

What are algorithms?

Do you know the word **algorithm**?

What are algorithms?

An **algorithm** is a set of instructions to complete a task

What are algorithms?

Etymology:

From the name of the Persian scientist
Al-Khwarizmi who wrote in about CE 825

Later the Greek word arithmos was added to
get **algorithm**



What are algorithms?

An **algorithm** is a set of instructions to complete a task

- the instructions need to break the task down step by step
- they need to be easy to follow

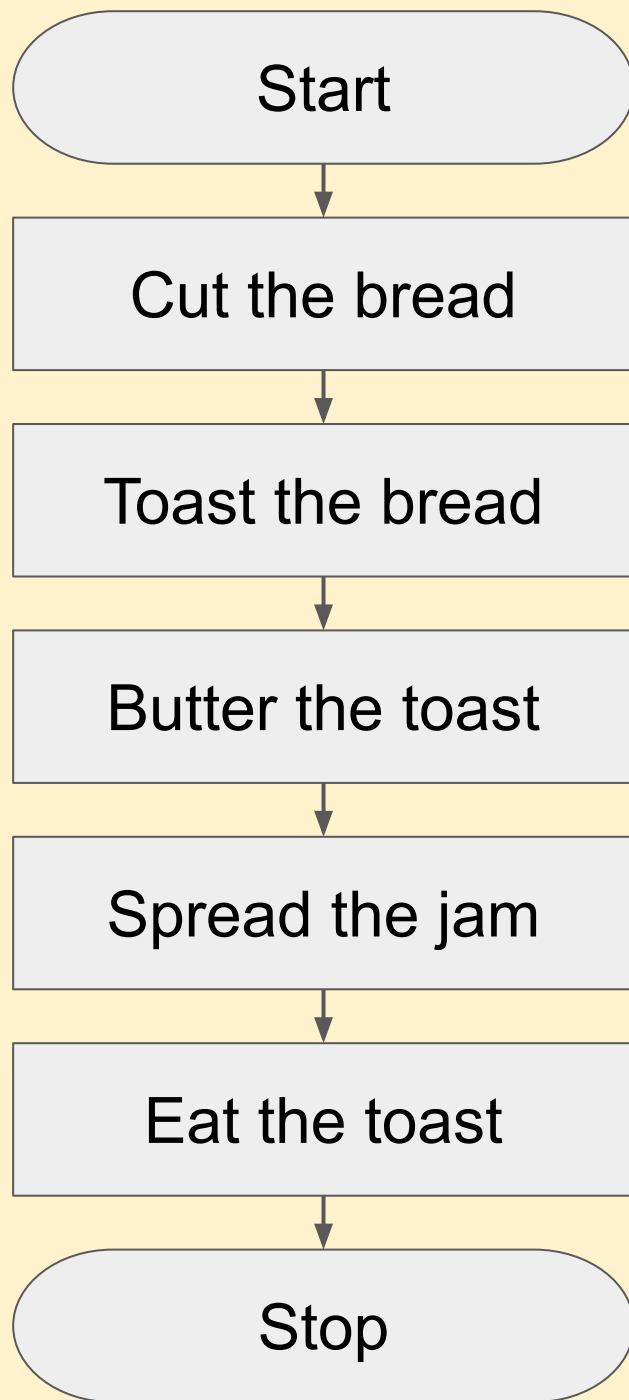
What are algorithms?

1. Start
2. Spread the jam
3. Slice the bread
4. Toast the bread
5. Eat the toast
6. Butter the toast
7. Stop

An algorithm is:

- step by step instructions
- in the right order
- break the problem down
- clear and unambiguous
- get the same result each time

This algorithm is written using **Structured English** instructions



Getting instructions in the right order is important

We call this **sequence**

This algorithm is written using a **flowchart**

What are algorithms?

You use algorithms in your everyday life

Most of the time you don't think about the algorithm, but you're probably using them

What are algorithms?

Algorithms use:

- sequence
- selection
- repetition

Computer scientists use algorithms to plan how to write computer code

What are algorithms?

Computer algorithms are everywhere in the modern world:

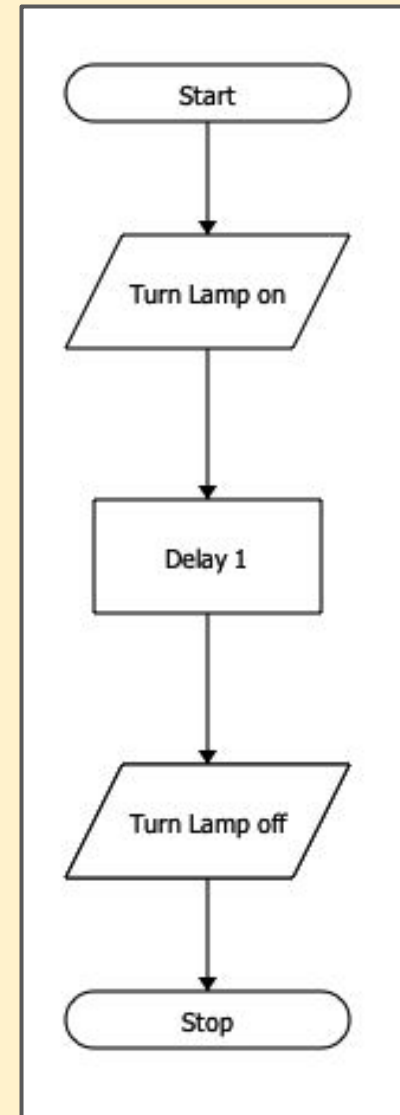
- the YouTube algorithm tells use what to watch next
- Spotify* uses algorithms to recommend music to us
- shopping websites use algorithms to suggest things we might want to buy

What are algorithms?

One way of writing algorithms is to use **flowcharts**

It's important to get instructions in the right order. This is called **sequence**

Sequence means getting instructions things in the right order so that the algorithm works properly

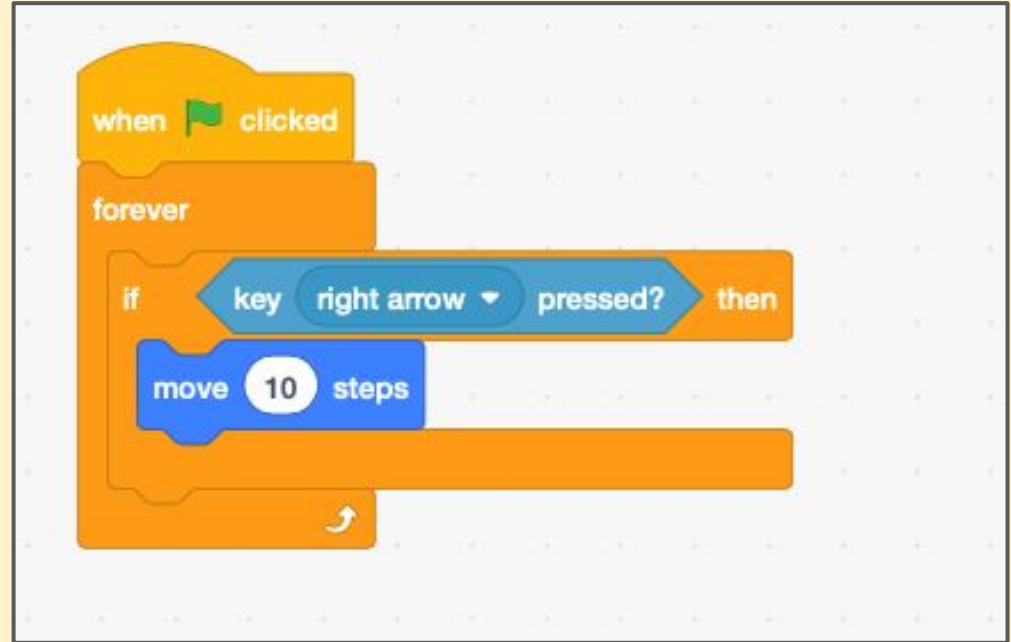


What are algorithms?

Sometimes we need to do a section of code more than once

This is called **repetition**

Repetition is repeating something



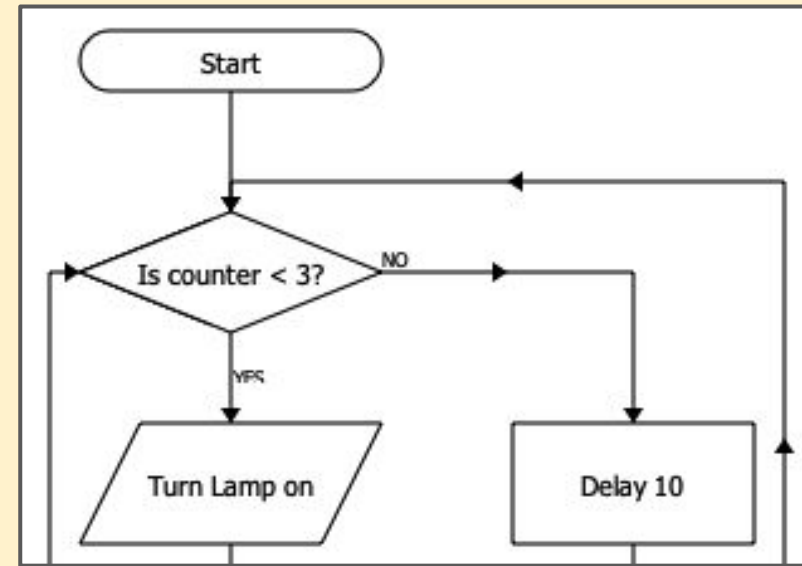
The forever block in this Scratch program keeps doing the section of code until the program stops

What are algorithms?

Sometimes we need to choose which section of code to do next

This is called **selection**

Selection is choosing what to do next in a program



The diamond shaped symbol chooses when to turn the lamp on

What are algorithms?

Start a new PowerPoint presentation

Title: **Micro:bit Programming**

On the **first slide** write down the meanings of the four key ideas:

1. algorithm
2. sequence
3. selection
4. repetition

Save your PowerPoint and then share it with me

Use the knowledge organiser and these sides to help!

What are algorithms?

Produce an algorithm to complete a task

You can use Structured English or a flowchart

For example:

- log in to a school computer
- make breakfast
- tie your shoelaces
- make a cake