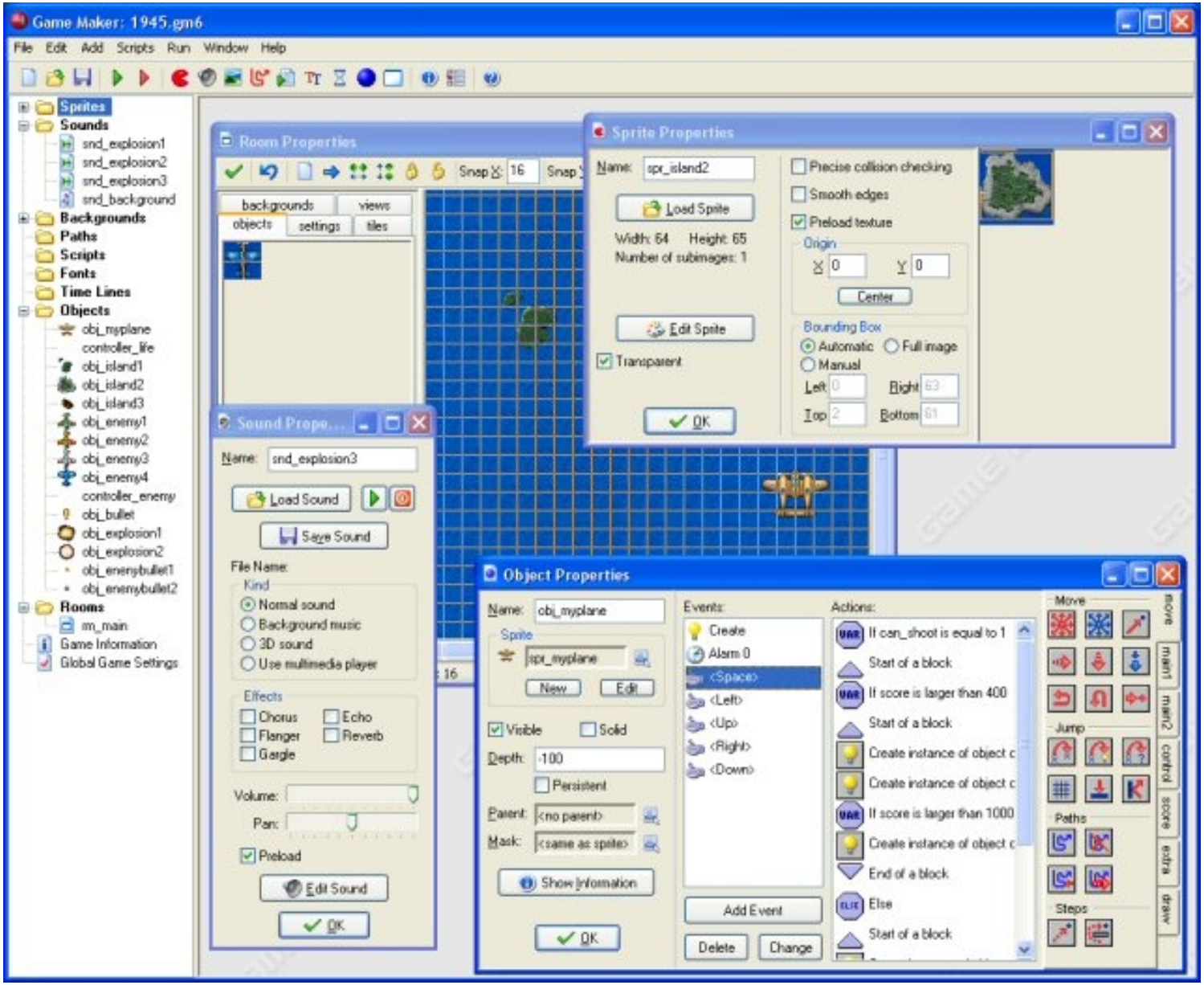
Lecture 10

- Pervasive and Mobile Games
  - Online and on the streets
  - Breaking the magic circle



Lab sessions

- Tuesdays 10-12, C11
- Beginning next week
- Using Game Maker to explore different aspects of game design
  - http://www.yoyogames.com/make
  - Free version available
- Learning skills required to build a larger game prototype (coursework)
- Primarily visual IDE
  - Can add code for increased functionality
- Why?


Game Maker: 1945.gm6
File Edit Add Scripts Run Window Help
Sprites
Sounds
snd_explosion1
snd_explosion2
snd_explosion3
snd_background
Backgrounds
Paths
Scripts
Fonts
Time Lines
Objects
obj_myplane
controller_life
obj_island1
obj_island2
obj_island3
obj_enemy1
obj_enemy2
obj_enemy3
obj_enemy4
controller_enemy
obj_bullet
obj_explosion1
obj_explosion2
obj_enemybullet1
obj_enemybullet2
Rooms
rm_main
Game Information
Global Game Settings
Room Properties
backgrounds
views
objects
settings
tiles
Sprite Properties
Name: spr_island2
Load Sprite
Width: 64 Height: 65
Number of subimages: 1
Edit Sprite
Transparent
OK
Precise collision checking
Smooth edges
Preload texture
Origin
Center
Bounding Box
Automatic
Full image
Manual
Left
Right
Top
Bottom
Sound Prope...
Name: snd_explosion3
Load Sound
Save Sound
File Name:
Kind
Normal sound
Background music
3D sound
Use multimedia player
Effects
Chorus
Echo
Flanger
Reverb
Gargle
Volume:
Pan:
Preload
Edit Sound
OK
Object Properties
Name: obj_myplane
Sprite
spr_myplane
New
Edit
Visible
Solid
Depth: -100
Persistent
Parent: <no parent>
Mask: <same as sprite>
Show Information
OK
Events:
Create
Alarm 0
<Space>
<Left>
<Up>
<Right>
<Down>
Add Event
Delete
Change
Actions:
If can_shoot is equal to 1
Start of a block
If score is larger than 400
Start of a block
Create instance of object c
Create instance of object c
If score is larger than 1000
Create instance of object c
End of a block
Else
Start of a block
Move
Jump
Paths
Steps
move
main1
main2
control
score
extra
draw


Score: 0
Welcome to my world!! King Kong Barbie.....
Are you the president!?
HAHAHA...I'm the Heavenly Dog with the massive power! You can't beat me!!!!!!
.....
IT'S YOUR FINAL DESTERNATION!!!
てんぐ
PRESS ENTER TO CONTINUE

Assessment

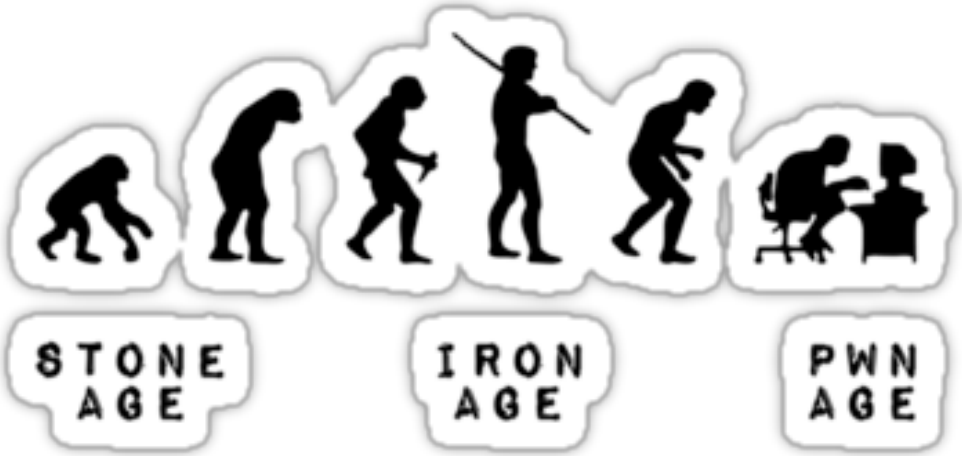
- 3 Courseworks
- Dates TBA
- 30%, 30% and 40% respectively
- Written - Critiquing the game design of an existing game of your choice
- Written - Designing a prototype game
- Practical - Constructing a prototype game
  - Game Maker, something else

Expectations

- You will have to write an essay
  - Good practice for dissertation writing
- You will have to use your imagination
  - “I heard this module is hard because you make people think of new things”
  - Designing an entirely new game is very difficult, being creative and fun is not
  - Plagiarism is a serious offence

Help

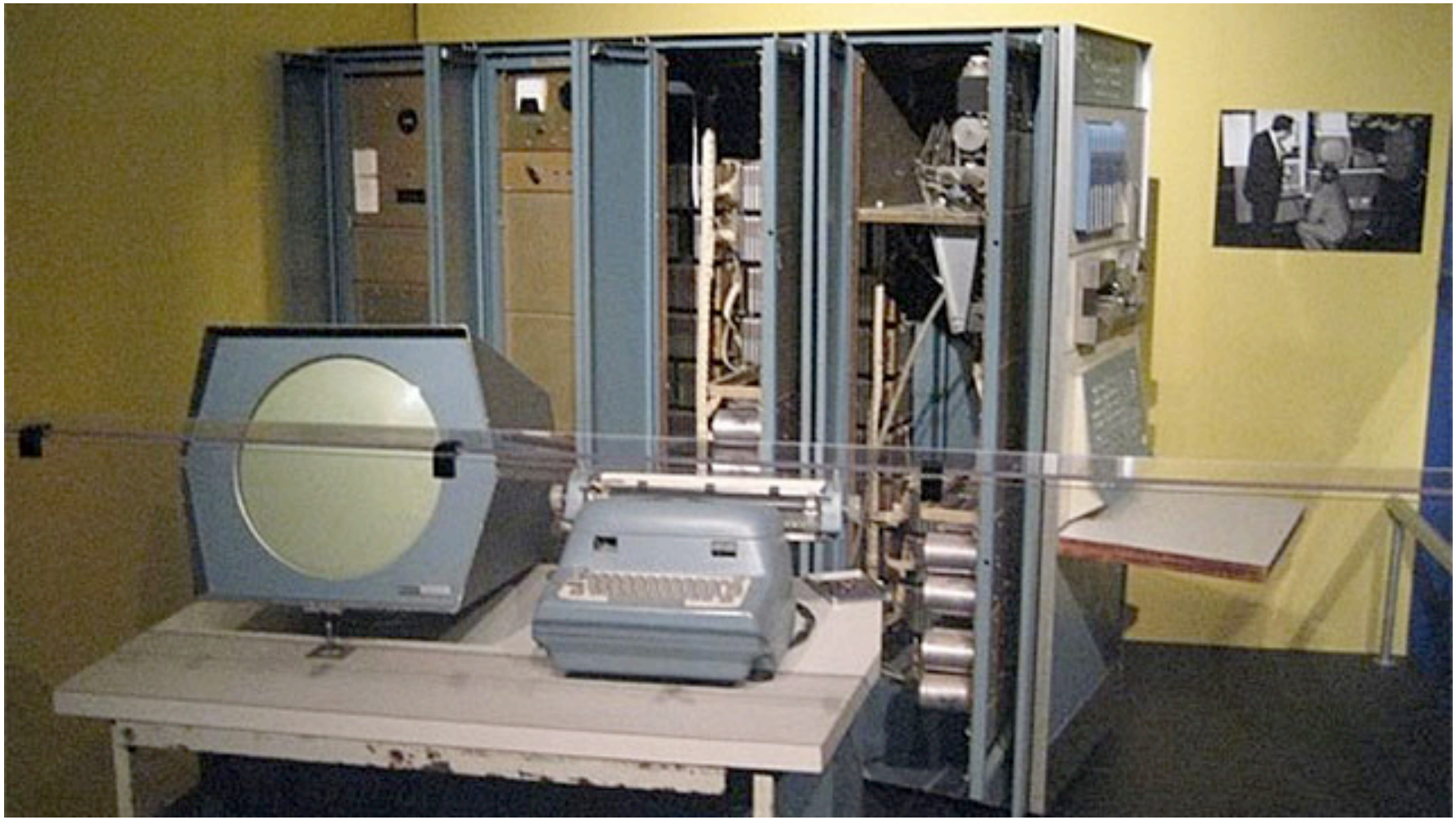
- What if I get stuck/lost/confused/angry?
- Email me in the first instance
  - mdf@cs.nott.ac.uk



A Brief History of Games

The Origins of the Video Game

Cathode-Ray Tube Amusement Device (1947)

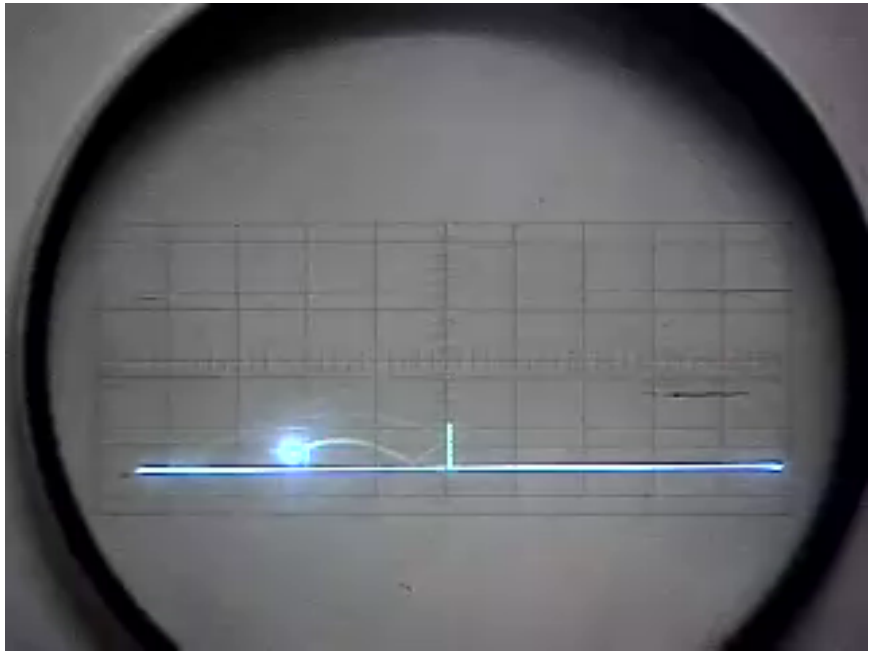


OXO (1952)

- Graphical tic-tac-toe
- Developed on the EDSAC
- First digital display
- Compete against rudimentary AI using a rotary dial
- http://www.pong-story.com/1952.htm

Tennis for Two (1958)

- Oscilloscope display
- Analogue computer
- Two player
- Players take turns to change trajectory of the “ball”



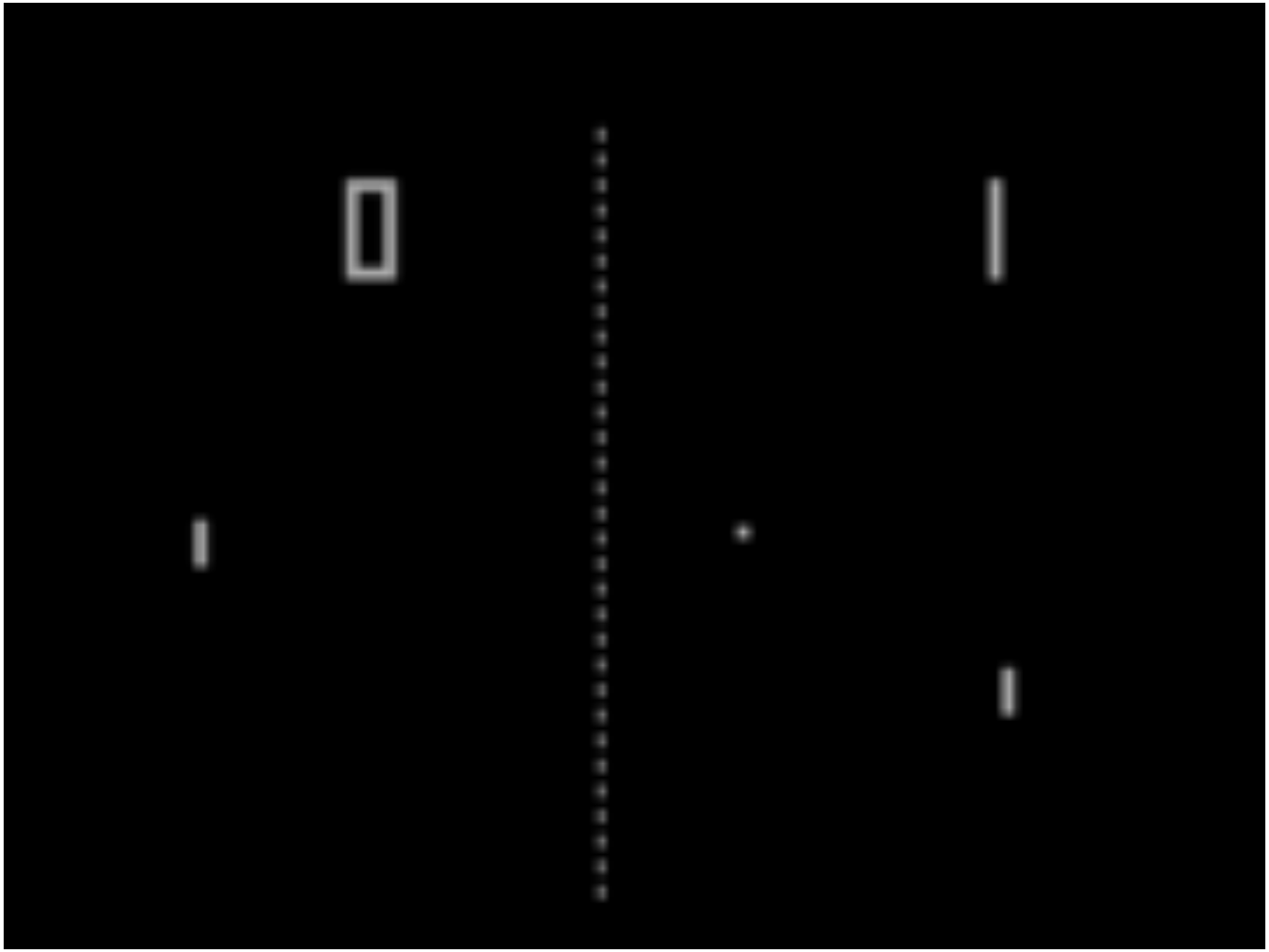
SpaceWar! (1961)

- DEC PDP-1
- Two players controlling ships
- Firing missiles at one another
- Manoeuvre in the gravity well of a star
- First widely available computer game

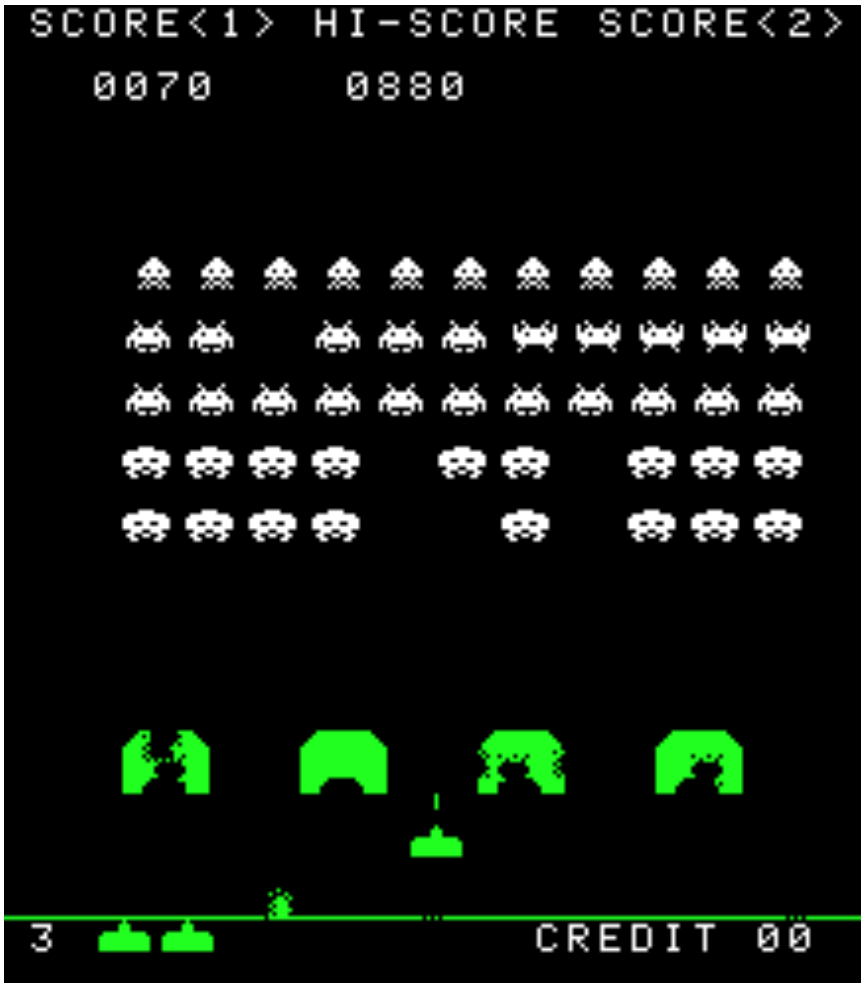
The Golden Age of the Arcade Game

Galaxy Game / Computer Space (1971)

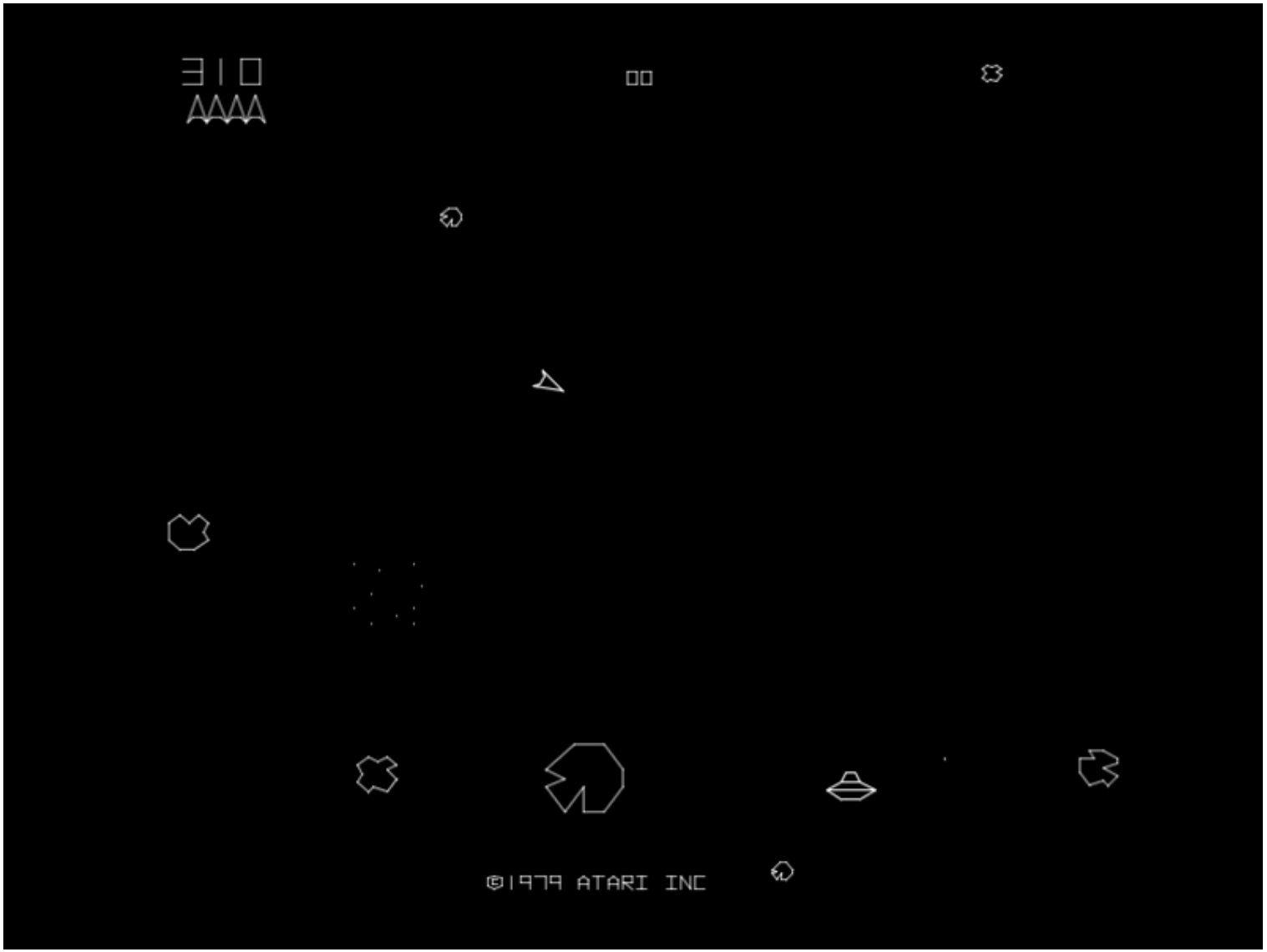
PONG (1972)



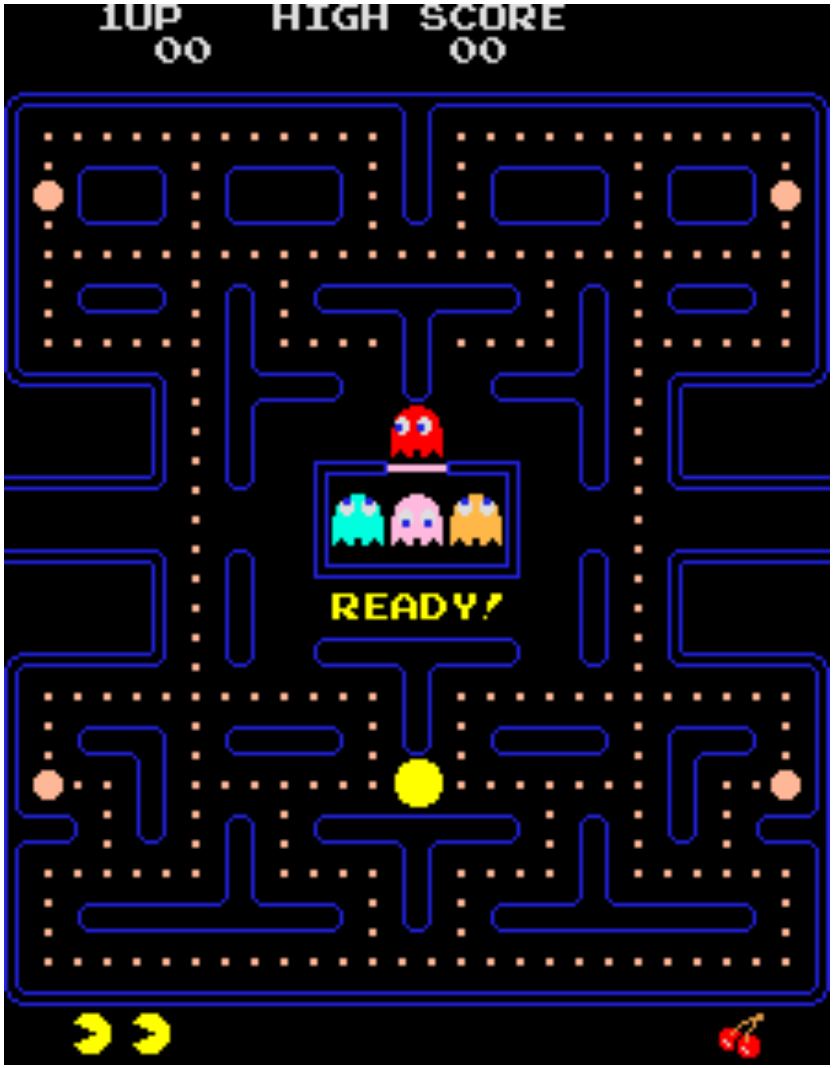
Space Invaders (1978)



Asteroids (1979)



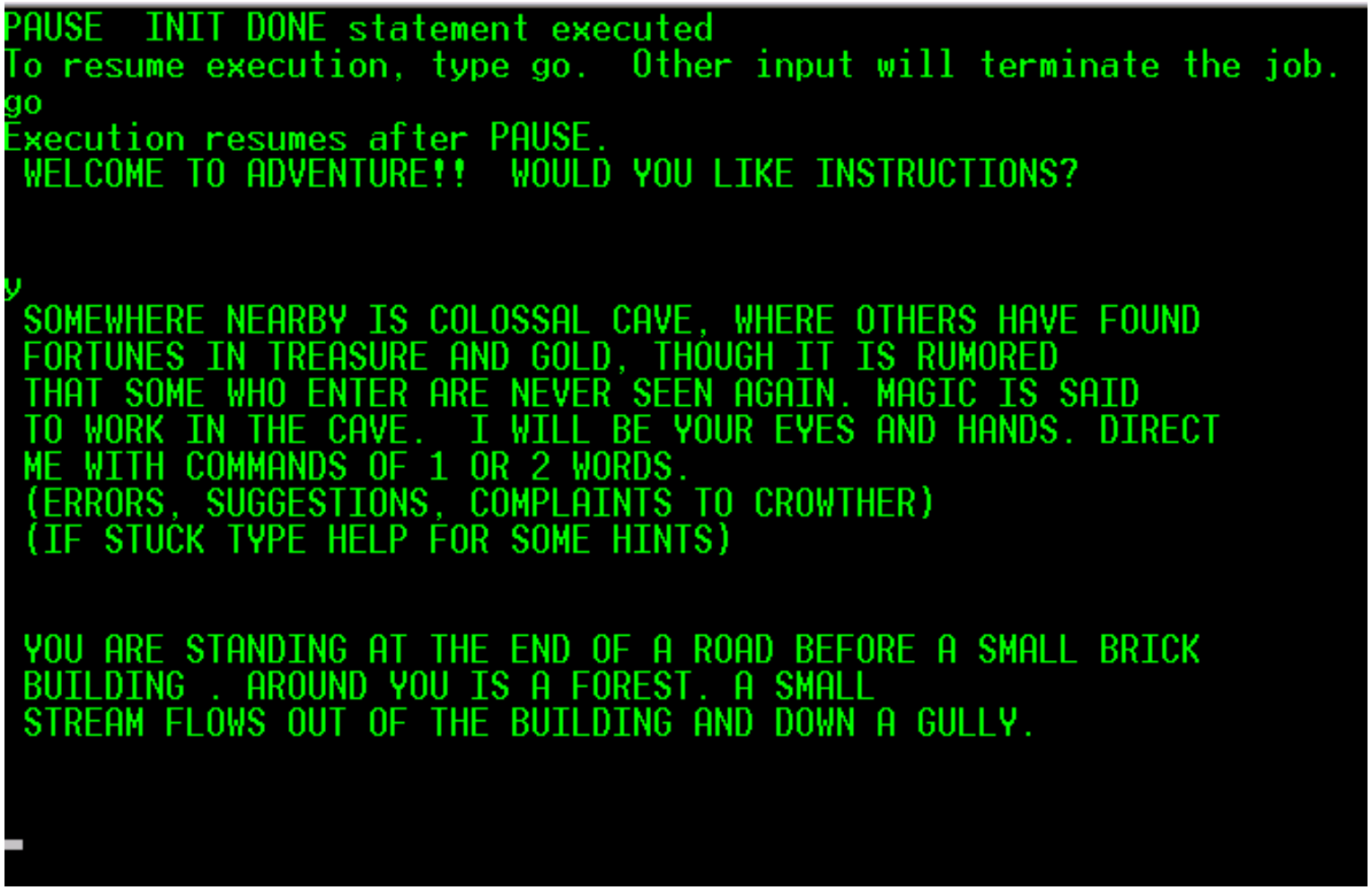
Pac-Man (1980)



University Mainframes

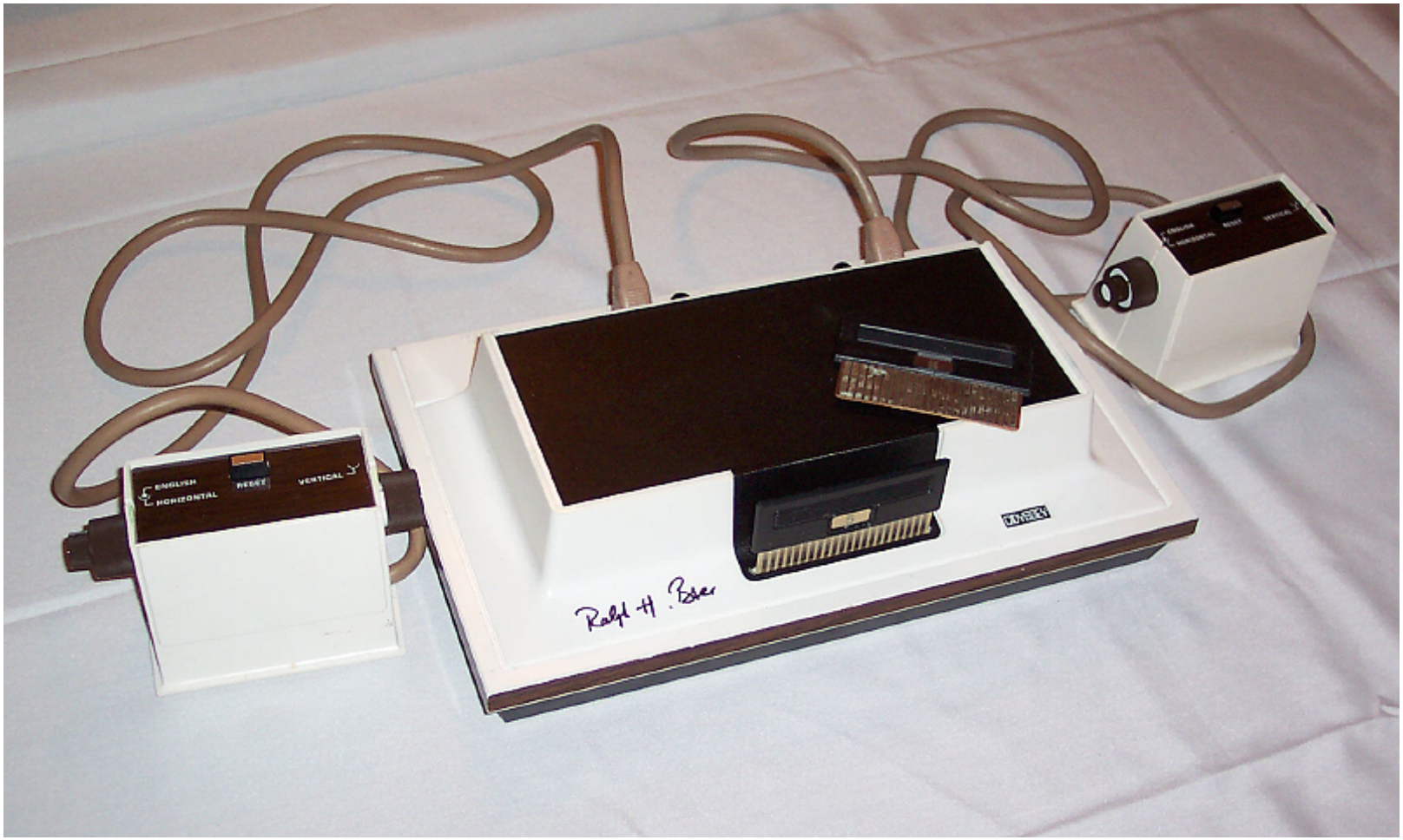
- Hunt the Wumpus (1972)
- Adventure (1975)
- Zork (1977)

Adventure / Colossal Cave (1975)



The First Consoles
- games hardcoded into chips in the console

Magnavox Odyssey (1972)



Home Pong (1975)

2nd Generation Consoles - games burnt in ROM in removable cartridges

Atari 2600 (1977)

Pitfall (1982)

Pac-Man (1982)

E.T. the Extra-Terrestrial (1982)

Intellivision (1980)

Emerson Arcadia 2001 (1982)

ColecoVision (1982)

8/16 bit home computers
- rise of the bedroom coders

Atari 5200 (1982)

BBC Micro


BRITISH BROADCASTING CORPORATION
MICROCOMPUTER SYSTEM
ESCAPE
TAB
CAPS LOCK
CTRL
SHIFT
SHIFT LOCK
RETURN
SHIFT
DELETE
COPY
BREAK
cassette motor
caps lock
shift lock

Commodore 64

ZXSpectrum


ZX Spectrum
EDIT
CAPS LOCK
TRUE VIDEO
INV. VIDEO
GRAPHICS
DELETE
CAPS SHIFT
ENTER
BREAK SPACE

Atari ST

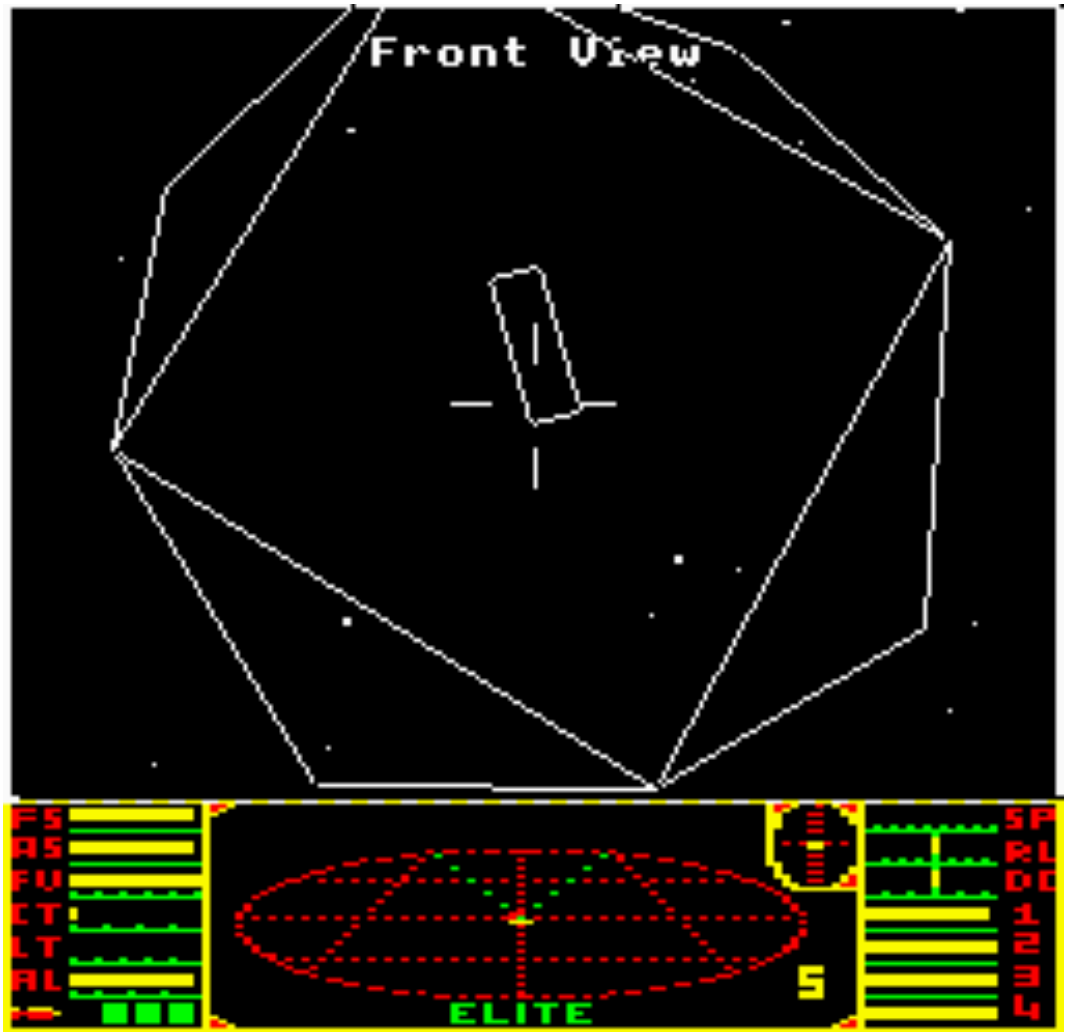

Desk File View Options
GEM, Graphics Environment Manager
TOS
Copyright (c) 1985
ATARI CORP.
Digital Research, Inc.
All Rights Reserved.
OK
ATARI SC1224
ATARI 1040ST

Commodore Amiga

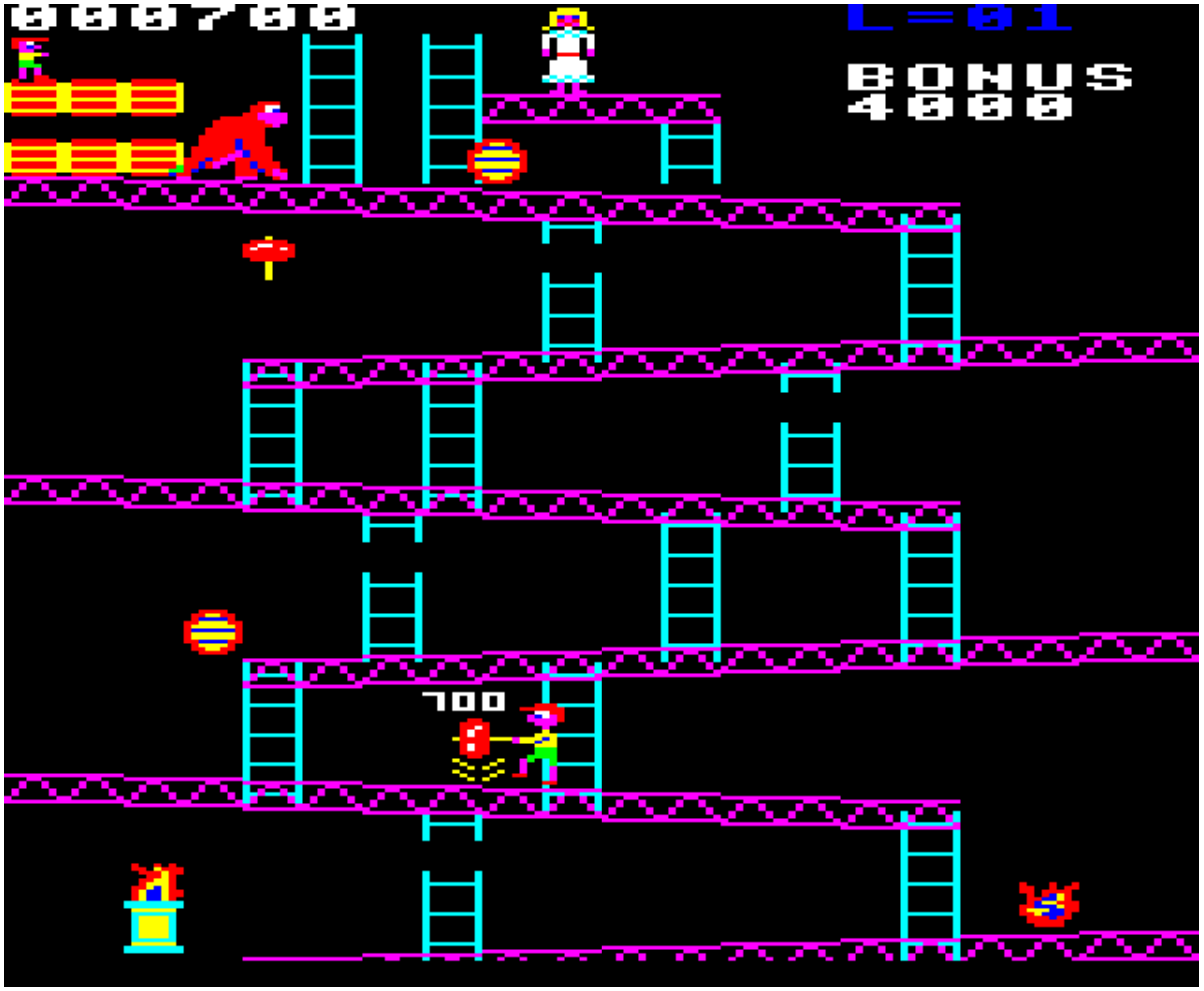
Manic Miner (1983)

Jet Set Willy (1984)

Elite (1984)



Killer Gorilla (1984)

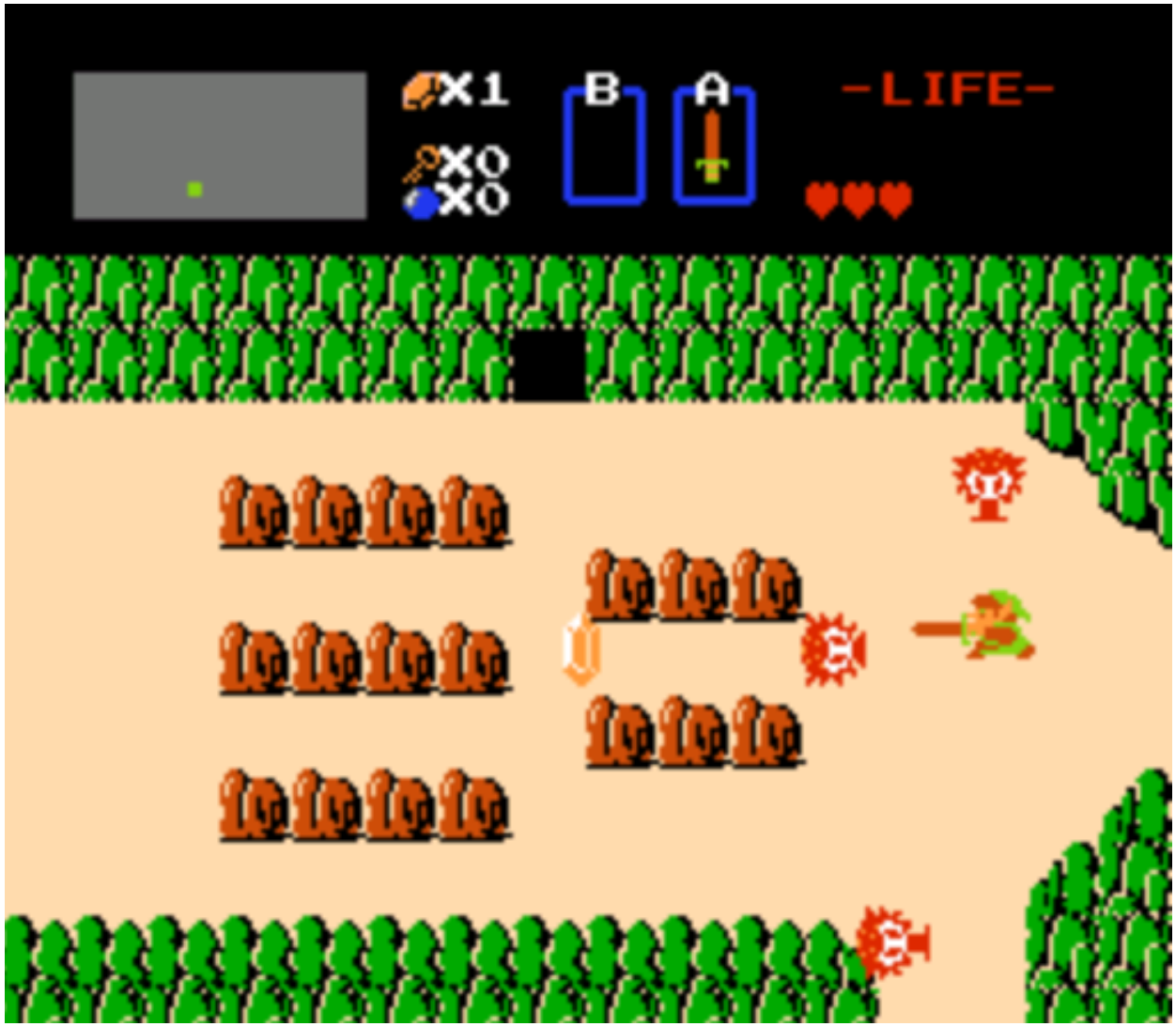


3rd Generation Consoles
8 bit, game pad
rise of the big franchises

Nintendo Entertainment System (1985)

Sega Master System (1986)

The Legend of Zelda (1986)



Final Fantasy (1987)

4th Generation Consoles
16 bit, basic 3d graphics, optical storage

Sega Megadrive (1989)

Super NES (1991)

90s PC gaming
Genre defining 32bit PC games, 1st 3d graphics cards

Wolfenstein 3D (1992)

Dune II (1992)


MENTAT
OPTIONS
Credits
993
Atreides Trike.
MISSILE TANK
DMG
ATTACK
MOVE
RETREAT
GUARD

Myst (1993)

Doom (1993)


8
AMMO
58%
HEALTH
2 3 4
5 6 7
ARMS
79%
ARMOR
BULL 110 / 400
SHEL 8 / 100
RCKT 1 / 100
CELL 260 / 600

Ultima Online (1997)

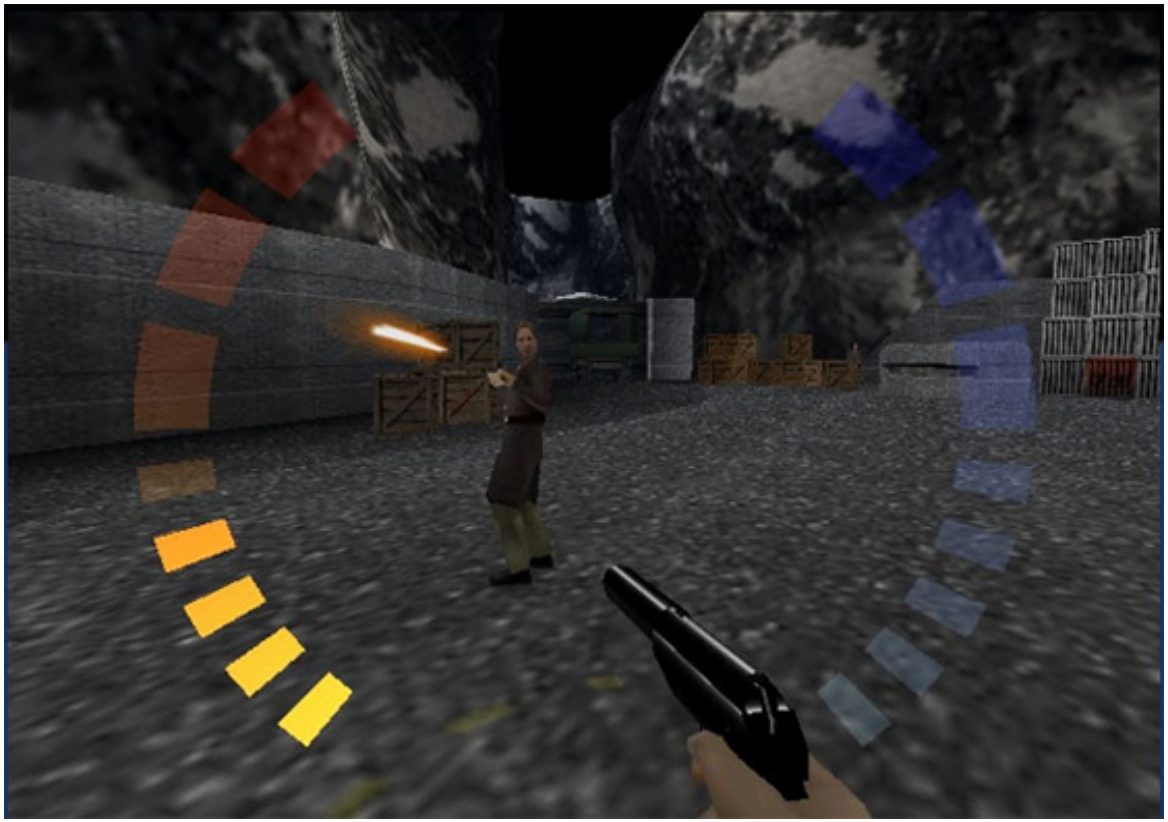
Half-Life (1998)

5th Generation Consoles
32bit, fully 3d

Sony Playstation (1994)

Nintendo 64 (1996)

GoldenEye 007 (1997)



Legend of Zelda: Ocarina of Time (1998)

6th Generation Consoles
128bit era

Sega Dreamcast (1998)

Sony PlayStation 2 (2000)

Nintendo Gamecube (2001)

Microsoft Xbox (2001)

Grand Theft Auto 3 (2001)

Halo (2001)

Ubiquitous broadband and internet access leads to a huge rise in online gaming

World of Warcraft (2004)

7th (“next”) Generation Consoles

Xbox 360 (2005)

PlayStation 3 (2006)

Nintendo Wii (2007)

Grand Theft Auto IV (2008)

Call of Duty: Black Ops (2010)

New forms of interaction

Wii Sports (2006)

Guitar Hero (2005)

Kinect (2010)

Can You See Me Now? (2001)

Casual / Social / Mobile Games

Bejeweled Blitz (2008)

Angry Birds (2009)

Farmville (2008)

Braid (2008)

8th generation?

Next week – categorising games, game mechanics and genres