

# Algorithms

Computer programs control much of the world we live in.

People have to program computers to do the jobs they are supposed to.

The key skill people need to do this is called **computational thinking**. This is basically problem solving - figuring out what a problem involves and finding a way to solve it.

# Algorithms

To program a computer we create **code**.

The code gives the **instructions** to the computer to do something.

Computer programmers write **algorithms** to help them figure out what code to write.

# Algorithms

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

- the instructions need to be in the right order
- they need to break the problem down to make it easy to solve
- each step needs to be as simple as possible
- they need to be clear
- they need to get to the same end result each time

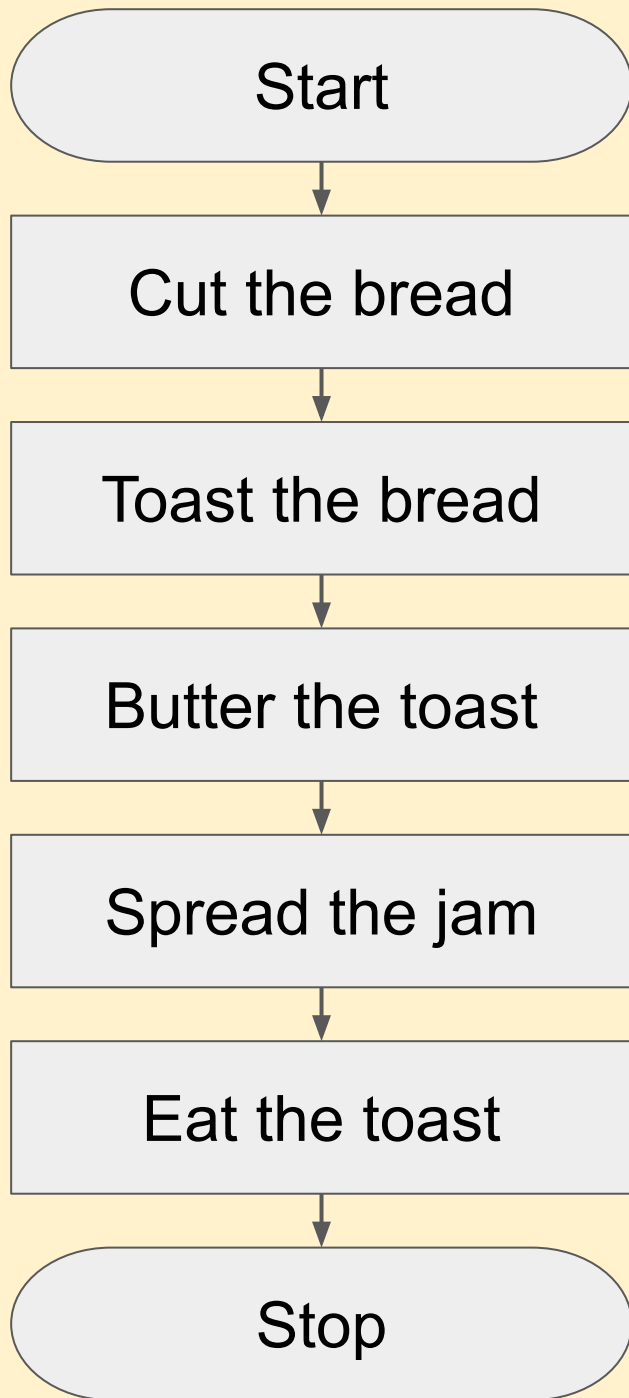
# Algorithms

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



This algorithm is written using a **flowchart**

# Algorithms

1. START
2. SLICE(bread)
3. TOAST(bread)
4. SPREAD(butter)
5. SPREAD(jam)
6. EAT(toast)
7. STOP

This algorithm is written using **Pseudo Code**. This is close to computer code and uses a simple set of instructions.

Each instruction has just one meaning.

# Algorithms

An algorithm is a set of step by step instructions to complete a task

There are 3 ways to write algorithms:

- structured English
- flowcharts
- pseudo code

# Algorithms

## Other key terms:

- A computer **program** is an algorithm that has been coded so that it runs on a computer
- **Sequence** means getting instructions in the right order
- **Repetition** means doing things more than once.  
**Iteration** is another word for repetition
- **Selection** means making a decision in an algorithm
- A **variable** is an area of computer memory where a value can be stored