COMP110: Principles of Computing

# 1: Computing Foundations

# Learning outcomes

By the end of today's session, you will be able to:

- ► **Describe** the overall structure of the module and its assessments
- ► **Recall** the historical context of computing and gaming technology
- ► **Explain** the basic architecture of a computer

# Today's agenda

- ► COMP110 course outline
- ► History of computing

# Module introduction

# Aim

To enable you to apply basic computing and mathematical theory to practical programming activities.

# Description

On this module, you will learn the basic principles of computing, discrete mathematics, and technical notation (e.g. pseudocode, UML, etc.). You start the process of learning to use basic methods and core concepts to solve practical problems and leverage algorithms in your solutions. You will become acquainted in a practical way with the techniques and methods that help you to work effectively and efficiently to build and annotate computing solutions with reference to relevant scholarly sources. You acquire experience of working on basic computing problems and solving them.

# Learning Outcomes

| ID | NAME | DESCRIPTION | ASSESSMENT CRITERIA CATEGORY |
|---|---|---|---|
| 1 | Code | Translate technical notation into executable code. | PROCESS |
| 3 | Solve | Demonstrate computational thinking and numeracy skills. | PROCESS |
| 3 | Contextualise | Locate the broader development context of relevant industries. | COMMUNICATE |
| 5 | Research | Report on an issue using appropriate sources and academic conventions. | RESEARCH |

# Module choice

- ► If you are on a BSc course (Computing for Games or Immersive Computing) this module is **mandatory**
- ► If you are on BA Game Development: Programming, this module is **optional** and can be switched with GAM120: Reading Experiences
- ► Undecided? The induction session for GAM120 is Tuesday 12:00 in DM Lecture A
- ► Want to switch? See me or Michael

# Topic schedule

On LearningSpace

# Timetable

http://mytimetable.falmouth.ac.uk

# Assignments

- Assignment 1: worksheet tasks
    - **Nine** worksheets — programming, annotation, problem solving, mathematics
- Assignment 2: research journal
- See LearningSpace for assignment briefs and worksheets
- See MyFalmouth for deadlines

# Worksheet A

- ► SpaceChem
- ► Due **next Friday (4th October)**
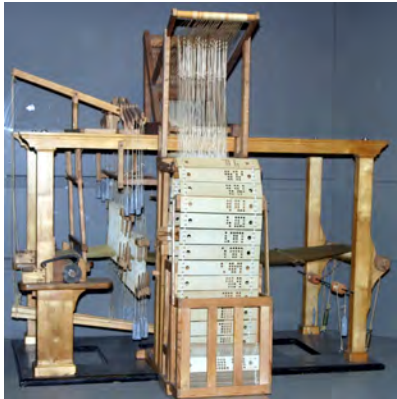
# What was the first computer?

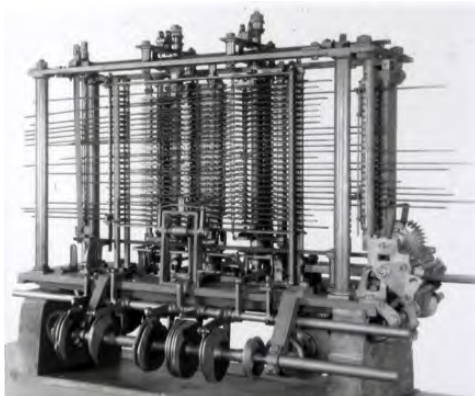# Antikythera Mechanism (∼150 BC)

First mechanical computer?

# Jacquard Loom (1804)

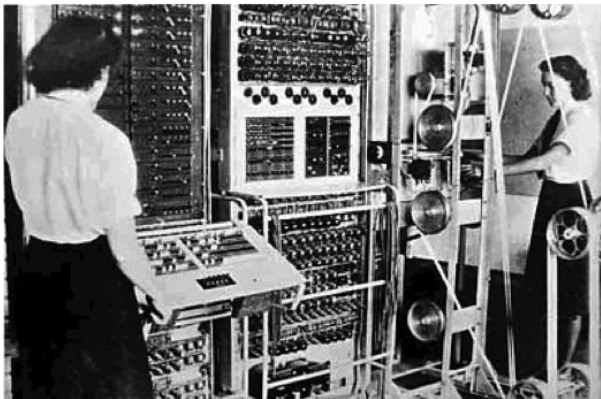First programmable machine in modern age

# Babbage's Difference and Analytical Engines (1837)

## First mechanical computer in modern age

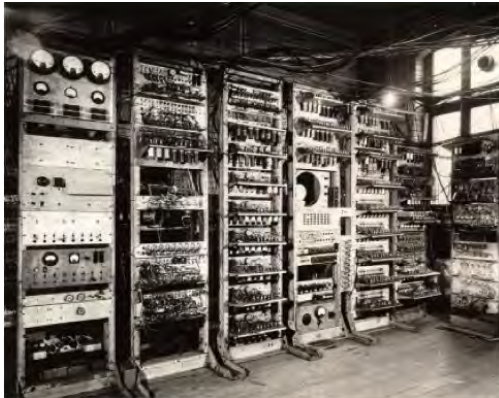# Colossus (1943)

First programmable electronic computer

# ENIAC (1946)

First general-purpose computer

# Manchester Small-Scale Experimental Machine (1948)
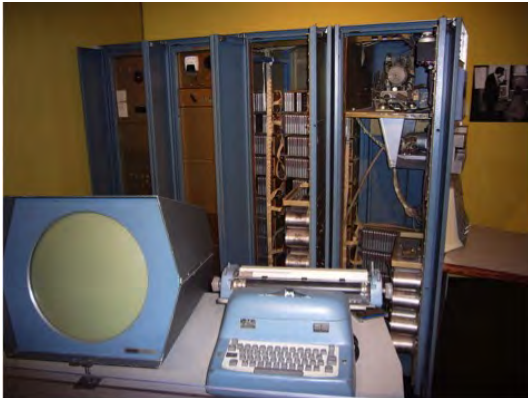
First stored program computer

# TRADIC (1949)

First transistor computer

# PDP-1 (1959)

Influenced "hacker culture"

# Datapoint 2200 (1970)

First microcomputer

# Commodore VIC 20 (1980)

First computer to sell 1 million units

# IBM Personal Computer Model 5150 (1981)
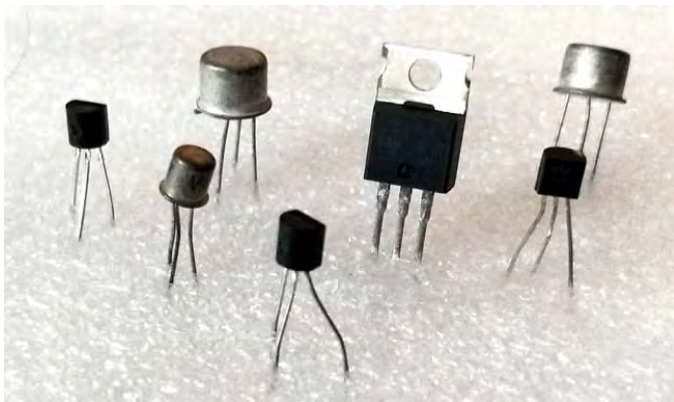
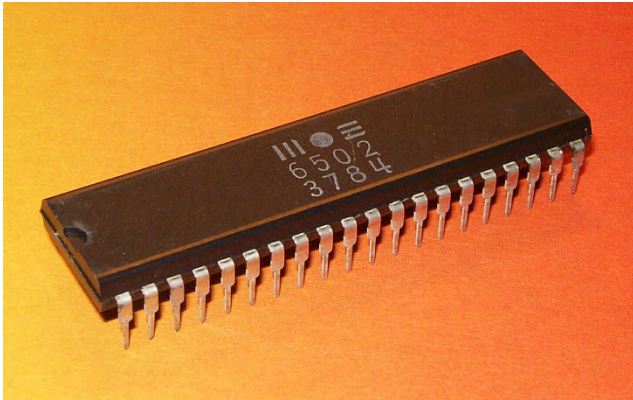Precursor to the modern PC

# Electronic computer technologies

# Vacuum tubes (valves)

# Transistors

# Integrated circuits (ICs)

| 1943 | Colossus | 1700 valves |
|------|----------|-------------|
| 1946 | ENIAC | 20000 valves |
| 1949 | TRADIC | 800 transistors |
| 1959 | PDP-1 | 2700 transistors |
| 1975 | MOS 6502 | 3510 transistors |
| 1979 | Intel 8088 | 29000 transistors |
| 1998 | Intel Pentium II | 7.5 million transistors |
| 2016 | Intel Core i7 Broadwell-E | 3.2 billion transistors |
| 2018 | Apple A12 | 6.9 billion transistors |

# What was the first computer game?

# Cathode Ray Tube Amusement Device (1948)

First interactive electronic game

# Chess AI on the Ferranti Mark I (1951)
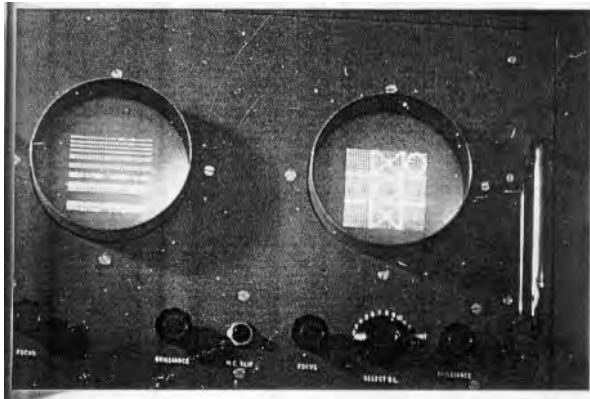
First chess program

# Bertie the Brain (1950)

First computer game with a visual display

# OXO (1951)

First game with visuals on a general-purpose computer

# Tennis for Two (1959)

First to be created purely for entertainment

# SpaceWar! (1962)

First widely available game, inspired first arcade games

# Pong (1972)

First commercially successful game

# What was the first games console?

# The Brown Box (1967)

First prototype console

# Magnavox Odyssey (1972)

### First commercial console

# Game console timeline

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http://www.onlineeducation.net/videogame_
      timeline/video-game-timeline.jpg
```
(A little out of date!)

# Debrief

You should now be able to:

- ► **Describe** the overall structure of the module and its assessments
- ► **Recall** the historical context of computing and gaming technology
- ► **Explain** the basic architecture of a computer

**Remember:** Worksheet A is due **next week**!