



ada
computer
science

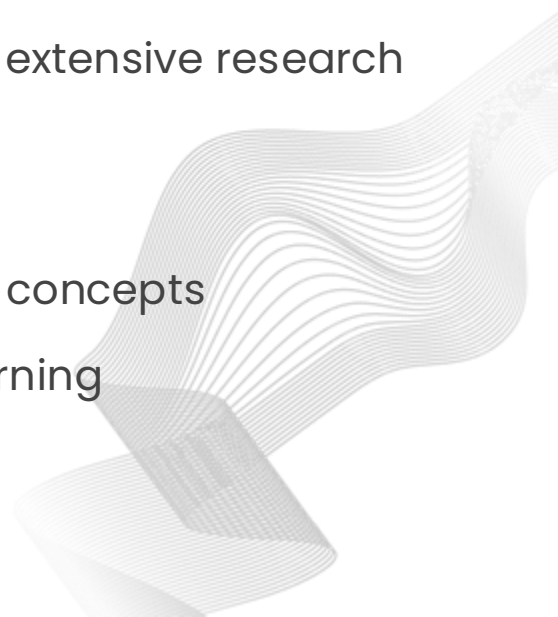
Ada Computer Science

Overview of the Ada CS platform
Summer 2024



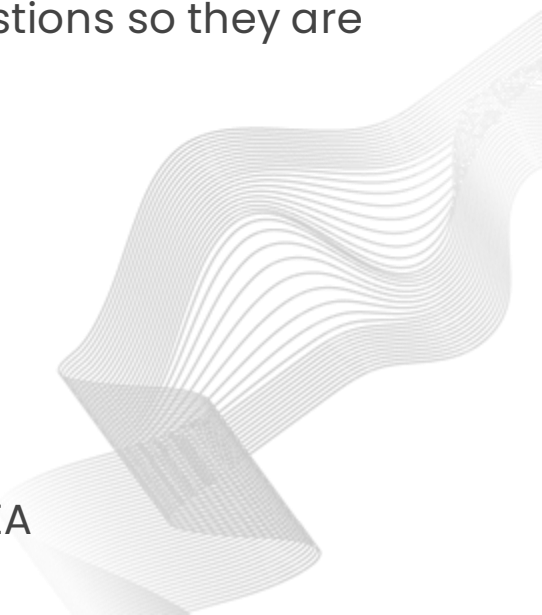
What is Ada Computer Science?

- Free online platform built and maintained by the Raspberry Pi Foundation and the University of Cambridge
- Designed for **teachers** and **learners** (aged 14+)
- Written by computer science subject experts; based on extensive research and evidence about pedagogy
- Integrates:
 - comprehensive instructional materials introducing concepts
 - self-marking questions to reinforce and assess learning
 - automated high-quality formative feedback



How is Ada different from Isaac CS?

- The teams at the Raspberry Pi Foundation and the University of Cambridge are no longer involved in Isaac CS
- Since we launched **Ada Computer Science** we have:
 - Written over 125 new questions and re-titled all questions so they are easier to find
 - Added exemplar code in Java and Visual Basic (VB)
 - Reviewed and updated several topics
 - Improved the UI for teacher features
 - Introduced an embedded SQL editor
 - Published a new AI and Machine Learning topic
 - Published a database project to support with the NEA



Ada Computer Science statistics (June 2024)

- 19,000+ registered users
- 2,000+ teachers
- 810,000+ question attempts
- 1,085 self-marking questions
- 376 real code examples



13 strands of learning

AI and machine learning

Algorithms and data structures

Computing systems

Creating media

Data and information

Design and development

Effective use of tools

Impact of technology

Models of computation

Networks

Programming

Safety and security

Software projects



Customised views for learners

Show me content for... (Optional) ⓘ

All stages



All Exam Boards



Add more content

Preferred programming language (Optional)

Python



Preferred logic notation (Optional)

And (\wedge) Or (\vee) Not (\neg)



All content can be filtered and organised by the user.



Concept pages

A **logic circuit** is a set of two or more logic gates that are connected to implement more complex logic.

A digital electronic circuit in a computer system is typically made up of millions of logic gates. Each circuit is designed to carry out a specific function, such as adding binary numbers.

Circuits within computer systems can be highly complex so we will illustrate the principles involved by considering simpler circuits made up of a few logic gates.

GCSE, A Level

A simple logic circuit



GCSE, A Level

The circuit's truth table



GCSE, A Level

The circuit's Boolean expression



Program code

Pseudocode **Python** C# VB Java

In Python, using the **range** function with three arguments allows you to define the **starting value**, the **stopping value**, and the **step value**.

Remember that the **stopping value** of the **range** function is **exclusive**. This means that the final value of **i** will be up to but **NOT** including the stopping value of 31.

```
1 | for i in range(3, 31, 3):  
2 |     print(i)
```

[View on GitHub](#)

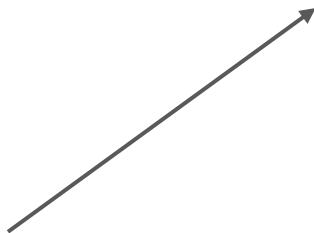
Hundreds of downloadable, executable code examples, in multiple programming languages.



Self-marking questions

More than 1000 self-marking questions.
Eleven question types. Designed to help
learners self-assess and reinforce learning.

Quick Question
Multiple Choice Question
Numeric Question
String Match Question
Regex Match Question
Free Text Question
Logic Question
Item Question
Reorder Question
Parsons Question
Cloze (Drag and Drop) Question



Put the following Big O complexities into the order of increasing complexity:

Available items

$O(n!)$

$O(n^2)$

$O(1)$

$O(\log n)$

$O(2^n)$

$O(n \log n)$

$O(n)$

Your answer

Drag items across to build your answer

Don't forget to use the hints if you need help.

[Hint 1](#)

[Hint 2](#)

Check my answer

Coming soon! LLM marking for free text questions

Arithmetic logic unit (ALU) operations

✦ LLM marked question



Free text questions are marked by a large language model (LLM)

In our 2024 study, we found that the LLM marks agreed with the marks computer science teachers gave 66% of the time. This means that the marks you receive will not always be accurate. For more information, read our [FAQs](#).

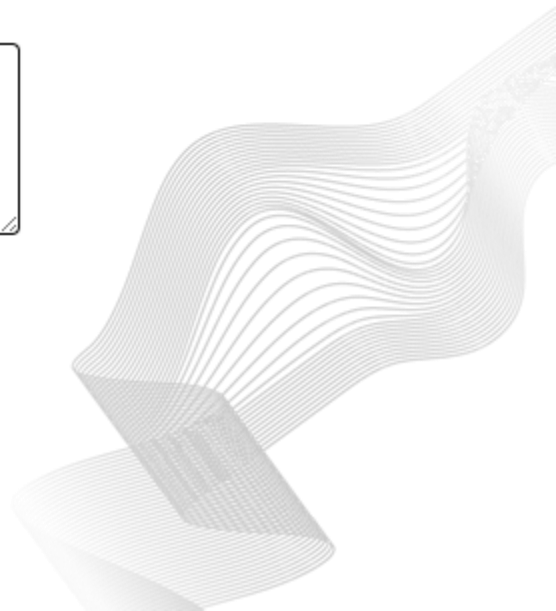
We only send your answer to OpenAI, we do not send any personal data; you can withdraw your consent at any time in your [account settings](#).

17 attempts remaining today ⓘ

The Arithmetic Logic Unit (ALU) is a crucial component within a computer's processor. The ALU can carry out several different types of operation.

State one specific operation of the ALU and provide an example of how that operation is used.

Performing addition such as $5+5$

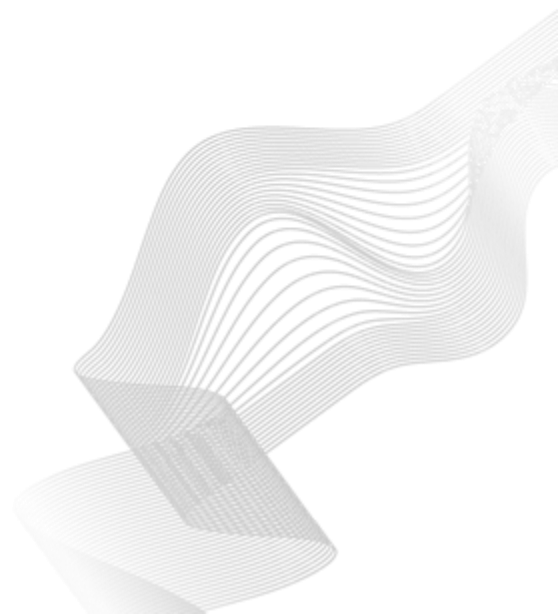


Do you agree with the LLM's predicted marks?

1 in 3 times the predicted mark will be wrong. Find out more in our [FAQs](#)

✦ Prediction: 2 out of 2 marks

Mark scheme	
Operation: Arithmetic, addition, multiplication, division	✓
Operation: Logic, logical	
Operation: Comparison	
Operation: Shift	
Operation: Bitwise	
Example: Use of the term addition, subtraction, multiplication, or division, or an example like 2+2	✓
Example: A logic example like AND, OR, NOT, or an applied example of one of these term such as NOT True	
Example: Comparing values, equal, not equal, greater than or less than, or an applied example such as 5>1	
Example: Performing a left or right shift, or an applied example such as left shift 1011	
Example: Using bitwise to manipulate individual bits of binary data	



Before submitting another response, please say whether you agree with the predicted mark.

☐ Disagree

☐ Partly agree

☐ Agree

Send feedback

