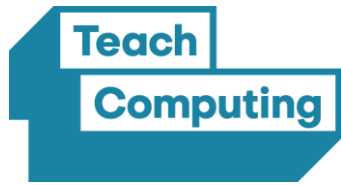


KS3 Computing for non-specialist teachers

Welcome to the session, we will be starting at **4pm**.

- Please use the Q&A to communicate in this session. If you cannot hear the facilitator, please let us know in the Q&A panel.
 - Please keep your microphone muted at all times.
- Please do not share any personal data or confidential information in this session.



MAYOR OF LONDON



Funded by

Department
for Education

National Centre for Computing Education

KS3 Computing for non-specialist teachers



Shorifa Khanam
Subject Matter Expert
NCCE & Stem Learning UK
s.khanam@stem.org.uk

Key stage 3 computing for the non specialist teacher

CP445 Face to face course

For Key Stage 3 computing teachers who are new or existing to the subject. This CPD covers the key subject knowledge topics required to teach the computing Key Stage 3 programme of study.

Key stage 3

Face to face course

6 days

View dates & locations

Overview

Computing is a national curriculum foundation subject and a vital aspect of a broad and balanced curriculum for all learners. If you're new, moving towards or an existing teacher of Key Stage 3 computing then this course will allow you to explore the subject knowledge required to confidently teach the Key Stage 3 programme of study.

The sessions within this course are designed to give you the subject knowledge around key topics such as algorithms, data representation, hardware and programming, whilst also exploring useful and engaging strategies for delivering this content in the classroom.

Book this course

You need to be logged in to start the course.

Book this course

Not got a STEM Learning account?
[Create an account](#)

<https://teachcomputing.org/courses/CP445/key-stage-3-computing-for-the-non-specialist-teacher>

This session will cover

- The three strands of the Key Stage 3 programme of study
- What binary is and how computers use it
- What an algorithm is and how to define it
- Teaching programming using sequencing, selection and iteration
- The wealth of resources, support and fully funded CPD available from the [National Centre for Computing Education \(NCCE\)](#)

Computing curriculum

Three broad strands:



Significant overlap between strands

Don't need to be taught in isolation

https://www.computingschool.org.uk/data/uploads/secondary_national_curriculum_-_computing.pdf

Computing curriculum

*“The core of computing is **computer science**, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use **information technology** to create programs, systems and a range of content. Computing also ensures that pupils become **digitally literate** – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.”*



[QuickStart Computing](#)

Programming

create and debug
simple programs

Predict behaviour

design, write and debug
programs

Control or simulate

Sequence

Selection

Repetition

Variables

Inputs/Outputs

Two programming
languages
(block and textual)

Data structures (lists,
tables, or arrays)

Procedures or functions

Algorithms

Understand what an algorithm is

How they are used

Precise and unambiguous instructions

Explain how simple algorithms work

Detect and correct errors in algorithms and programs

Searching and sorting algorithms

Alternative algorithms

Computational abstractions - real world problems and physical systems

Networks

Internet

Provide multiple services - WWW, communication and collaboration

Search technologies -
How results are selected and ranked

Hardware and software in computer systems

How they communicate with one another and within systems

Data Representation

Boolean - AND, OR, NOT

Binary use

Binary addition and conversions

Images, Text, Sound as binary

Instructions stored and executes within computer system

Information Technology

Key Stage 1

Key Stage 2

Key Stage 3

Use technology purposefully

Create, organise, store, manipulate and retrieve digital content

Common uses of technology beyond school

Evaluate digital content
Select, use and combine software

Design and create programs, systems and content

Collect, analyse, evaluate and present data and information

select, use and combine multiple applications

Collecting and analysing data

User needs and target audience

Create, re-use, revise and re-purpose digital artefacts

trustworthiness, design and usability

Digital Literacy

Key Stage 1

Key Stage 2

Key Stage 3

Use technology safely
and respectfully

Keep personal
information private

Where to go for help
and support

Content and contact
online

Use technology safely
and respectfully and
responsibly

Recognise acceptable
and unacceptable
behaviour

Range of ways to report
concern

Content and contact
online

Range of ways to use
technology safely,
respectfully, responsibly
and securely

Protect own online
identity and privacy

inappropriate content,
contact and conduct

Know how to report
concerns

Digital Literacy

Key Stage 1

Key Stage 2

Key Stage 3

Start here >

Education for a Connected World

A framework to equip children and young people for digital life



UKCS
UK COUNCIL FOR CHILD INTERNET SAFETY

PROJECT EVOLVE BETA

About News Toolkit Writing Team How to... Release Notes

ProjectEVOLVE

Shaping a better online life for all

Access Toolkit

Range of ways to use technology safely, respectfully, responsibly and securely

Protect own online identity and privacy

inappropriate content, contact and conduct

Know how to report concerns

17/06/20 | Shorifa Khanam

National Centre for Computing Education

MAYOR OF LONDON

National
Centre for
Computing
Education



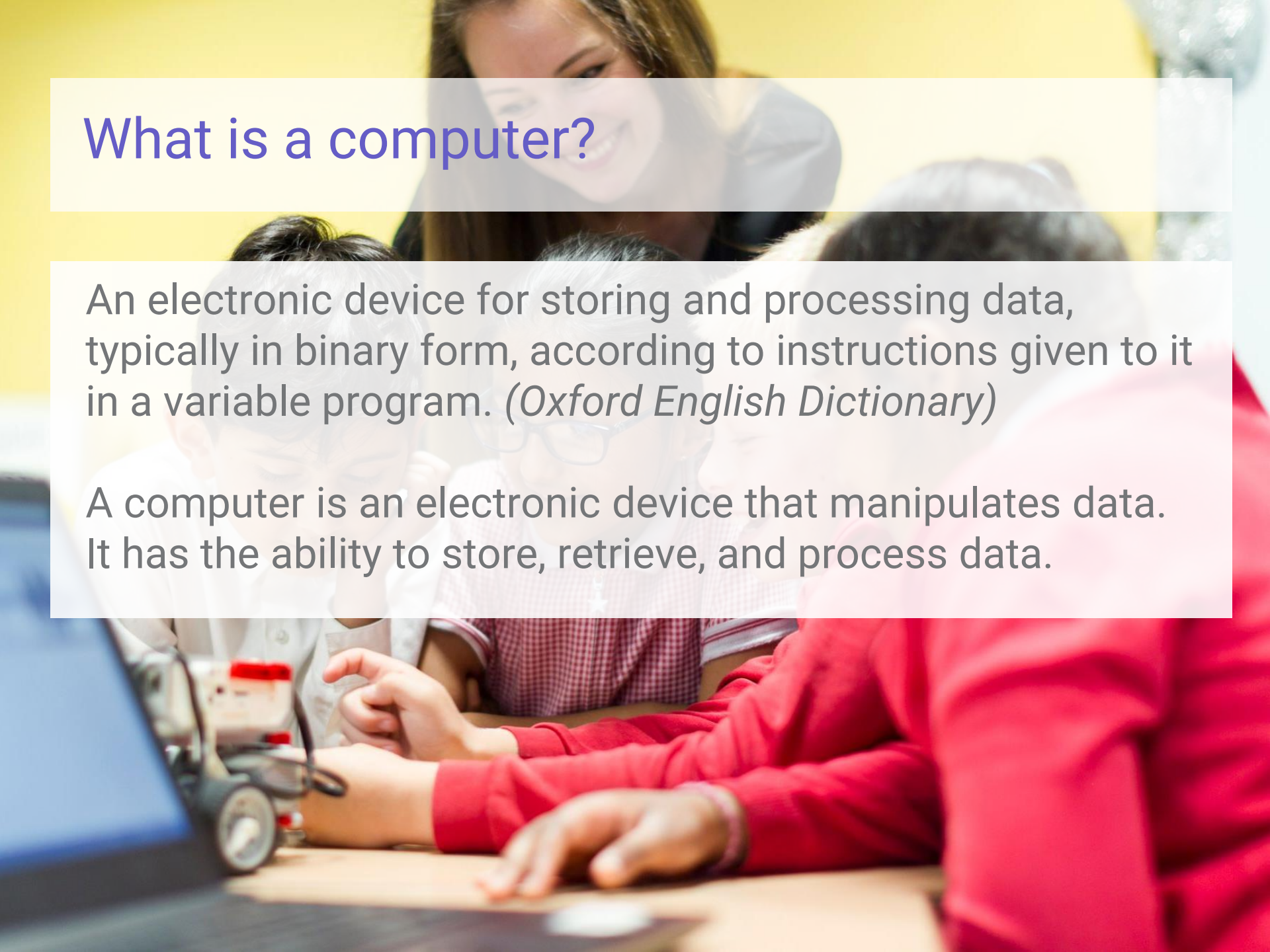
What is a computer?

Use the Q&A feature to add a definition

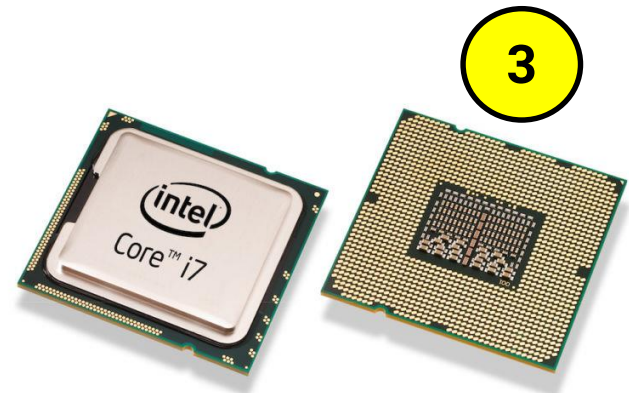
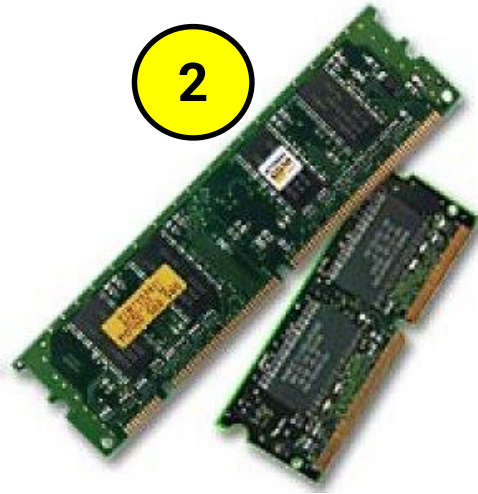
What is a computer?

An electronic device for storing and processing data, typically in binary form, according to instructions given to it in a variable program. (*Oxford English Dictionary*)






A computer is an electronic device that manipulates data. It has the ability to store, retrieve, and process data.

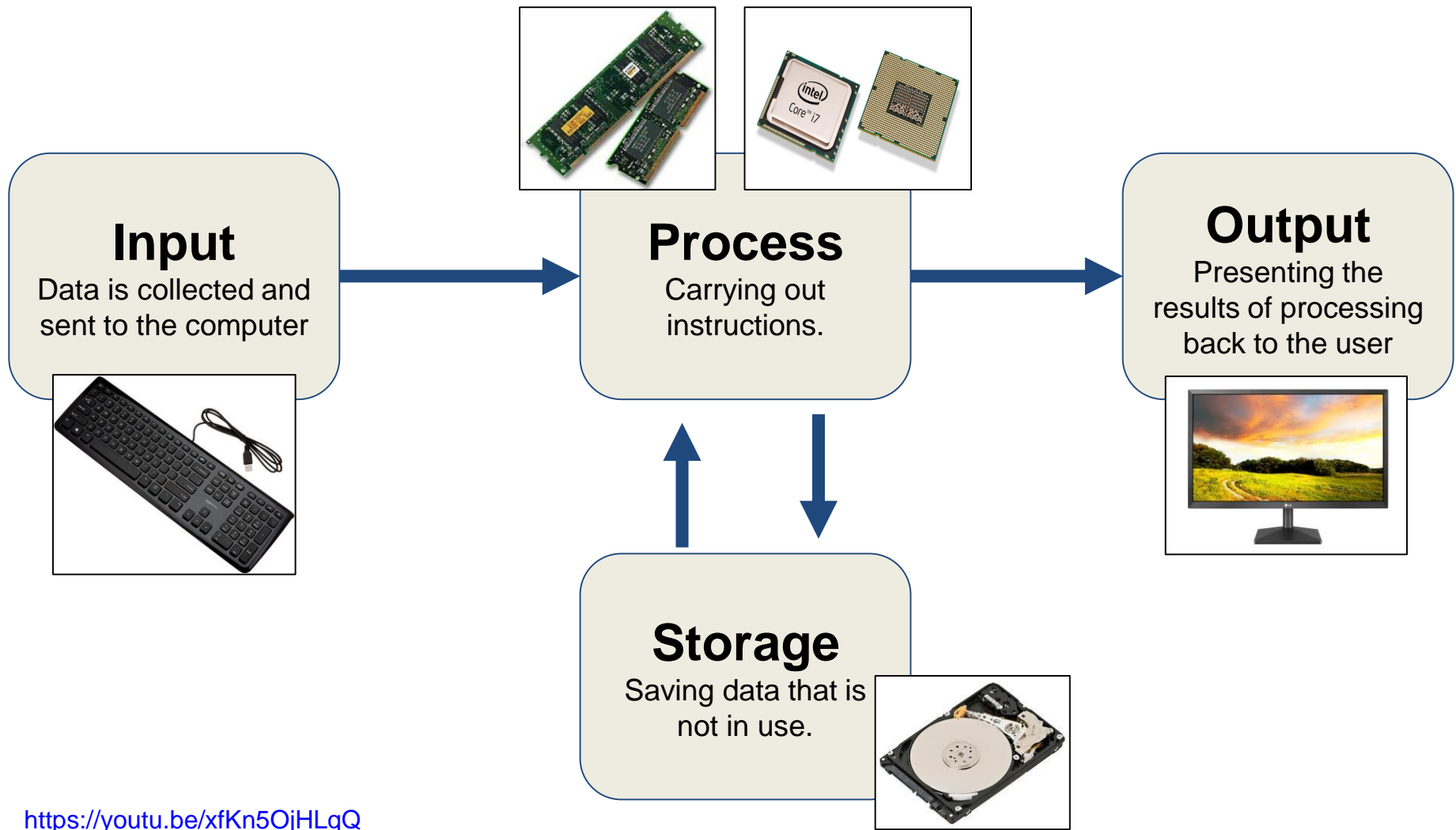


Hardware Components



Hardware Components

1		Hard drive: Stores files, programs and other data when they are not being used by the computer.
2		RAM (Random Access Memory): Holds instructions for files and programs currently open on the computer whilst they wait to be fetched by the CPU.
3		CPU (Central Processing Unit): Fetches instructions from memory and executes them one at a time.
4		Keyboard: Collects data about button presses and sends it to the computer.
5		Monitor: Receives data from the computer and converts it into images on screen.



<https://youtu.be/xfKn5OjHLqQ>

What's this got to do with data?

Binary



Bicycle – two wheels



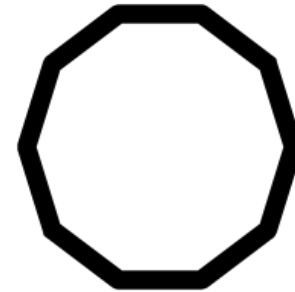
Biped – two legs

What's this got to do with data?

Decimal

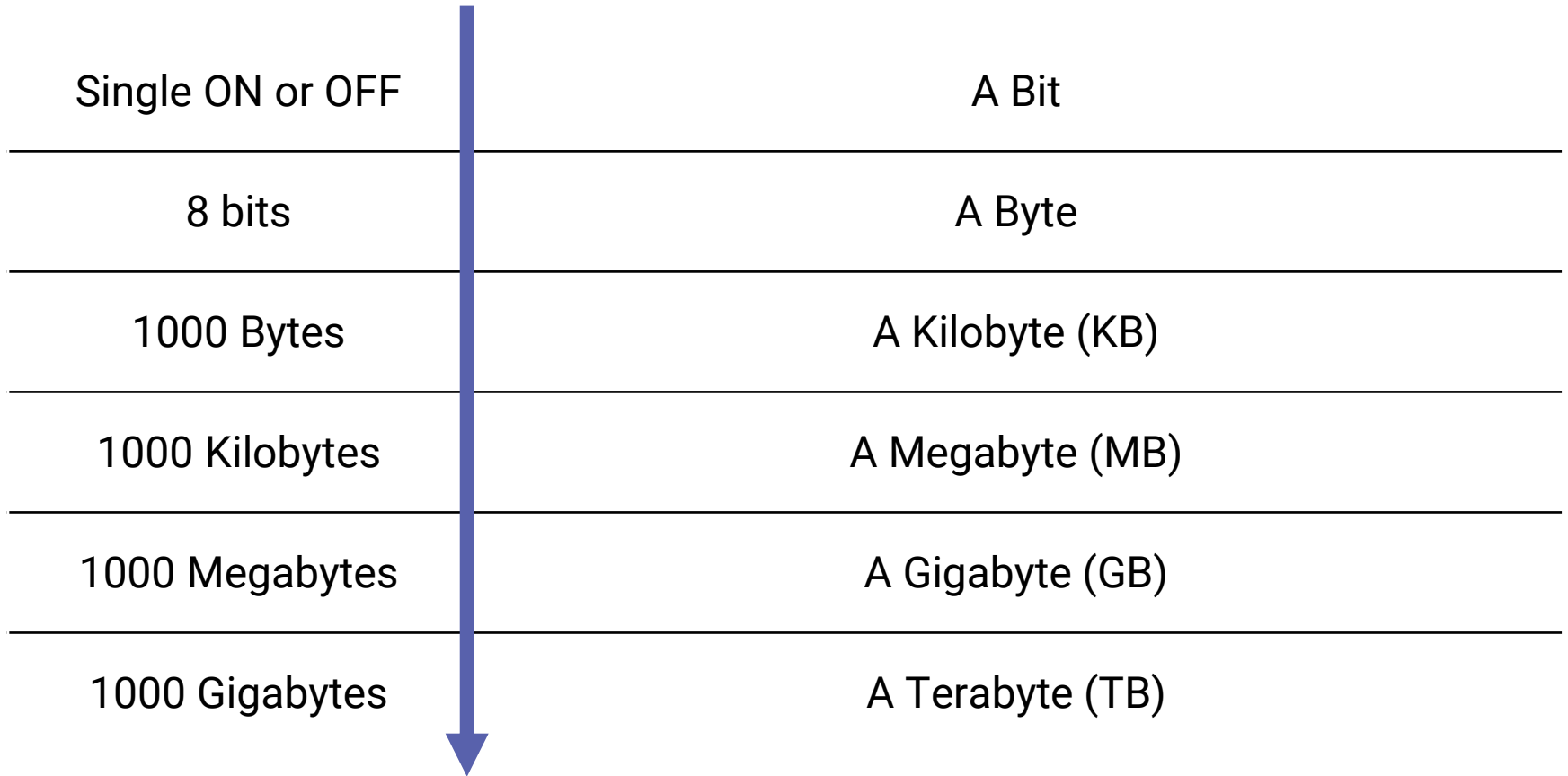


Decade – ten years



Decagon – ten sides

Binary Units – The Building Blocks of Data



Binary Units – Making It Meaningful

- 1 Bit = a single pixel in a black & white image
- 1 Byte = A single character (a, M, ?, * etc)
- 1 Kilobyte = Half a small email.
- 1 Megabyte = 1 minute of an mp3 file
- 1 Gigabyte = 300 mp3 songs
- 1 Terabyte = Four full 4K movies.

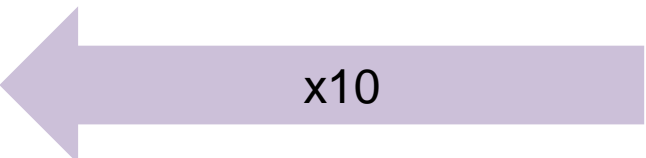
Binary – Base 2

A single bit can only be one of **two states**.

0

1

Back To Primary School - Representing Decimal

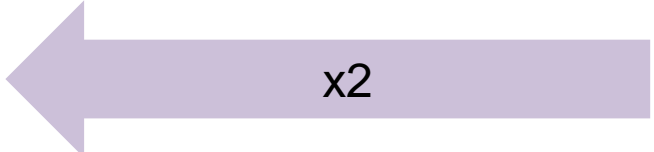


1000	100	10	1
0	1	5	4

- this is also known as base 10.
- simply add the numbers from each column

$$1(H) + 5(T) + 4(U) = 154$$

Binary to Decimal/Denary



128	64	32	16	8	4	2	1
0	1	1	0	0	1	1	1

- this is also known as base 2.
- to convert binary to decimal simply add the header value from each column with a 1 underneath.

$$64 + 32 + 4 + 2 + 1 = 103$$

Binary to Decimal/Denary

00001011

128	64	32	16	8	4	2	1
0	0	0	0	1	0	1	1

$$8+2+1 = 11$$

Binary to Decimal/Denary

01010110

128	64	32	16	8	4	2	1
0	1	0	1	0	1	1	0

$$64 + 16 + 4 + 2 = 86$$

Binary – Suggested teaching activity

Group students into bytes (groups of 8)

Print off the column headers and put on chairs

Display a decimal number

- students stand up/sit down,
- switch torches on/off
- write 1/0 on mini whiteboards etc to create the correct bit pattern.

Resources - [CS Unplugged](#)

Denary to Binary



84



Source: www.bbc.co.uk/bitesize

NCCE course: more on Data representation

Find a course:

Key stage 3 computing for the non specialist teacher CP445

For Key Stage 3 computing teachers who are new or existing to the subject. This CPD covers the key subject knowledge topics required to teach the computing Key Stage 3 programme of study.

[^ View dates & locations](#)

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Representing Numbers – Key Vocab

Binary – a base 2 system of representing information

Decimal/Denary – a base 10 system of representing information

Bit pattern – a sequence of binary bits used to represent information.

A group of students in a computer lab. A woman with glasses is leaning over a desk, looking at a computer screen. A student in a white shirt and tie is sitting at the desk, using a mouse. Another student is visible in the foreground, and a blonde student is on the right. The background shows other students and computer monitors.

What is an Algorithm?

Use the Q&A feature to add a definition

Algorithm – Al – go – rith - um

- step by step instructions to solve a given problem.
- an algorithm is a set of instructions designed to perform a specific task.
- an algorithm is a set of instructions that describes how to get something done.

Misconception Time

"An algorithm is a sequence of instructions for a computer"

Algorithm \neq Computer Program

KS3 Computing National Curriculum

Pupils should be taught to.....:

"Understand several key **algorithms** that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem"

A Computer Program

Algorithms that are converted into code to become computer programs.

Algorithm = OUTPUT "Hello World"

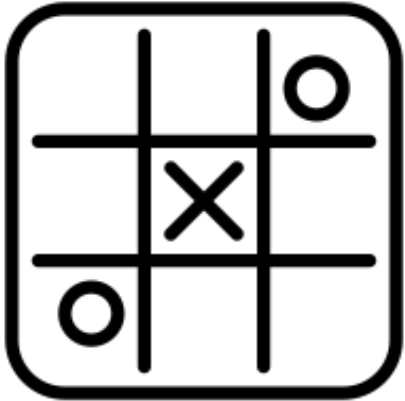
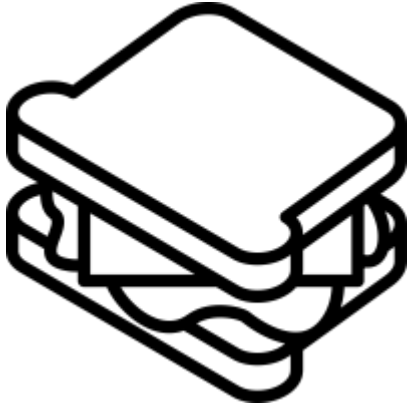
Scratch



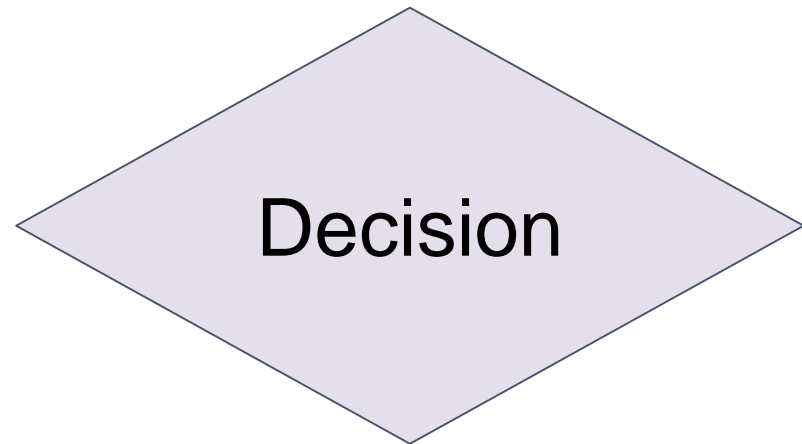
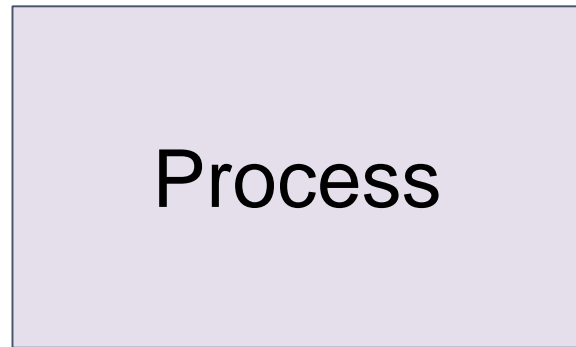
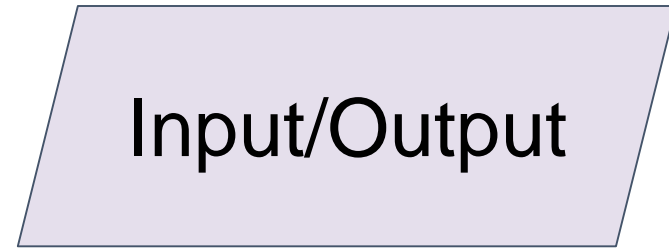
Python

```
print("Hello, World!")
```

Real World Situations

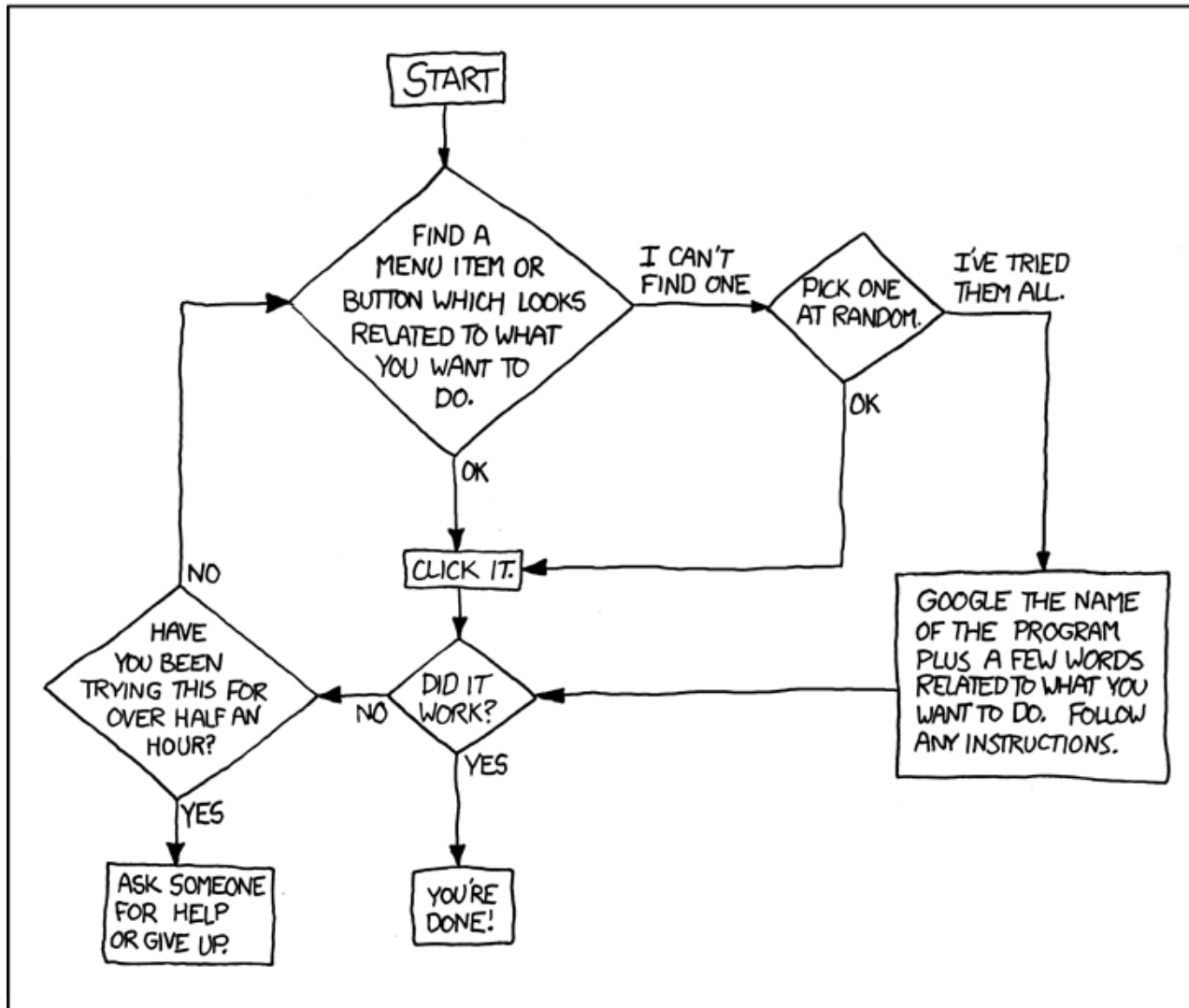


Representing Algorithms - Flowcharts



DEAR VARIOUS PARENTS, GRANDPARENTS, CO-WORKERS,
AND OTHER "NOT COMPUTER PEOPLE."

WE DON'T MAGICALLY KNOW HOW TO DO EVERYTHING IN EVERY
PROGRAM. WHEN WE HELP YOU, WE'RE USUALLY JUST DOING THIS:



PLEASE PRINT THIS FLOWCHART OUT AND TAPE IT NEAR YOUR SCREEN.
CONGRATULATIONS; YOU'RE NOW THE LOCAL COMPUTER EXPERT!

Teaching Algorithms - Task ideas

- give students the completed algorithm - they predict the output.
- algorithms in the wrong order (good with maze/moving around type activities).
- algorithms with missing steps.
- algorithms with abstracted steps - student have to produce more detailed instructions.
- broken algorithms - students have to test and correct.
- similar but different - students use existing algorithms to help create new ones for similar tasks.

Algorithms and Computers – Common Tasks

Searching for an item in a list.

Sorting a list into order.

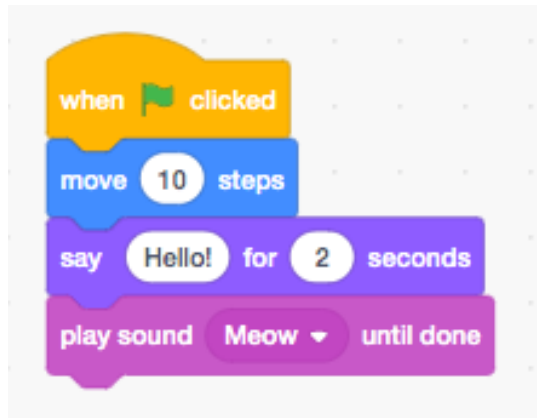
KS3 Computing National Curriculum

Pupils should be taught to.....:

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output

Block based programming

- instructions are represented as blocks
- blocks connect together like a jigsaw
- Scratch is commonly used in KS2 and KS3



Text based programming

- instructions are entered as text in to the computer
- **Python** is a programming language commonly used in KS3

```
#Display Menu
print("Welcome to the Maths Quiz")
print("""Please select the quiz type:
1. Easy Addition
2. Medium Addition
3. Hard Addition""")
```

Selection

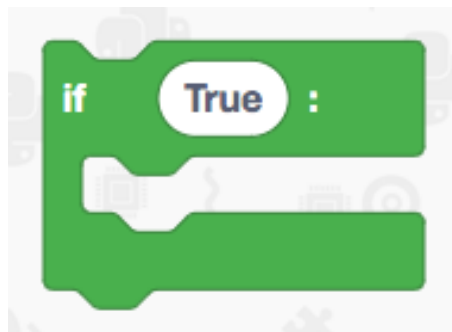
Key concept - Selection

- selection is used when a decision needs to be made
- we use selection everyday to make decisions. For example:
 - do you want milk in your tea?
 - is it raining?
 - do you need an umbrella?
 - is it safe to cross the road?



Key concept - Selection

- selection is also used when a decision needs to be made within a program
- we typically use the if command to specify different pathways through the code



- the code will only execute if a condition is met (i.e. if something is True)

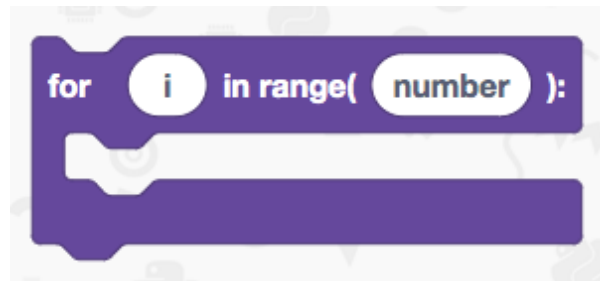
Iteration

Key concept - Iteration

- iteration is used within computer programs to repeat a set of instructions
- iteration is also referred to as repetition
- two methods of iteration:
 - count controlled
 - condition controlled

Key concept - Count controlled iteration

- count controlled iteration allows us to repeat a set of instructions a specific number of times
- we typically use the for command for count controlled iteration



- count controlled iteration is used when you know before repeating a set of instructions how many times you want them to be repeated

Key concept - condition controlled iteration

- **condition controlled iteration** allows us to control whether instructions are repeated using **Boolean expressions**
- we typically use the **while** command for condition controlled **iteration**



- the code will be repeated as long as the **Boolean expression is True**

Platforms

- [Edublocks](#)
- [Trinket](#)
- [Repl.it](#)
- [Makecode](#)
- [Code for Life](#)
- [Code club](#)
- [Raspberry Pi](#)
- [Python in pieces](#) – 60 day free trial at present
- [code.org](#) – lessons and hour of code

SUPPORT NETWORKS

What support is available to you as you move forward in your teaching / leading of computing?

KS3 Computing for non-specialist teacher

Find a course:

Key stage 3 computing for the non specialist teacher CP445

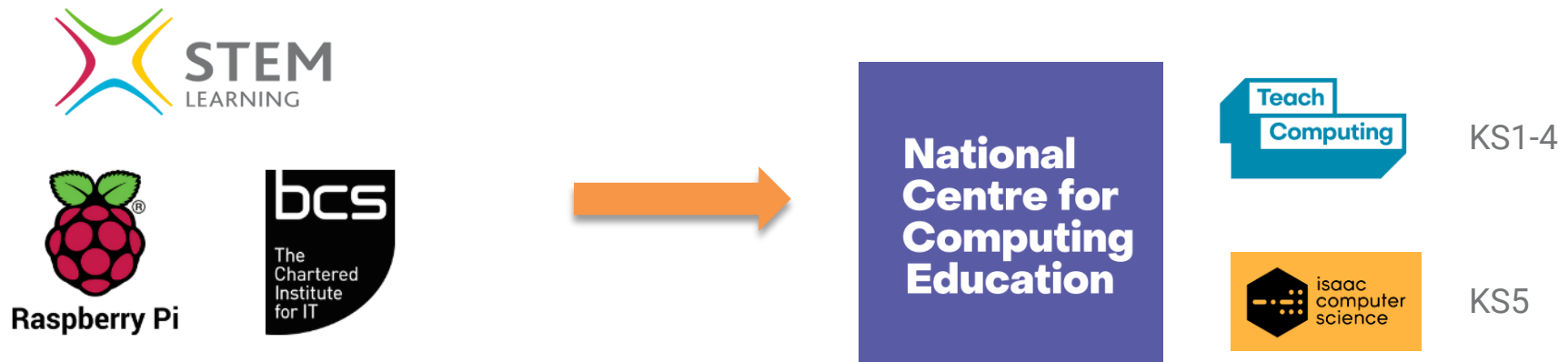
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<https://teachcomputing.org/courses/CP445/key-stage-3-computing-for-the-non-specialist-teacher>

What is the NCCE?



Drawing on their strengths, each organisation in the consortium is leading on different aspects of the NCCE

“Our vision is for **every child in every school** in England to have a world-leading computing education”

Our Vision

Secondary TeachComputing Courses

Includes:

- **Key Stage 3 computing for the non-specialist teacher**

Upcoming:

- **New to secondary computing subject leadership**
- **Bridging the Gender Gap**

Secondary teachers – Key stages 3 and 4

For Key Stage 3 and 4 pedagogy, we offer free online courses to all teachers and free remote courses for teachers working in state-funded education.

Course fees for remote CPD:

State-funded schools	Free
Independent schools	£220 per day

Teachers who have completed the Computer Science Accelerator Programme are eligible to attend all our CPD for free. Details will be sent on successful completion of the programme.

Computer Science Accelerator Programme

- Highly personalised, modular programme, to improve GCSE **subject knowledge**
- **Diagnostic test** to help identify gaps in knowledge
- Live remote CSA course + 1 other course = 10 hours
- Short summative **assessment**
- Gain **certification** in GCSE **Subject Knowledge**
- Schools and colleges receive **bursary** per teacher **£920**

Secondary teachers – GCSE level

[The Computer Science Accelerator Programme](#) offers free online courses to all teachers and free remote courses for teachers in state-funded education.

Secondary teachers working in state-funded education are eligible for a bursary of £920, paid to your school or college, as shown in the table below.

Bursary allocation	Your school will receive:
Complete the programme and pass final test	£620
Additional funding for classroom practice	£300
Total bursary	£920

Computer Science Accelerator Programme Courses

Title
Introduction to computer systems, networking and security in GCSE computer science
Introduction to algorithms, programming and data in GCSE computer science
Representing algorithms using flowcharts and pseudocode
Computer Processors
Fundamentals of Computer Networks
The Internet and Cyber Security
Python programming: Working with data
Python programming constructs: sequencing, selection & iteration

<https://teachcomputing.org/courses>

Computer Science Accelerator Programme

Learning pathways for teachers

Learning pathways for teachers

Our learning pathways will help you to get started and offer a structured route through the programme based on your level of experience.

 [Advanced GCSE computer science](#) PDF

 [New to GCSE computer science](#) PDF

 [New to algorithms & programming](#) PDF

 [Computing non-specialist](#) PDF

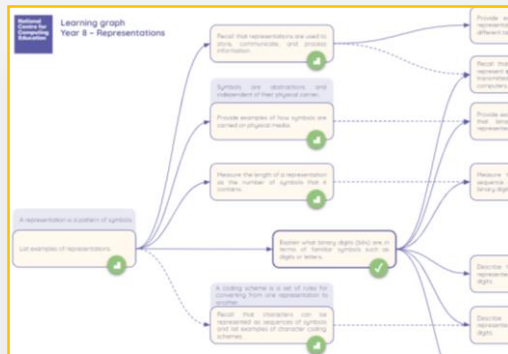
 [New to computer systems](#) PDF

[Browse our courses](#)

<https://teachcomputing.org/cs-accelerator>

Resource Repository

teachcomputing.org/resources



Subject Knowledge Assessments

<https://www.eedi.co.uk/projects/teach-computing>

Assessments that help you raise attainment

The National Centre for Computing Education (NCEE) offers face-to-face and online training, subject knowledge support and free teaching resources to computing teachers across the UK.

Funded by the Department for Education, we equip you with the skills you need to give students a successful and well-rounded computing education.

Our free online subject knowledge assessments allow you to evaluate your students' knowledge, so you can use this information to guide your teaching for the rest of the year.

Access the tests now

Teach Computing
Subject knowledge assessments.

Mobile App | About us | Support | Log in | Sign up

Certification

teachcomputing.org/primary-certificate

- Register & plan**
Enrol and discover courses suited to you
- Participate**
Complete a tailored programme of CPD, both online and local to you
- Engage**
Engage with other teachers and with local Communities of Practice
- Complete**
Complete your learning programme and receive your Certificate in Primary Computing
- Reflect**
Embed new ideas in the classroom and see increased impact

Online Courses

<https://teachcomputing.org/courses>

Raspberry Pi Foundation

Impact of Technology: How To Lead Classroom Discussions

Learn how to keep 14-16 year-old students engaged in discussions while teaching computer science. Supported by Google.

3 weeks | 2 hours per week

Accept and join course

Resource Repository

World-class lesson plans, unit guides and teacher guides to help you **teach computing**.

- A comprehensive collection of material to support 500 hours of teaching materials, facilitating the delivery of the computing curriculum Key Stages 1 to 4 (5-16 year-olds).
- All resource repository content is free, and editable (Open Government License (OGL)) ensuring the resources can be tailored to each individual teacher and school setting.
- Suitable for all students regardless of their ability, background and additional needs.
- All content launched by July 2020.

teachcomputing.org/resources

Resource Repository

World-class lesson plans, unit guides and teacher guides to help you **teach computing**.

Each unit includes:

- **Lesson Plans** -- 6 per unit (approx.): Step-by-step plans, outlining the delivery of a single one hour lesson to students of varied abilities.
- **Slides** -- one per lesson, for use by the classroom teacher.
- **Homework** -- 2 (approx.) per unit: Follow up work to be done either to extend or assess students' learning
- **Individual Activities** -- multiple per lesson plan
- **Progression mapping** -- a visual representation of the stages encountered by learners within a particular topic and the structure of these stages, i.e. the relations between them.
- **Assessment** -- A multiple choice end of unit summative quiz, and formative assessment throughout.
- **Pedagogy** -- Based on most up to date research in delivering good computing lessons.

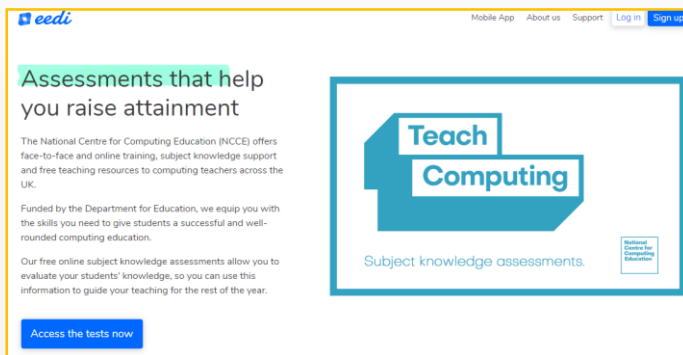
teachcomputing.org/resources

Subject Knowledge Assessments

Comprehensive assessment suite for KS3 Computing and GCSE computer science.

The quality-assured short online tests, collectively known as NCCE Subject Knowledge Assessments, cover the breadth and depth of the curriculum, and will allow teachers to accurately assess the subject knowledge of their students, using the popular Eedi platform.

- Algorithms
- Data & Information
- Design & Development
- Programming
- Computer Systems
- Computer Networks
- Creating Media
- Effective Use of Tools
- Safety & Security
- Impact of Technology



The screenshot shows the Eedi website interface. At the top left is the Eedi logo. To the right are navigation links: 'Mobile App', 'About us', 'Support', 'Log in', and 'Sign up'. The main content area features a heading 'Assessments that help you raise attainment' in a green box. Below this is a paragraph: 'The National Centre for Computing Education (NCCE) offers face-to-face and online training, subject knowledge support and free teaching resources to computing teachers across the UK.' Another paragraph follows: 'Funded by the Department for Education, we equip you with the skills you need to give students a successful and well-rounded computing education.' A third paragraph states: 'Our free online subject knowledge assessments allow you to evaluate your students' knowledge, so you can use this information to guide your teaching for the rest of the year.' A blue button labeled 'Access the tests now' is positioned at the bottom left. On the right side of the page, there is a large graphic with the text 'Teach Computing' and 'Subject knowledge assessments.' below it, along with the NCCE logo.

<https://www.eedi.co.uk/projects/teach-computing>

<https://help.eedi.co.uk/en/articles/3529791-teach-computing-get-started-with-eedi>

Primary **Certification**

Complete

- One F2F course/remote live course
- One online course
- Contribute to online discussion (CAS forum)

Plus 1 of:

- Host or attend Barefoot Workshop
- Attend CAS CoP meeting
- Review a resource on CAS

Plus 1 of:

- Lead a session at a regional/national conference
- Run an after school code club
- Lead a CAS CoP

Primary TeachComputing Courses

- **Teaching and leading key stage 1 computing - Module 1 & Module 2**
- **Teaching and leading key stage 2 computing - Module 1 & Module 2**
- **Introduction to primary computing**
- **Primary Programming and algorithms**

Upcoming:

- **Computing for new subject coordinators**
- **Closing the gap - outstanding primary computing for all**

Primary teachers – Key Stages 1 and 2

We offer free online courses to all teachers and bursary-supported remote courses for primary teachers working in state-funded schools in England. For remote courses, one teacher from each state-funded school is eligible for a bursary in any one academic year.

Funding for remote courses:

Primary teacher in state-funded school	Free
Bursary (one teacher per school)	£220 per course

The fee for teachers working in independent schools is £220 per course.

Your Local Hub(s)

Hubs and Areas covered

- Network of up to 40 Computing Hubs based in secondary school nationwide
- providing local, responsive and appropriately tailored support to all computing teachers in state primary and secondary schools and colleges in their area
- the focal point for local computing CPD, drawing upon local expertise to provide a range of CPD opportunities for all teachers, particularly in category 5 and 6 Local Authority Districts

School Engagement Programme

→ **Subject Matter Experts** engaging with schools and colleges that require support:

- ◆ **'Non-GCSE'** Schools*
£1400/£4000 bursary available*
- ◆ **Priority Schools** (LAD 5 & 6)

*

- *Schools that do not offer GCSE computer Science currently,*
- *including schools who have dropped it recently*
- *Schools who are at risk of dropping GCSE*
- *Recent adopters (criteria to be met)*

<https://teachcomputing.org/bursary#subject>

Priority School Support

→ Heads of Dept. and Teachers

Analyse the needs of the department

Discuss possible support over the coming years

→ Create a department action plans

→ Create teacher CPD plans

→ Support school in the action plan

0.5days

With other schools with similar need

→ SME will support this year, department will have a 3 year plan.

Section 2: Departmental Action Plans
This section is to be started in the first consultation and developed with the school over several reviews.

Professional Development

- Do computing teachers have access to subject specific professional development opportunities? [F2F and Online Courses](#)
- Is CPD planned in line with teachers' and curriculum development needs?
- Do computing teachers draw on expertise from outside the school such as the NCFE and CAS?
- Do you have enough staff to provide the desired level of curriculum time for computing? If not, do you have spare teaching capacity on the timetable in other subject areas?
- Do you want your staff to have a certificate in teaching GCSE Computer Science? [Start the journey with CSA](#)
- Which online courses could your team benefit from? [Online courses](#)

Year	Action.	Set date:	Responsible	Check in date	Review (RAG)
1	All related staff are signed up to the NCFE website.	01/09/19	All		
1	All staff have useful discussion with HOD about their 3 year pathway plan	Sep 19	HOD		
1	HOD to identify which online courses he and his colleagues need to participate in	Sep 19			
1	All online courses sat by dept.	March 20			
1	HOD to attend advanced F2F CSA Accelerator Courses	By March			
1	HOD to agree with SLT if GD (another teacher with slack on timetable) can upskill this year.				

Section 3: Individual Teacher Action Plans: Use teacher's pathway starting point to map a 3 year CPD plan.

Teacher 1 Name	Pathway Starting Point (A-C)	Aims What are intended outcomes of engaging with NCFE?	Impact What will success look like?
Philippa Terry	D	Become an outstanding practitioner, improve pedagogy and contribute to community	Lesson observation data improves, more confident in answering questions, deliver content at CAS CoPs
Year 1 Actions:		Year 2 Actions:	Year 3 Actions:
<ul style="list-style-type: none"> Complete CSA Accelerator Attend CAS CoP Redevelop KS3 Curriculum 		<ul style="list-style-type: none"> Complete GCSE CS – Outstanding Contribute to CAS CoP Redevelop KS4 Curriculum 	<ul style="list-style-type: none"> Attend Gender Balance Course Review Curriculum Online course update / Get involved with FDP
Review 1	RAG Y1 Actions	Amendments after review 1 meeting.	
Other Comments:		Updated Y2 Actions:	Updated Y3 Actions:
		Review 2	RAG Y2 Actions
		Amendments to Y3 after review	

Non GCSE Support

- SMEs work with Senior Leaders and HOD, using a dedicated **Toolkit**
 - **Analyse** the reasons for not offering(barrier) - Discuss possible support to remove barriers
 - **Create** an action plan
 - **Support** school in the action plan
- ◆ 4 - 9 months is suggested time-frame of support on the action plan

Barriers causing non delivery of GCSE					
Barrier	Reason	Y / N	Suggested discussion / Possible support	Other discussion points	Support Agreed.
Recruitment of specialist teachers	We have interviewed - No candidates suitable	Yes	SME SUPPORT * 1 to 1 Mentoring * Bespoke training any other staff with slack on timetable - These staff members will need to be identified (school will receive bursary) NCFE SUPPORT * Liaise with local supply, ITT, Teach-first etc. to source suitable staff and possibly upskill before employment. NCFE SUPPORT * Upskill current ICT/computing or any other staff (school will receive bursary) on accelerator programme	* Explain it doesn't have to be a computing/ICT teacher, as the NCFE is an existing all different teachers (PE, DT, Maths, Science)	Identify 2 members of staff within school, give 1-1 Mentoring Upskill onto CSA
Capacity of existing ICT/Computing Teachers	No one has enough time/skill to dedicate to create suitable KS3-4 SOW	Yes	SME SUPPORT * Support for curriculum planning, including long term plans and schemes of learning. JOB SUPPORT * Support in working with local outstanding practitioners, possible shadowing and sharing ideas. NCFE SUPPORT * Computer Science Champions can mentor staff * Upskill current ICT/computing or any other staff (school will receive bursary) on accelerator programme * Resource Repository and Subject Knowledge Assessments	* Discuss all of the different courses available, Online and Face 2 Face * There are very generous bursaries on top of fresh/one course fees * Discuss resource repository and other offers from NCFE to support capacity.	Curriculum plan including Scheme of learning CS Champions to Mentor staff Build in resource repository and subject knowledge assessments.
Lack of demand from students or fear of poor uptake.		No	No support needed at this time	No comments needed.	

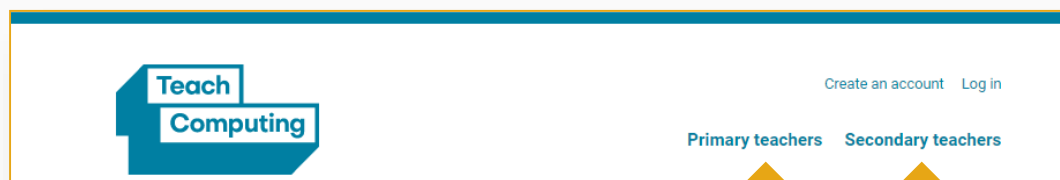
Action Plan								
SME Time to give	Hours	Days	* Time allocation is fine	Expected date to be able to deliver GCSE Computer Science				
	16.5	22		Sep 2020				
<p>Summary of support needed</p> <p>Identify 2 members of staff within school, give 1-1 Mentoring Upskill onto CSA Curriculum plan including Scheme of learning CS Champions to Mentor staff Build in resource repository and subject knowledge assessments.</p> <p>Work with team on how to hit 1-3 and stretch 7-9 targeted pupils</p> <p>Work with identified staff on curriculum with 2.5 days no cost mentoring £1400 Bursary for completion of Action Plan + 2 people on CSA = £5000</p>								
Support	Provider	Success Criteria	Review date	Hours	SME Support	SME time	QA of SME	QA of Education Support team
Identify 2 members of staff	SME	2 named staff identified to deliver GCSE CS	Jan-20	0.5	YES	0.5	Mr Jessop and Miss Hogg completed CSA in April 2020	
Plan KS3 and KS4 curriculum	SME	KS3 and KS 4 curriculum is written and all schemes of work are ready to go	Jun-20	3	YES	3	Worked with school and other schools to develop KS3 and KS4 curriculums in May 2020.	
2 Staff complete the CSA	NCFE Team	2 named staff complete and pass the test of CSA. Certificates as proof	May-20	40	NO		Mr Jessop and Miss Hogg completed CSA in April 2020	
Mentor staff through CSA	CSC	Staff don't struggle through or get left behind	Apr-20	3	NO		Both teachers have started - support was fine	
Scheme of learning created	SME	Schemes of learning for each topic, resource repository and subject knowledge assessments built in as appropriate	Jun-20	10	YES	10	There are schemes of learning for every topic at KS3 and KS4. Digital library built into KS3 to be ment-embedded	Need to see some of schemes of learning, when was this work complete? With which schools?
Support for 1-3 and Stretch 7	SME	Staff complete bespoke support around stretch and challenge of	Jul-20	3	YES	3		
Bursaries	NCFE Team	Action plan complete + 2 people through CSA (start before Feb 20th) = £5000 Bursary to be paid	Jul-20	0	NO		£3600 paid just waiting on £1400 from this action plan	
					NO			
					NO			

What an SME can support you with.

- Supporting teachers who want to **convert/upskill**
- Guiding teachers - relevant **courses, resources** and **communities**.
- Support on **curriculum intent and implementation**
- **Schemes of work** and equivalent.
- Bespoke **subject knowledge** support
- **Infrastructure** and **software** guidance
- **Physical programming** support
- **Multi-school** support
- **Raising profile** of subject
- Raising **engagement of girls**
- Plus ***much more***.

How do I request support?

→ There is a form you can complete from teachcomputing.org website:



Your local computing community

Hubs

Computing Hubs provide local, responsive and tailored support to teachers across England. They are led by schools and colleges with an exceptional track record in teaching computing. [Find your local hub.](#)

Subject Matter Experts

Schools and colleges that are not currently offering GCSE computer science, or those which are based in [Local Authority Districts 5 and 6](#), are eligible for fully-funded support from a subject expert to help improve their delivery of computing. [Contact your local Subject Matter Expert.](#)

A screenshot of a web form titled 'National Centre for Computing Education - Schools Engagement Programme'. The form has a blue header with the 'Teach Computing' logo. The main content area is white with a light blue border. It contains the following text: 'The Schools Engagement Programme provides fully funded support for all schools not yet delivering GCSE Computer Science and for priority primary and secondary schools (those located in Local Authority Districts 5 and 6). This support is provided by the National Centre for Computing Education and its associates, Subject Matter Experts (SMEs) located in regions across England. Please complete the form below to find out more about how a SME can support your school/college and your computing offer.' Below this is a red asterisk and the word '*Required'. At the bottom, there is a label 'Email address *' and a text input field containing the placeholder text 'Your email address'. A large orange arrow points from the 'Your local computing community' box to the form.

<https://docs.google.com/forms/d/e/1FAIpQLSeSmjJqi5jsUI0u6AxUR-FmEkudj-jgeGYLAVumaHqxGiElw/viewform>

CAS communities of practice

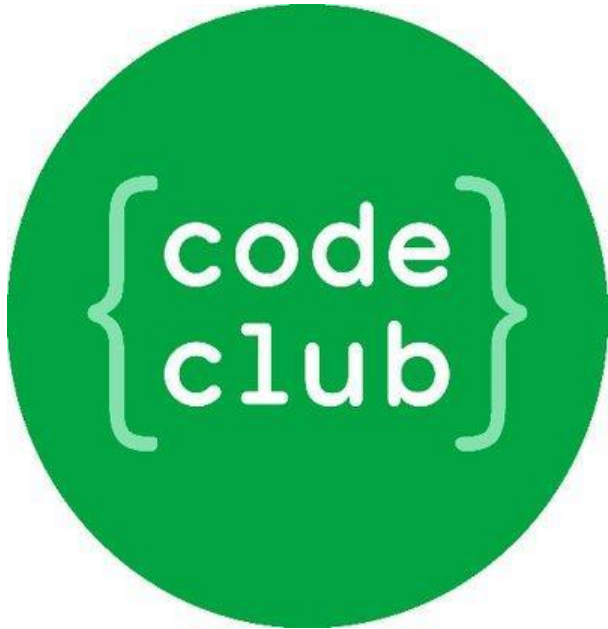


Computing at School

- meet at least once a term
- provide at least one resource for the teachers attending to use in their classroom
- have a theme or topic relevant to teachers of computing
- enable teachers to collaborate on a task or activity - to "have a go"
- provide opportunity for teachers to chat and network with each other

computingatschool.org.uk

Volunteers



- international network of free, volunteer-led after school coding clubs for children aged 9-13
- sign up on the website www.codeclub.org fill in your school details and tick the box to request a volunteer to contact you

Volunteers



- an exciting free resource for teachers and others engaging with young people inside and out of the classroom
- register from the STEM website www.stem.org.uk/stem-ambassadors to find a STEM Ambassador

Social Media



- Twitter #CASchat every Tuesday 8 - 9pm



- Primary Computing coordinators Facebook group (over 2000 members)

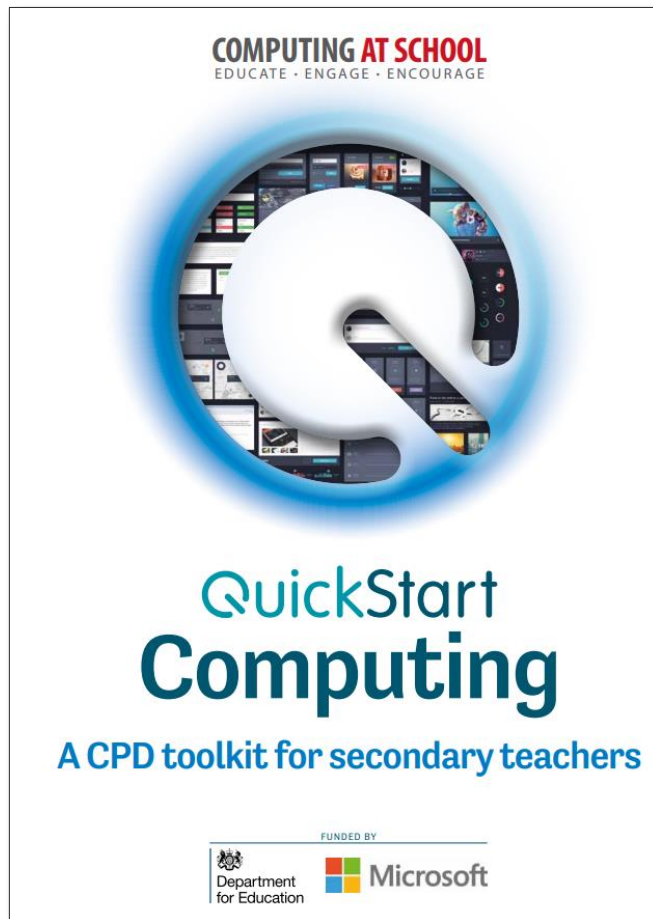
RESOURCES TOOLKIT

17/06/20 | Shorifa Khanam
National Centre for Computing Education

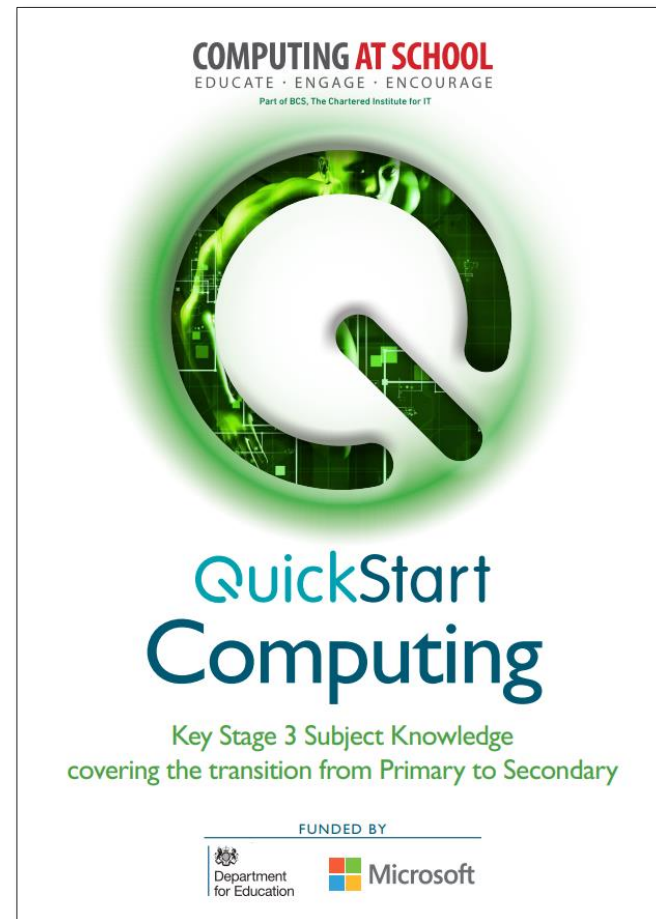
MAYOR OF LONDON

**National
Centre for
Computing
Education**

Quickstart Computing



<https://community.computingatschool.org.uk/files/4974/original.pdf>



<https://community.computingatschool.org.uk/files/8213/original.pdf>

This session will cover:

- The three strands of the Key Stage 3 programme of study
- What binary is and how computers use it
- What an algorithm is and how to define it
- Teaching programming using sequencing, selection and iteration
- The wealth of resources, support and fully funded CPD available from the [National Centre for Computing Education \(NCCE\)](#)

Next steps

Following this course there are a number of further opportunities. These include

- further NCCE courses that build on this one
- secondary Computing courses at Futurelearn
- forums and advice via STEM Learning
- ideas and materials via the Raspberry Pi Foundation
- computing at School communities and forums

National Centre for Computing Education

KS3 Computing for non-specialist teachers



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