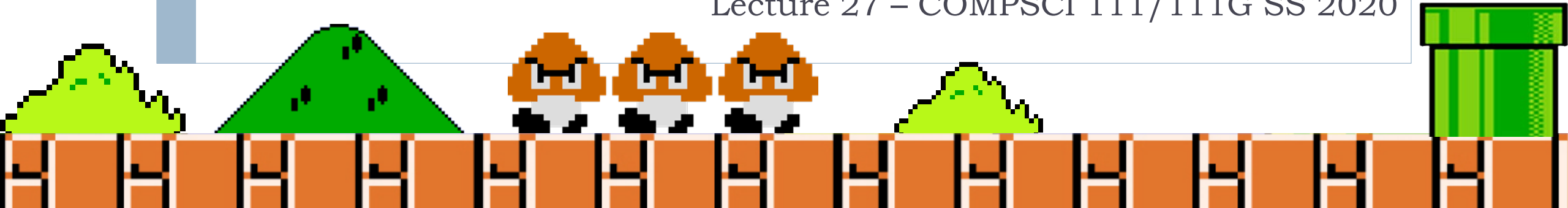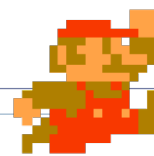# Games II

Digital Games

Lecture 27 – COMPSCI 111/111G SS 2020

What are Digital Games?

Commonly referred to as video games

People who play video games are called gamers

Rapidly growing industry

▸ Generated close to USD 100 billion in revenue in 2015

https://newzoo.com/insights/articles/digital-games-market-worth-83-2-billion-2016/

What do you need to play a digital game?

1. An input device

2. An output, typically video, device

Input Devices

Commonly used input devices:

- ▶ Keyboard and mouse
- ▶ Gamepad
- ▶ Touchscreen
- ▶ Motion controllers

Other input devices include steering wheels, joysticks, light guns, and rhythm game controllers

Output Devices

Screens

Speakers

Controllers

- ▸ Haptic feedback

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Platforms

Personal computers

Consoles

▸ Home and handheld

Mobile devices

Arcade machines

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Media

Cartridges

Optical discs

▸ CD, DVD, Blu-Ray, Proprietary

User-writable media

▸ Floppy discs, cassettes, memory cards

Digital downloads

▸ Steam, GOG, XBL, PSN

http://www.pcworld.com/article/197429/evolution_of_game_media.html

History of Digital Games: Alan Turing (1948)

▸ Wrote a program to play chess

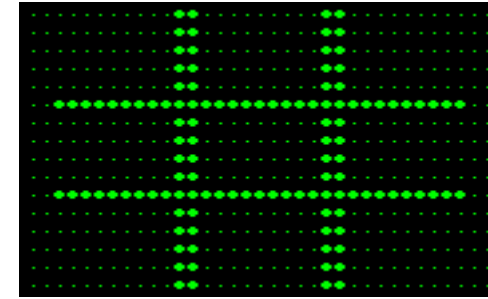▸ The algorithm looked 2 moves ahead

▸ Doesn't play chess very well

History of Digital Games: A.S. Douglas (1952)

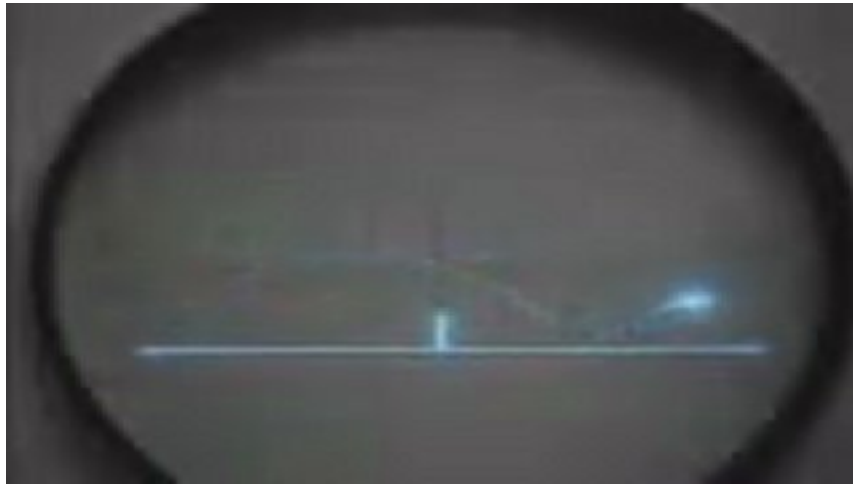▸ Part of Ph.D. thesis in Human-Computer Interaction

  ▸ Tic-Tac-Toe (noughts & crosses)

  ▸ Play by dialing numbers

  ▸ *Computer opponent*

▸ Emulator

  ▸ http://www.dcs.warwick.ac.uk/~edsac/

History of Digital Games: Tennis for Two (1958)

- William Higinbotham
- Demonstrate system
  - Analog computer
  - *Real-time game*

History of Digital Games: Spacewar! (1962)

- Stephen "Slug" Russell, MIT
- DEC PDP-1 assembler in 1962
- Demonstrate the Type 30 Precision CRT Display
  - "It should demonstrate as many of the computer's resources as possible, and tax those resources to the limit;
  - Within a consistent framework, it should be interesting, which means every run should be different;
  - It should involve the onlooker in a pleasurable and active way -- in short, it should be a game."
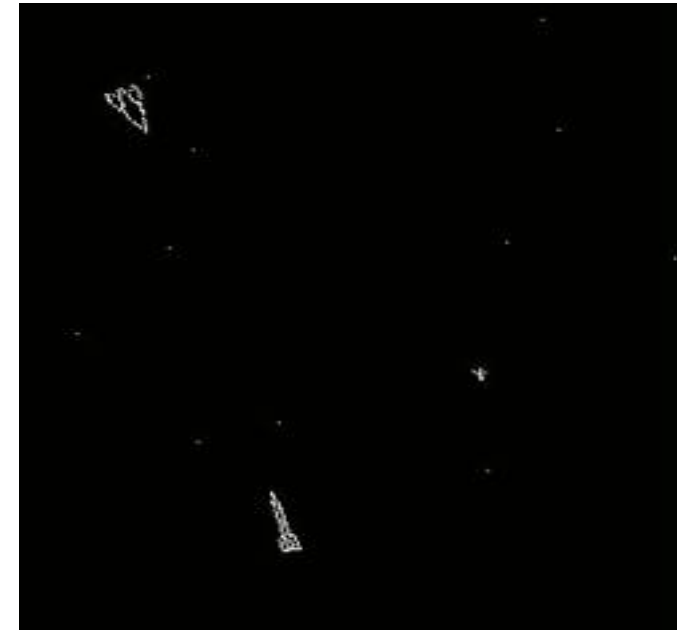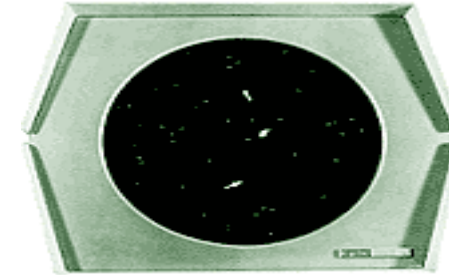
History of Digital Games
More Spacewar! Computer Space (1970)

▸ Nolan Bushnell decided to commercialize Spacewar

▸ Stand-alone arcade machine

History of Digital Games
Ralph Baer and the Magnavox Odyssey (1972)

- Asked to *Build the best television set in the world.*

- Built in several prototypes between 1966-1968

- Hand controller and light gun
  - *Use of sensor*

- Magnavox signed an agreement in 1971 and the first video game system got released in May 1972: Odyssey

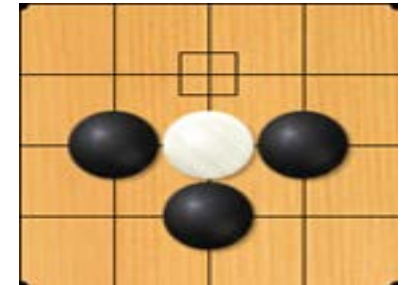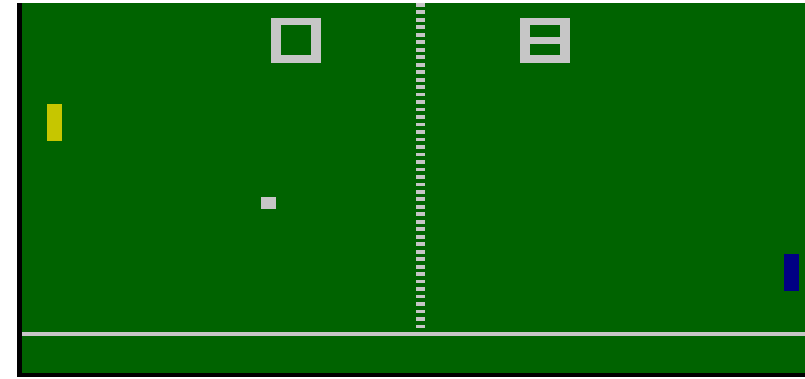# History of Digital Games
Nolan Bushell and Atari (1972)
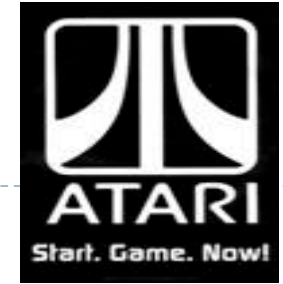
- Atari
  - syzygy
- Pong
  - Arcade version, 1972
  - TV-console, 1975

- Difficulties getting bank loans due to association with arcades and mafia

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Genres – Platform Games

Primarily involve navigation through environments

- 2D or 3D
- Traversal from one platform to the next

Genres - Shooters

Combat oriented using ranged weapons

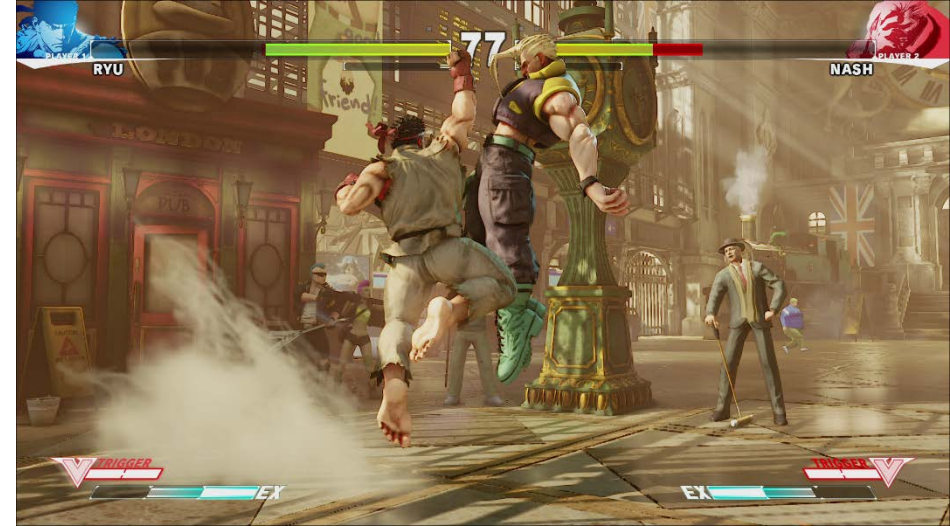- First-person
- Third-person
- Light gun
- Shoot 'em ups

Genres – Fighting Games

Focus on close combat

- 2D or 3D

Usually involves 2 combatants

- Player vs. Player
- Player vs. AI
- AI vs. AI

Genres – Role Playing Games

Play the role of one or more characters immersed in a well-defined world

▸ Detailed lore

▸ Focus on narrative, exploration, and quest completion

Genres – Sports Games

Emulate real-world sports

▸ Degree of realism varies widely

▸ Realistic titles are referred to as sims

▸ Usually competitive – against AI or other gamers

Genres - Strategy

Outcome of combat determined by skilful thinking and planning

- Real-time vs. turn-based
- Strategy vs. tactics

Other Notable Genres

Massively multi-player online games

Casual games

Party games

Rhythm/music games

Puzzle games

Exergames

Educational games

Adventure games

Many games incorporate elements of more than one genre

The Game Industry

Developer

▸ Company specializing in video game development

▸ Multi-disciplinary – programming, art, testing etc.

▸ E.g. Crystal Dynamics, Rockstar Games, Rare, Naughty Dog

Publisher

▸ Company responsible for funding, marketing, and distribution

▸ May also develop video games – internal team of developers referred to as a studio

▸ E.g. Electronic Arts, Activision Blizzard, Ubisoft, Take-Two Interactive

Business Models

"Packaged" games

- ▸ Purchase game for full access to its features
- ▸ Further monetary outlay unnecessary

Subscription games

- ▸ Playing the game requires paying a subscription fee
- ▸ May require initial purchase as well
- ▸ "Pay-to-play"

Free-to-play games

- ▸ Core game is free
- ▸ Certain game content locked behind in-game currency that is difficult to obtain
- ▸ In-game currency can be purchased directly with real world money

Business Models

Microtransactions

- Ability to purchase in-game goods using real world money
- Often used in conjunction with free to play games – "Pay-to-win"

Downloadable content

- Additional content released for a game post-release
- Can include new modes, levels or aesthetic content

Gamer Demographics

Based on a study by the Entertainment Software Association (ESA) in the US in 2016:

▶ 59% of gamers are men. 41% are women

▶ The average age of a male gamer is 35. The average age of a female gamer is 44.

▶ The average gamer has been playing video games for 13 years.

▶ 63% of households have at least one gamer.

http://essentialfacts.theesa.com/Essential-Facts-2016.pdf
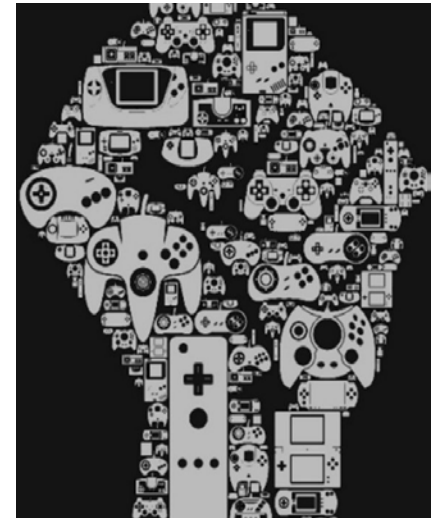
eSports

Organized video game competition
- ▸ Competitors typically professional
- ▸ Competitions are broadcast
- ▸ Prize money for winners

Genres associated with eSports:
- ▸ Real-time strategy games
- ▸ Fighting games
- ▸ First-person shooters
- ▸ Multiplayer online battle arena games

First established in South Korea
- ▸ Since 2000
- ▸ Now a global phenomenon with an audience of 226 million people in 2015
- ▸ https://newzoo.com/insights/articles/global-esports-market-report-revenues-to-jump-to-463-million-in-2016-as-us-leads-the-way/
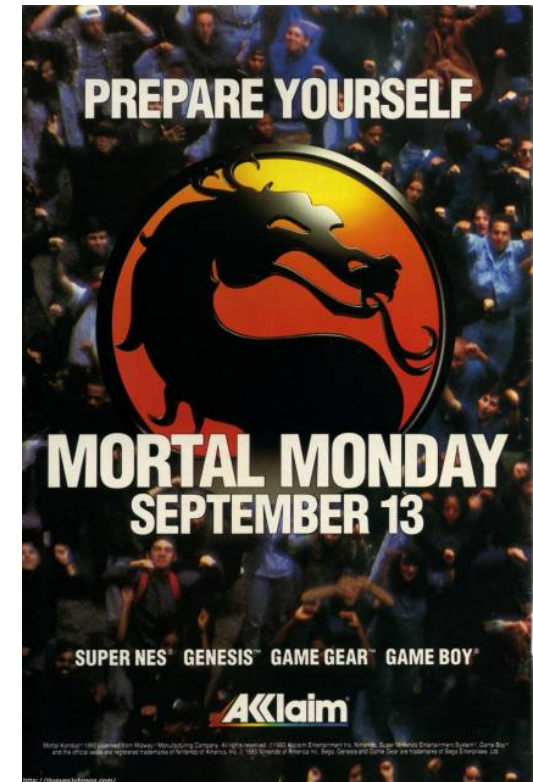
Controversies

Negative behavioural effects:

- Heightened aggression, lowered empathy
- Various studies performed – no consensus

Censorship and regulation

Portrayal of women and minorities

Online harassment

- Gamergate

Future

Virtual Reality

▶ Immerses user in a virtual environment

▶ User can look around, move and interact with environment

▶ Headsets for VR gaming recently released – Oculus Rift, HTC Vive

Augment Reality

▶ Real-world environment augmented with computer generated input – imagery, sound etc.