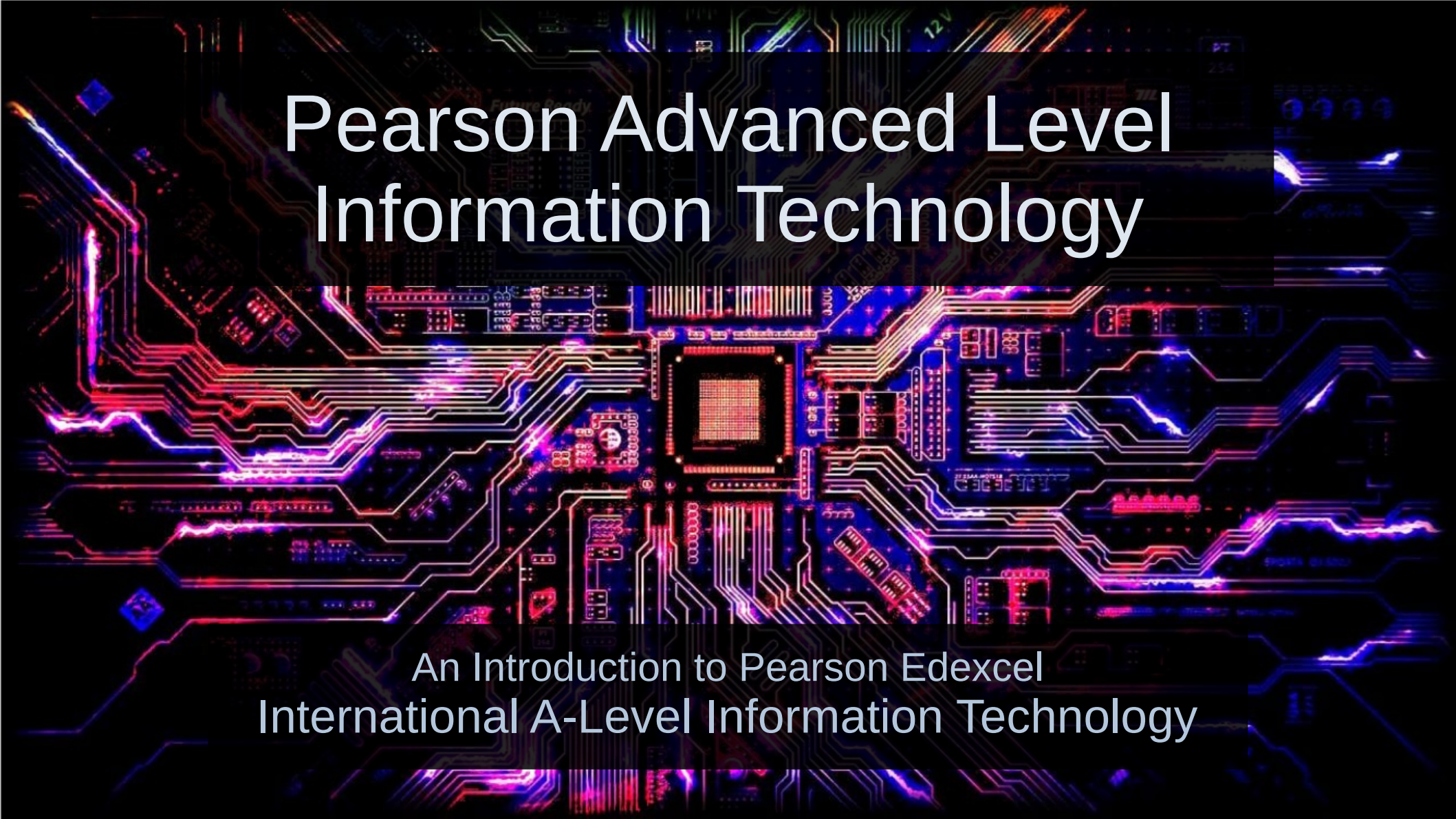
Pearson Advanced Level Information Technology



An Introduction to Pearson Edexcel

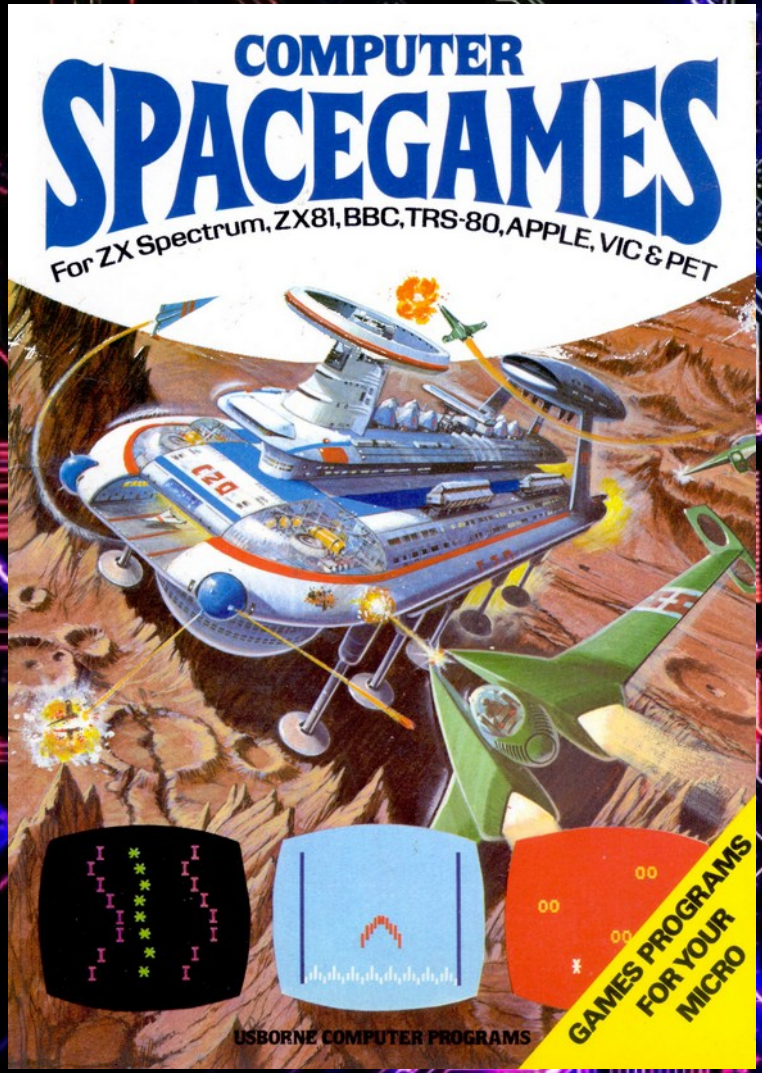
International A-Level Information Technology

Outline

- Ice Breakers
- What you will learn
- Course expectations

Ice Breaker 1: two truths, one lie

1. I started computer programming before I was 10 years old.
2. My university major was Computer Science
3. I like to play 王者荣耀



Death Valley

There is only one way to escape the forces of the evil Dissectitrons. You will have to steel every nerve and fly your single-seater Speed Dart along the jagged, bottomless ravine known as Death Valley.

Your computer will ask you for the width of the valley. Try 15* first and then work your way down – 8 is quite difficult. Steer your Speed Dart by pressing Q to go left and P to go right, and see if you can make it safely through Death Valley.

*If you are using a VIC 20, then use widths of 6 to 10.

How the program works

```
10 PRINT "DEATH VALLEY"
20 LET S=0
30 LET M=200
40 PRINT "WIDTH?"
50 INPUT W
60 LET W=INT(W/2)
▲70 LET L=10
80 LET Y=W
90 LET R=W
★■▲●100 LET D=INT(RND*3-1)
110 IF L+D<0 OR L+D>20 THEN GOTO 100
120 LET L=L+D
130 LET Y=Y-D
140 LET R=R+D
$★■▲●145 SCROLL
150 LET N=L
160 GOSUB 1000
170 PRINT "I";
180 LET N=Y
190 GOSUB 1000
200 PRINT "*";
210 LET N=R
220 GOSUB 1000
230 PRINT "I"
●→
★▲●240 LET I$=INKEY$
250 IF I$<>"Q" THEN GOTO 280
260 LET Y=Y-1
270 LET R=R+1
280 IF I$<>"P" THEN GOTO 310
```

Sets the number of goes used to zero for start of game.

M is the maximum number of goes allowed.

Gets a width number from you, divides it by 2 and uses INT to remove any halves.

L, Y and R are the distances between walls and Speed Dart.

Edge of screen — L spaces (= 10 at start) — I — Y spaces (= W at start) — * — R spaces (= W at start) — I

Selects −1, 0 or +1 and puts it in D.

Checks L+D isn't so big or small that columns disappear off sides of screen.

Changes spaces between columns according to the value of D.

+D — I — −D — * — +D — I

Moves cursor L spaces across the screen and prints I. (The semi-colon then stops the cursor going down to the next line.)

Moves cursor a further Y spaces and prints.*

Moves cursor a further R spaces and prints another I. (No semi-colon this time, so the cursor then goes down to the next line.)

Checks to see if you are pressing a key.

If the key you are pressing is *not* Q, computer jumps to 280.

If key *is* Q then Y is decreased by one and R increased by one so star moves left.

Checks if key being pressed is P.

Ice Breaker 2: My Expectations

- I consider myself more of a (science person / arts person)
- What I plan to do after graduating from high school
- How this class might benefit me in the future

Outline

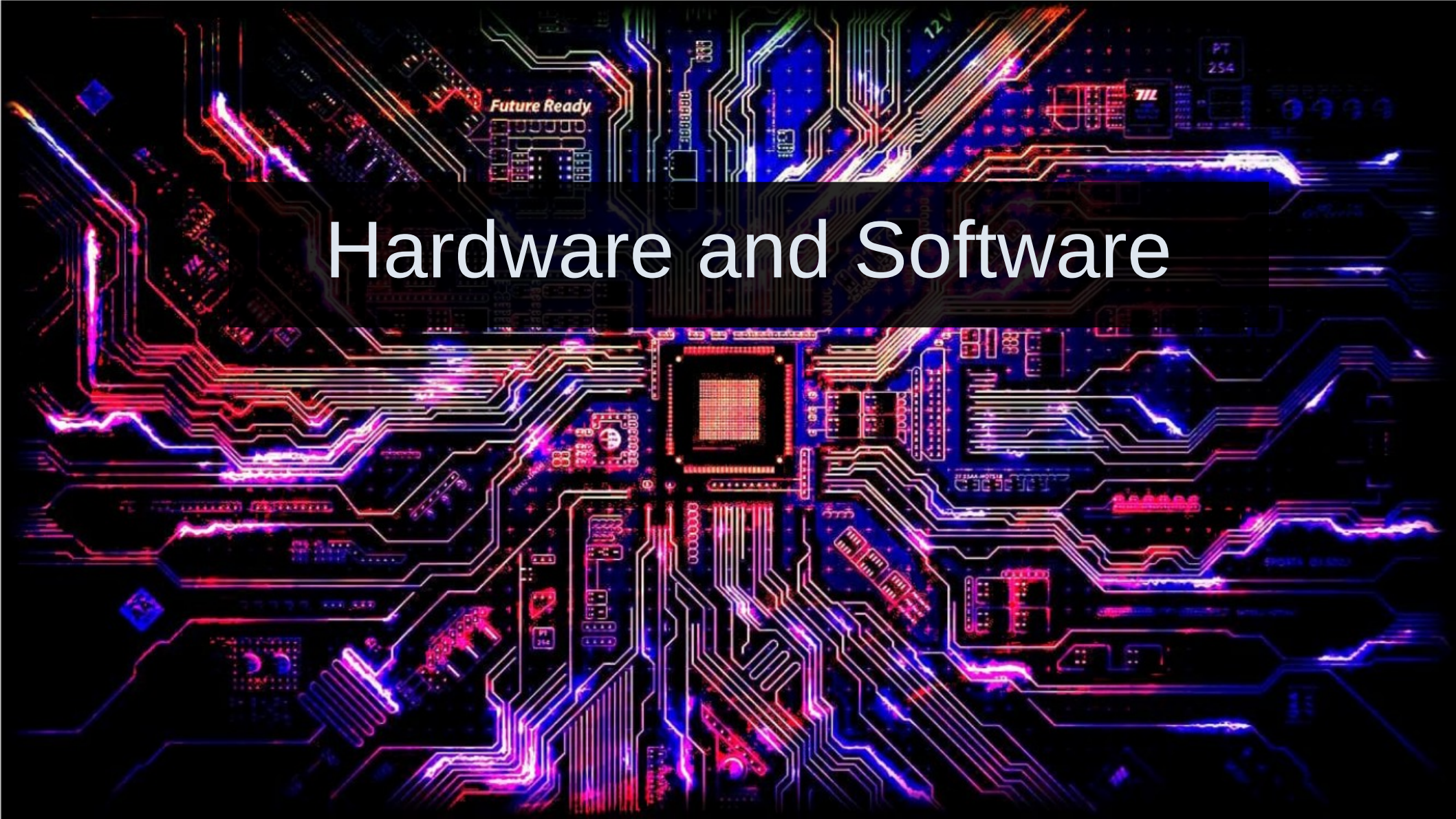
- Ice Breakers
- What you will learn
- Course expectations

What You Will Learn (AS)

- Unit 1: Theory
  - Hardware and Software
  - Networks
  - Online Environment
  - IT Systems
  - Data and Databases
  - Wider Issues
- Unit 2: Application
  - HTML
  - CSS
  - JavaScript
  - Design of Web Pages
  - Semantic Web

What You Will Learn (A2)

- Unit 3: Theory
  - Manipulating Data
  - Enabling Technologies
  - Using IT Systems in Organizations
  - Systems Development
  - Emerging Technologies
- Unit 4: Application
  - Uses and features of database solutions
  - Relational Database Concepts
  - Database Solutions



Hardware and Software

Discussion

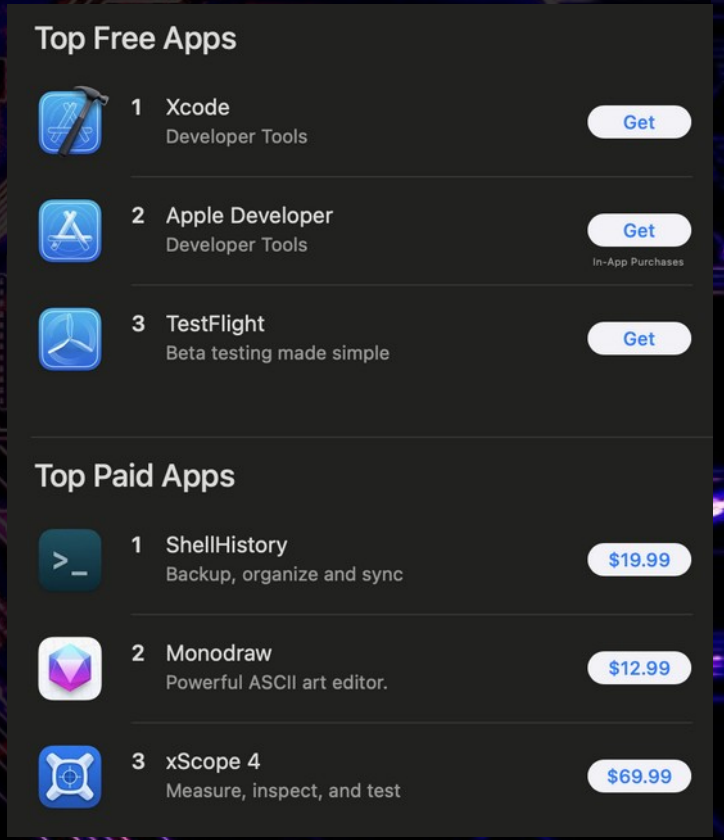
1. What is the size of your computer’s memory?
2. What operating system is running on your computer?
3. What software do you use that you think is well designed?

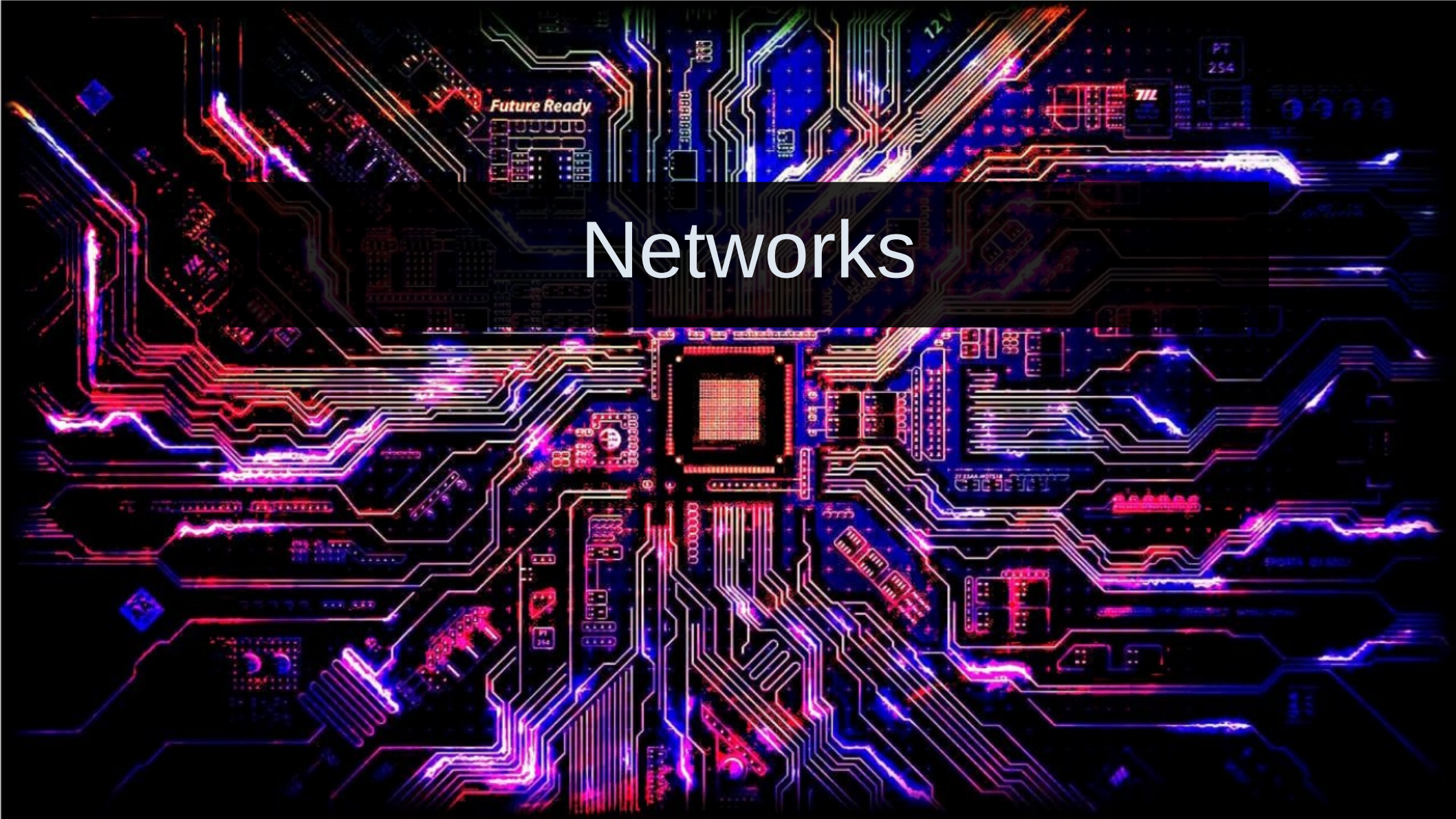
Hardware and Software

- Hardware
  - High-level understanding
  - Concepts and Vocabulary
    - Functions and features
    - Embedded system
    - Bandwidth and Latency
    - USB3, USB4, USB-C, PD

Hardware and Software

- Software
  - High-level understanding
  - Concepts and Vocabulary
    - Firmware
    - BIOS and bootloader
    - Operating System
    - Binary, kilobyte, kibibyte

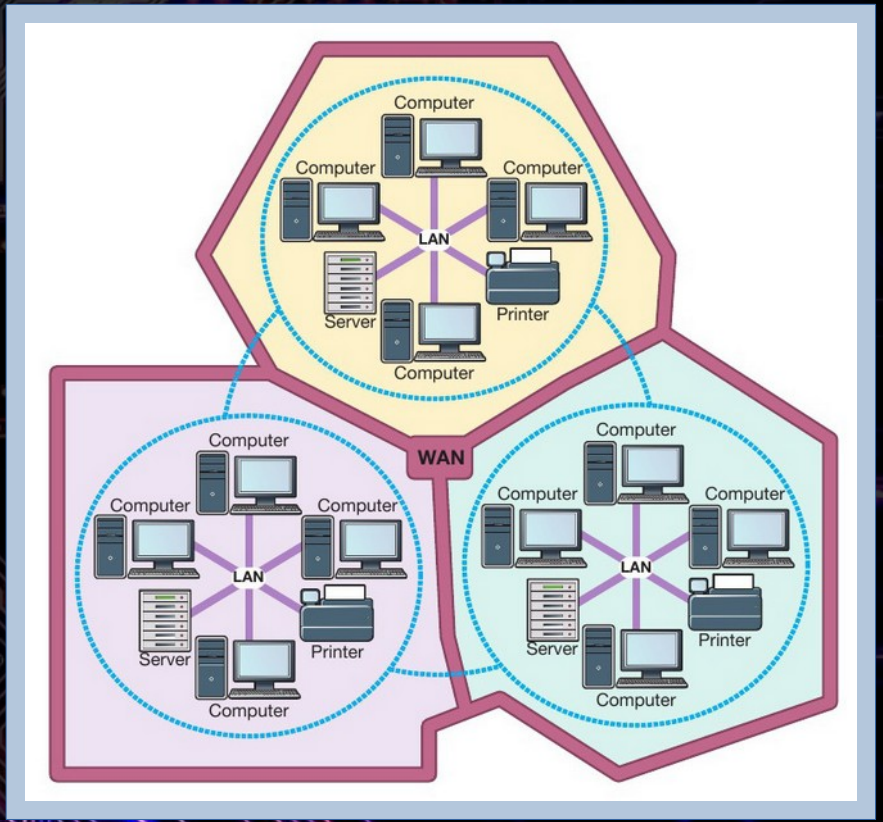




Networks

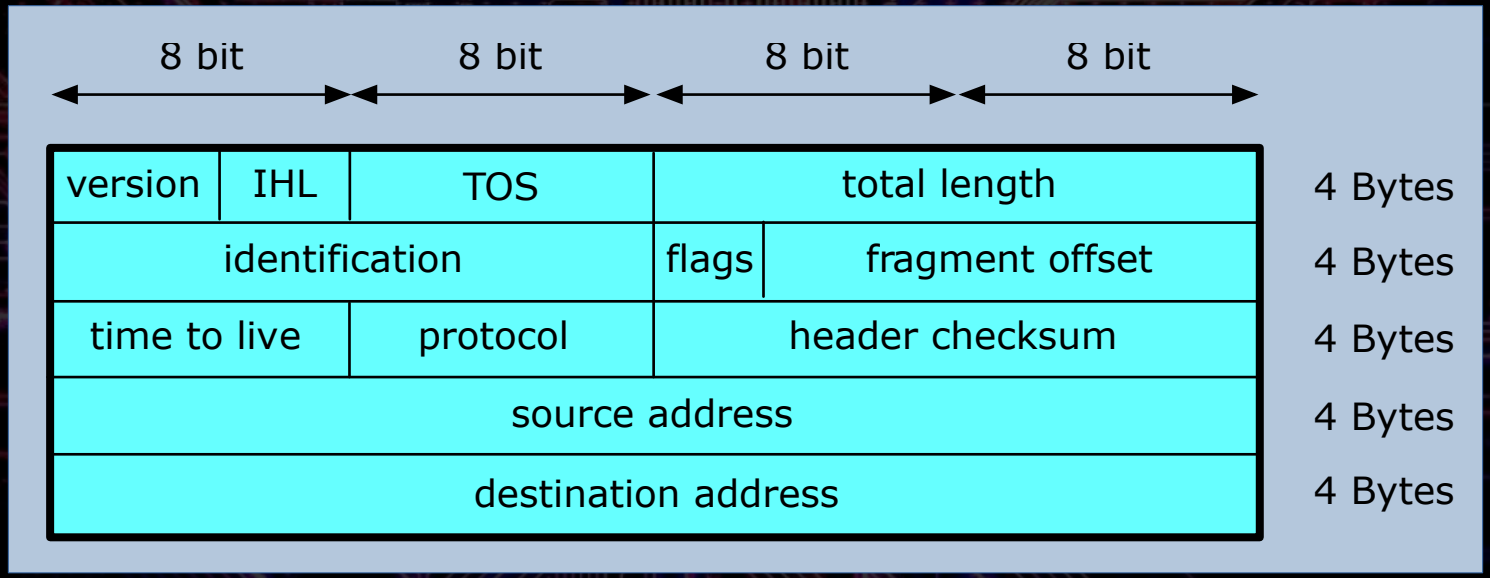
Networks

- Connecting Computers
  - Wired / Wireless
  - Protocols
    - TCP/IP, HTTP
  - Security



Networks

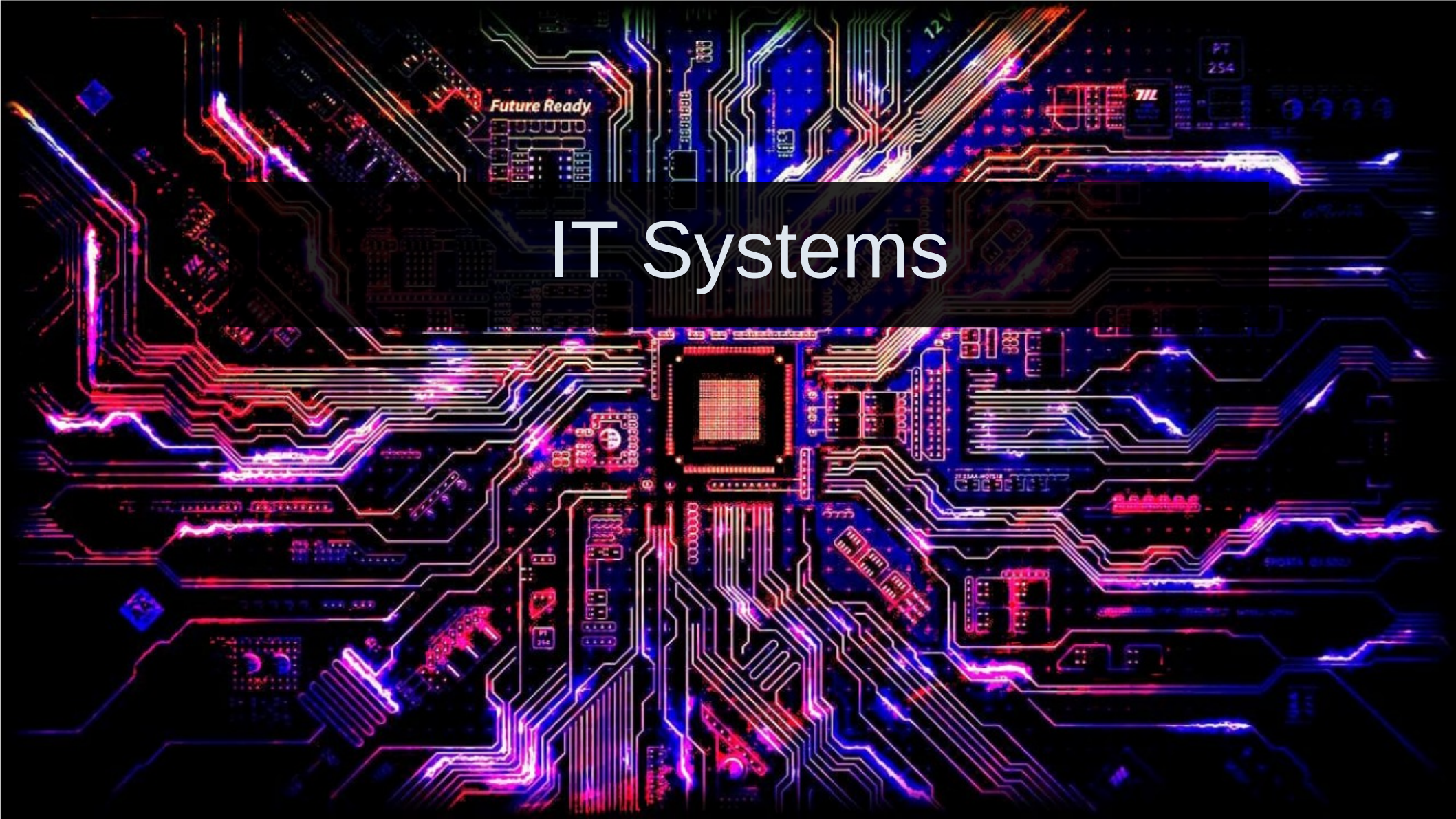
- Protocol example: IPv4



Online Environment

Online Environment

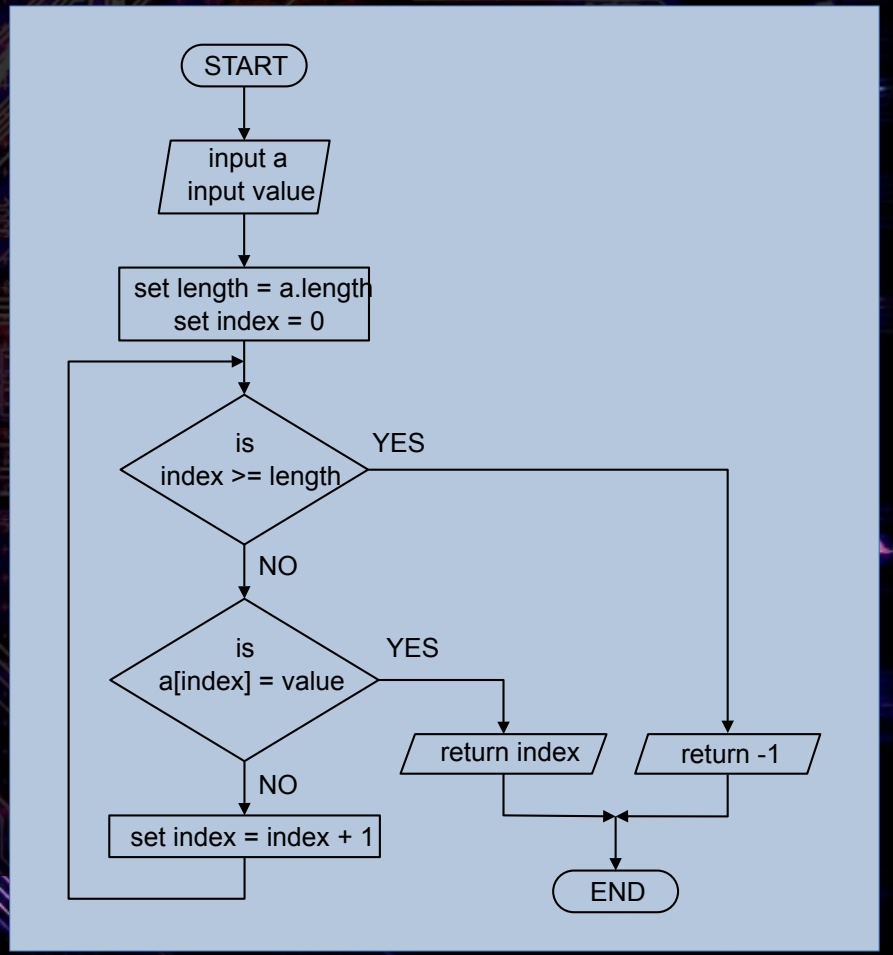
- Organization of the Web
  - Concepts and Vocabulary
    - Internet vs World-Wide Web
    - DNS, URL
    - Client-server, cloud
  - Social Aspect
    - Online communities
    - Privacy, digital footprint



IT Systems

IT Systems

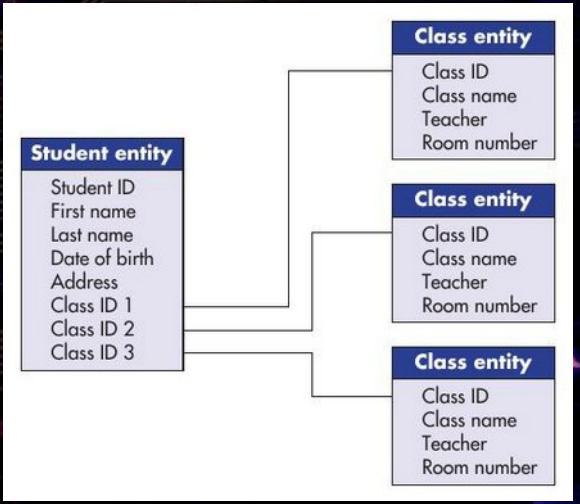
- System Design
  - Hardware, software, process, people
  - Decomposition
- Dataflow

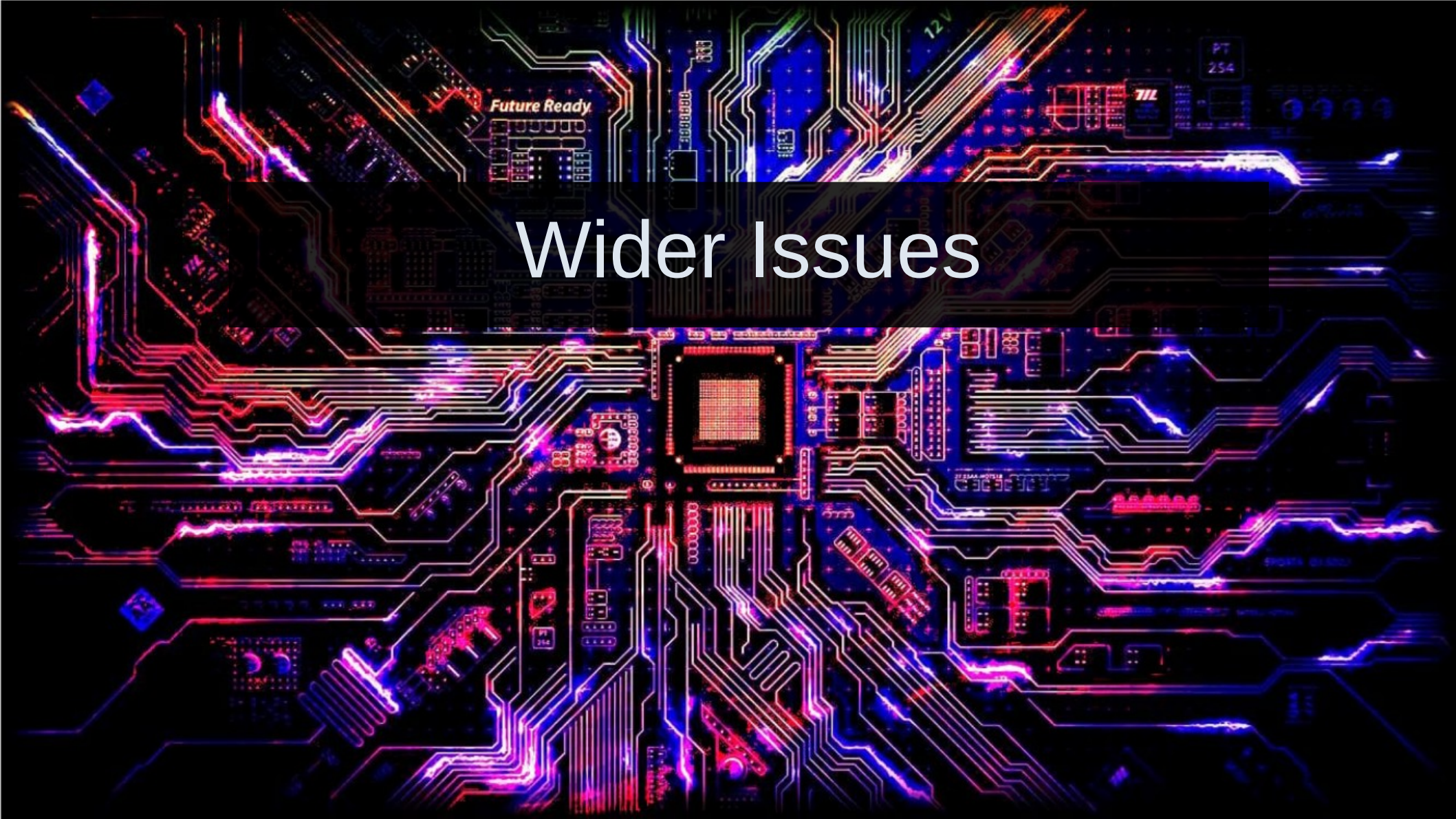


Data and Databases

Data and Databases

- Concepts and Vocabulary
  - Data vs Information
  - Structured vs Unstructured
- Structured Query Language (SQL)
  - Relational Databases





Wider Issues

Wider Issues

- Envronmental
- Legal, Moral, Ethical
  - Copyright, IP
  - Inclusion
- Smart Cities

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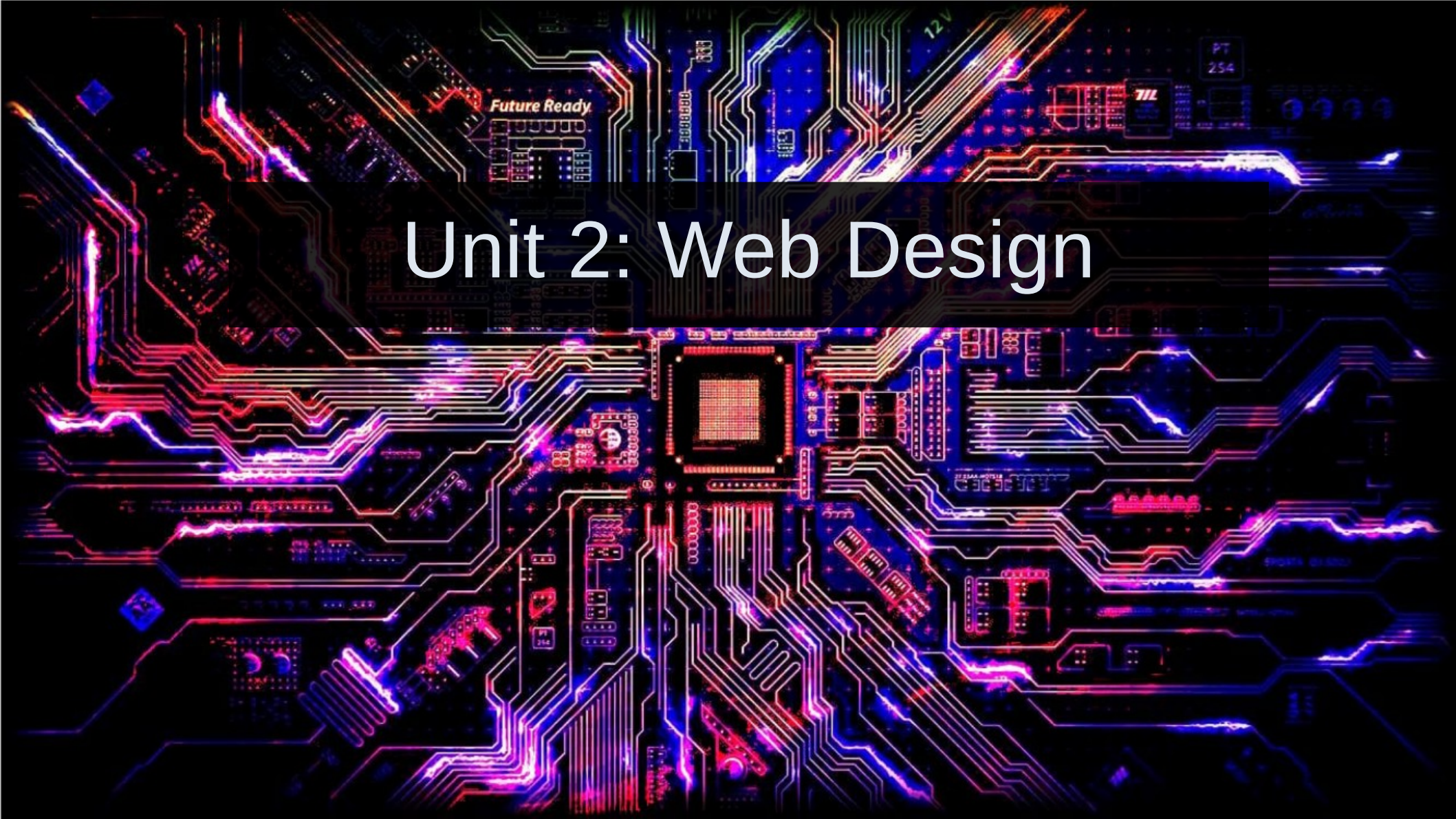


Unit 2: Web Design

HTML CSS JavaScript

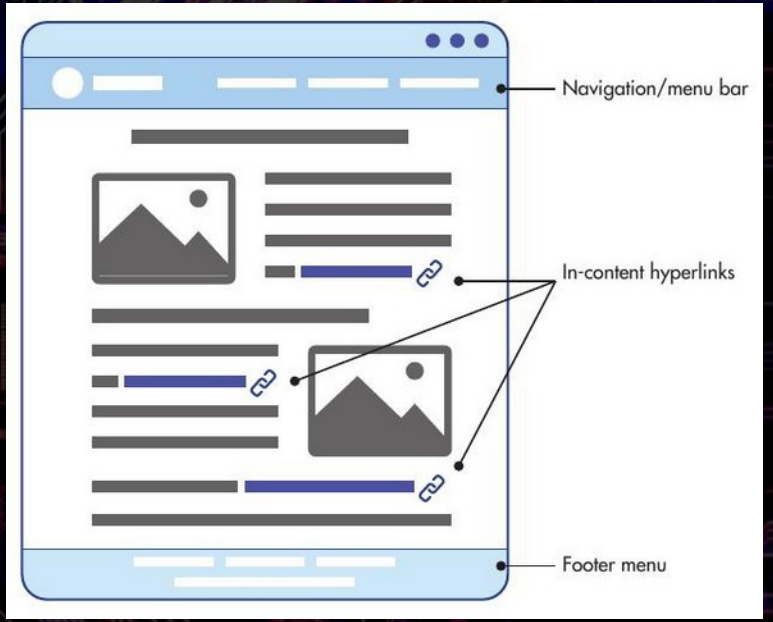
- HTML – Structure
- CSS – Presentation
- JavaScript – Function

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-
    <title>Document</title>
</head>
<body>
    <h1>Basic Server</h1>
    <button id="modalButton">Modal</button>
    <script type="module" src="index.mjs" defer>
</body>
</html>
```

```css
body {
    margin: 0;
    background-image: url("http://localhost:3033/b
    background-size: cover;
    background-repeat: no-repeat;
    background-position: center;
}
/* Set up the grid container */
#page-content {
    height: 100vh; /* Ensure the grid takes up the full viewport height */
```

Designing Web Pages

- Stages
  - Wireframe
  - Mock-up
  - Prototype
- Considerations
  - Visual hierarchy, Flow, Color palate, Accessibility, Functionality



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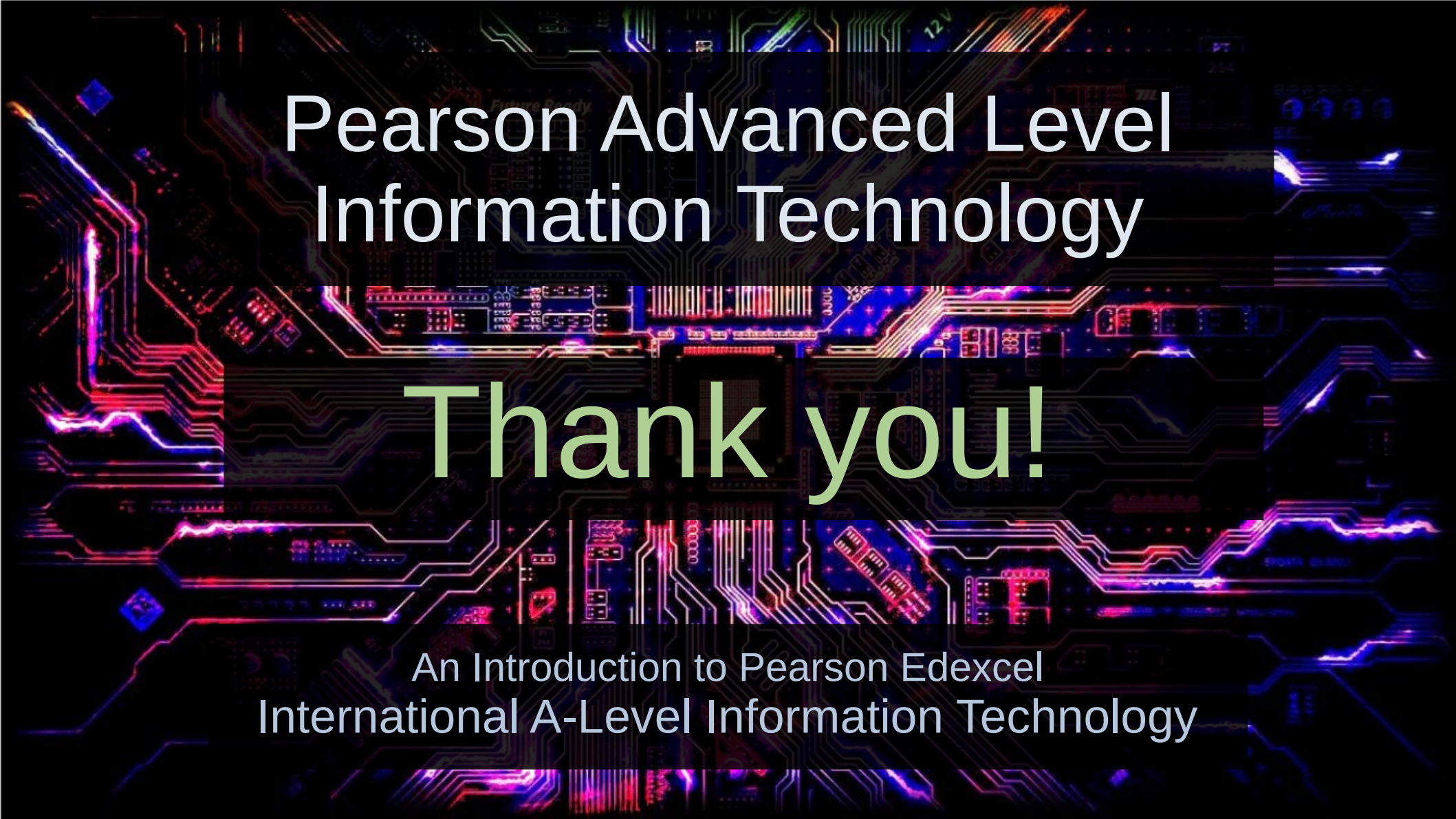
Outline

- Ice Breakers
- What you will learn
- Course expectations

Course Expectations

- Grade
  - Class readings and discussions (participation)
  - Worksheets and Quizzes
  - Presentations (research and teach)
  - Projects (coding)


Pearson Advanced Level
Information Technology
Thank you!
An Introduction to Pearson Edexcel
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Exam Information (coming soon)