



Digital Technologies and Languages Integration



Press a button or
shake Dot gently

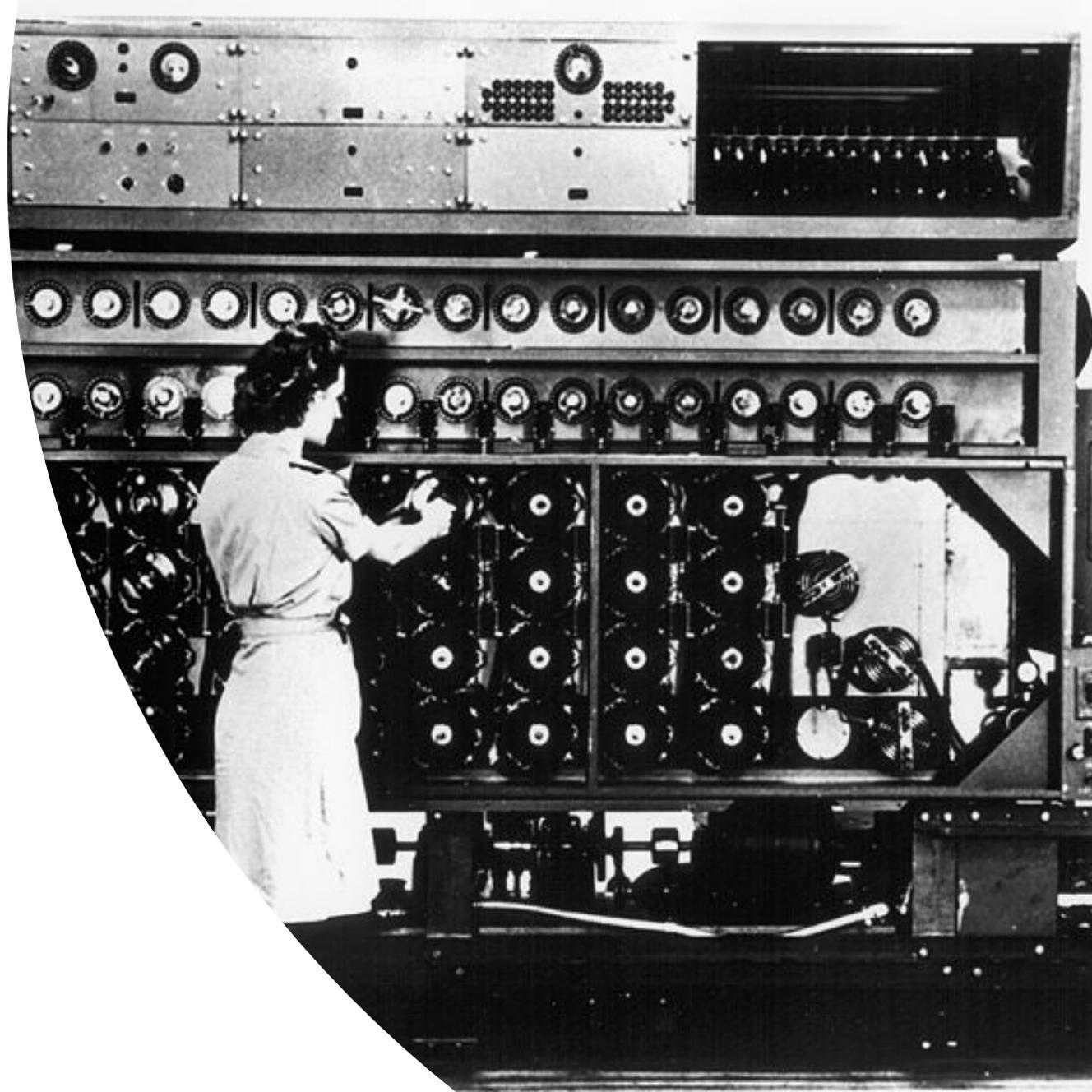
Teachers Can Code

- 16 Digital Technologies PL modules
- mix of primary/secondary and coding/non-coding
- delivered statewide in a train the trainer model



Key concepts

- **abstraction**
- **digital systems**
- **data representation**
- **data collection** and **data interpretation**
- **specification, algorithms, and implementation**
- **interaction**
- **impact**





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- Learn about algorithms and how to create them
- Look at parts of the Digital Technologies Curriculum and how it can be integrated into Languages
- Learn how to make a simple program using block-based or visual coding
- Explore how to use coding principles to teach and learn target language
- Look at a sample coding/languages project
- Explore some other ideas

The ICT capability is not
Digital Technologies



- Start
- Drive
- Look
- Light
- Sound
- Animations
- Control
- Variables
- Accessory



```
When Start  
My sounds #9
```

Hi, I'm Dot. Press a button or shake me and let's have a conversation.

```
When Dot Button 1  
My sounds #7
```

Where do you live?

```
When Dot Button 2  
My sounds #10
```

What's your name?

```
When Dot Shake  
My sounds #6
```

How are you feeling today?

```
When Dot Button 3  
My sounds #5
```

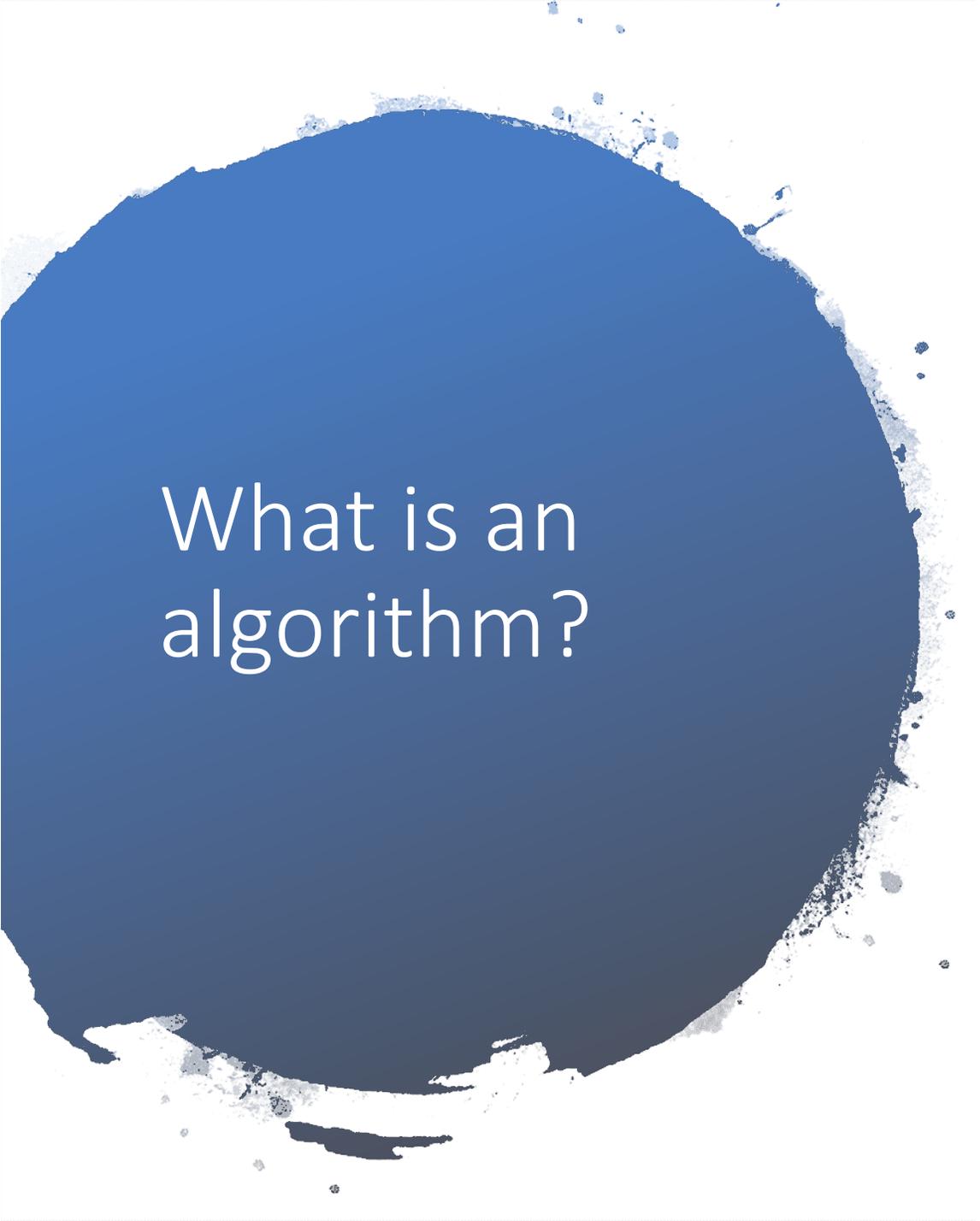
What are your hobbies?

```
When Dot Top Button  
My sounds #8
```

How old are you?

Download Blockly

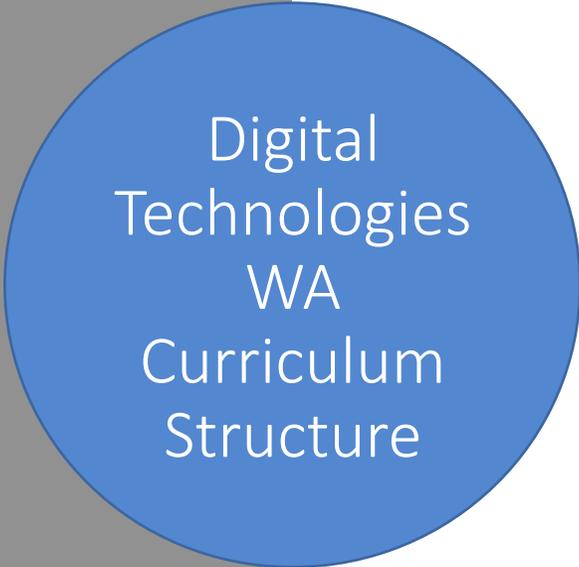




What is an
algorithm?

“

An algorithm is a **precise description of the steps and decisions needed to solve a problem**. Algorithms will need to be tested before the final solution can be implemented. **Anyone who has followed or given instructions, or navigated using directions, has used an algorithm.**



Digital
Technologies
WA
Curriculum
Structure

Knowledge and understanding

Digital systems
the components of digital systems:
hardware, software and networks and
their use

Representation of data
how data are represented and structured
symbolically

Processes and production skills

Collecting, managing and analysing data
the nature and properties of data, how
they are collected and interpreted

Digital implementation
the process of implementing digital
solutions

Creating solutions by:

- investigating and defining
 - designing
 - producing and implementing
 - evaluating
 - collaborating and managing
-

WA Curriculum Scope and Sequence

WA Curriculum: scope and sequence

	Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Digital implementation						Create and communicate information, including online collaborative projects, using agreed social, ethical and technical protocols (codes of conduct)	Manage the creation and communication of information, including online collaborative projects, using agreed social, ethical and technical protocols
Creating solutions by:							
Investigating and defining	Explore needs for design	Explore opportunities for design	Explore design to meet needs or opportunities	Create a sequence of steps to solve a given task	Define a sequence of steps to design a solution for a given task	Define a problem, and set of sequenced steps, with users making a decision to create a solution for a given task	Define a problem, and a set of sequenced steps, with users making decisions to create a solution for a given task
					Identify and choose the appropriate resources from a given set		
Designing	Generate and record design ideas through describing, drawing, modelling and/or a sequence of written or spoken steps	Develop and communicate design ideas through describing, drawing, modelling and/or a sequence of written or spoken steps	Develop, communicate and discuss design ideas through describing, drawing, modelling and/or a sequence of steps	Develop and communicate ideas using labelled drawings and appropriate technical terms	Develop and communicate design ideas and decisions using annotated drawings and appropriate technical terms	Develop and communicate alternative solutions, and follow design ideas, using annotated diagrams, storyboards and appropriate technical terms	Design, modify, follow and represent both diagrammatically, and in written text, alternative solutions using a range of techniques, appropriate technical terms and technology
Producing and implementing	Use given components and equipment to safely make simple solutions	Use given components and equipment to safely make solutions	Use components and given equipment to safely make solutions	Select, and safely use, appropriate components with given equipment to make a solution	Select, and safely use, appropriate components and equipment to make solutions	Select, and apply, safe procedures when using components and equipment to make solutions	Select, and apply, safe procedures when using a variety of components and equipment to make solutions
Evaluating	Use personal preferences to evaluate the success of simple solutions	Use personal preferences to evaluate the success of design processes	Use simple criteria to evaluate the success of design processes and solutions	Use criteria to evaluate design processes and solutions developed	Use criteria to evaluate and justify simple design processes and solutions	Develop negotiated criteria to evaluate and justify design processes and solutions	Develop collaborative criteria to evaluate and justify design processes and solutions



WA Curriculum Scope and Sequence

	Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Knowledge and understanding							
Digital systems	Digital systems (hardware and software) are used at home, in the school and in the community	Digital systems (hardware and software) are used in everyday life and have specific features	Digital systems (hardware and software) are used for an identified purpose	Digital systems and peripheral devices are used for different purposes	Digital systems and peripheral devices are used for different purposes and can store and transmit different types of data	Digital systems have components with basic functions that may connect together to form networks which transmit data	Digital systems have components with basic functions and interactions that may be connected together to form networks which transmit different types of data
Representations of data	Data can have patterns and can be represented as pictures and symbols	Data can have patterns and can be represented as pictures, symbols and diagrams	Data can have patterns and can be represented and used to make simple conclusions	Different types of data can be represented in different ways	Data can be represented in different ways	Data is represented using codes	Whole numbers are used to represent data in a digital system
Processes and production skills							
Collecting managing and analysing data	Collect and use data of any kind	Present data of any kind using a variety of digital tools	Present data using a variety of digital tools	Collect and present different types of data using simple software to create useful information	Collect and present different types of data for a specific purpose using software	Collect, store and present different types of data for a specific purpose using software	Collect, sort, interpret and visually present different types of data using software to manipulate data for a range of purposes
Digital implementation	Use data to complete a task Engage with information known people have shared in an online environment, and model strategies to stay safe online	Use data to solve a simple task/problem Share and publish information with known people in an online environment, modelling strategies to stay safe online	Use data to solve similar tasks/problems Share and publish information in a safe online environment, with known people	Use visually represented sequenced steps (algorithms), including steps with decisions made by the user (branching) Create and communicate ideas and information safely	Use simple visual programming environments that include a sequence of steps (algorithm) involving decisions made by the user (branching) Create and communicate ideas and information safely, using agreed protocols (netiquette)	Design solutions to a user interface for a digital system Design, follow and represent diagrammatically, a simple sequence of steps (algorithm), involving branching (decisions) and iteration (repetition)	Design, modify, follow and represent both diagrammatically, and in written text, simple algorithms (sequence of steps) involving branching (decisions) and iteration (repetition) Implement and use simple visual programming environments that include branching (decisions), iteration (repetition) and user input

WA Curriculum: scope and sequence

	Year 7	Year 8	Year 9	Year 10
Creating solutions by:				
Investigating and defining	<p>Define and break down a given task, identifying the purpose</p> <p>Consider components/resources to develop solutions, identifying constraints</p>	<p>Investigate a given need or opportunity for a specific purpose</p> <p>Evaluate and apply a given brief</p> <p>Consider components/resources to develop solutions, identifying constraints</p>	<p>Identify and define the needs of a stakeholder, to create a brief, for a solution</p> <p>Investigate a selection of components/resources to develop solution ideas, identifying and considering constraints</p>	<p>Identify the needs of the client/stakeholder to determine the basis for a solution</p> <p>Create and critique briefs to solutions</p> <p>Investigate components/resources to develop increasingly sophisticated solutions, identifying and considering associated constraints</p>
Designing	<p>Design, develop, review and communicate design ideas, plans and processes within a given context, using a range of techniques, appropriate technical terms and technology</p> <p>Follow a plan designed to solve a problem, using a sequence of steps</p>	<p>Design, develop, evaluate and communicate alternative solutions, using appropriate technical terms and technology</p> <p>Produce a simple plan designed to solve a problem, using a sequence of steps</p>	<p>Apply design thinking, creativity and enterprise skills</p> <p>Design solutions assessing alternative designs against given criteria, using appropriate technical terms and technology</p>	<p>Apply design thinking, creativity, enterprise skills and innovation to develop, modify and communicate design ideas of increasing sophistication</p> <p>Design possible solutions, analysing designs against criteria, including functionality, accessibility, usability and aesthetics, using appropriate technical terms and technology</p>
Producing and implementing	<p>Safely make solutions using a range of components, equipment and techniques</p>	<p>Safely apply appropriate techniques to make solutions using a range of components and equipment</p>	<p>Select, and safely implement and test appropriate technologies and processes, to make solutions</p>	<p>Select, justify, and safely implement and test appropriate technologies and processes, to make solutions</p>
Evaluating	<p>Independently apply given contextual criteria to evaluate design processes and solutions</p>	<p>Develop contextual criteria independently to assess design processes and solutions</p>	<p>Evaluate design processes and solutions against student developed criteria</p>	<p>Analyse design processes and solutions against student developed criteria</p>
Collaborating and managing	<p>Work independently, and collaboratively when required, to plan, develop and communicate ideas and information when using management processes</p>	<p>Work independently, and collaboratively when required, to plan, develop and communicate ideas and information when managing projects</p>	<p>Work independently, and collaboratively to manage projects, using digital technology and an iterative and collaborative approach. Considers time, cost, risk and safety</p>	<p>Work independently, and collaboratively to manage projects, using digital technology and an iterative and collaborative approach. Considers time, cost, risk, safety, production processes, sustainability and legal responsibilities</p>

Program a Robot Algorithm

Process and Production Skills

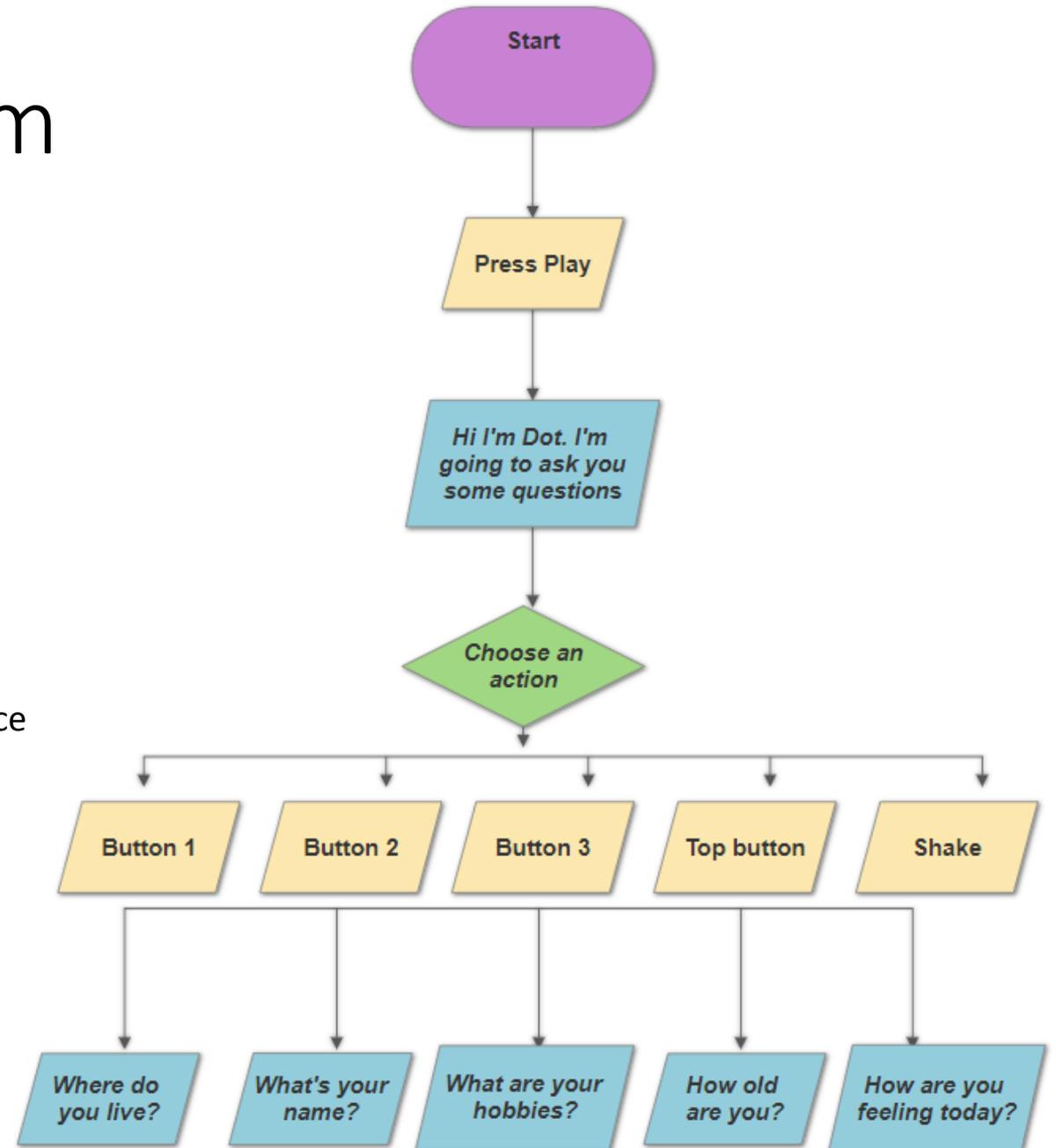
Digital implementation

Year 3

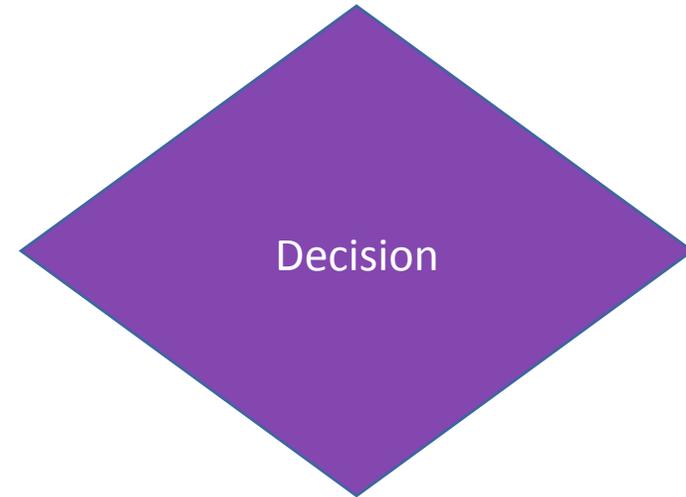
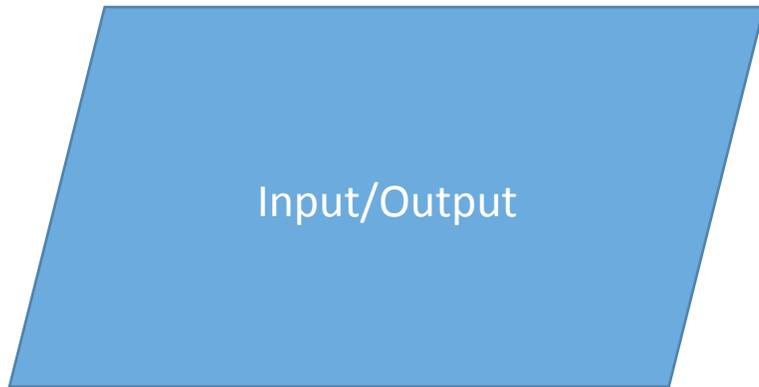
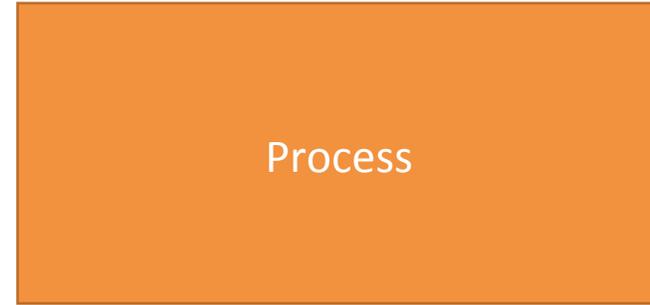
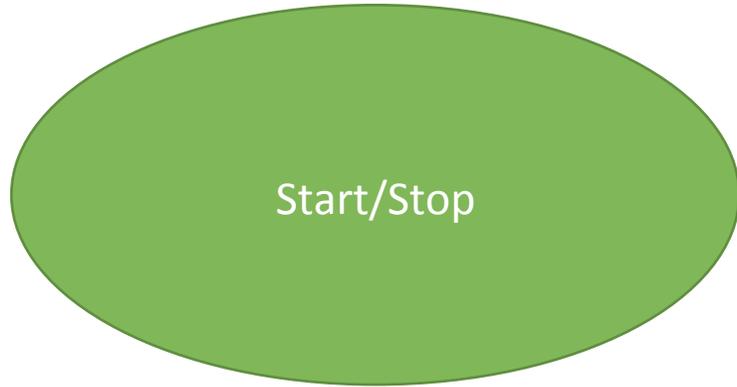
Use visually represented steps (algorithms), including steps with decisions made by the user (branching)

Year 4

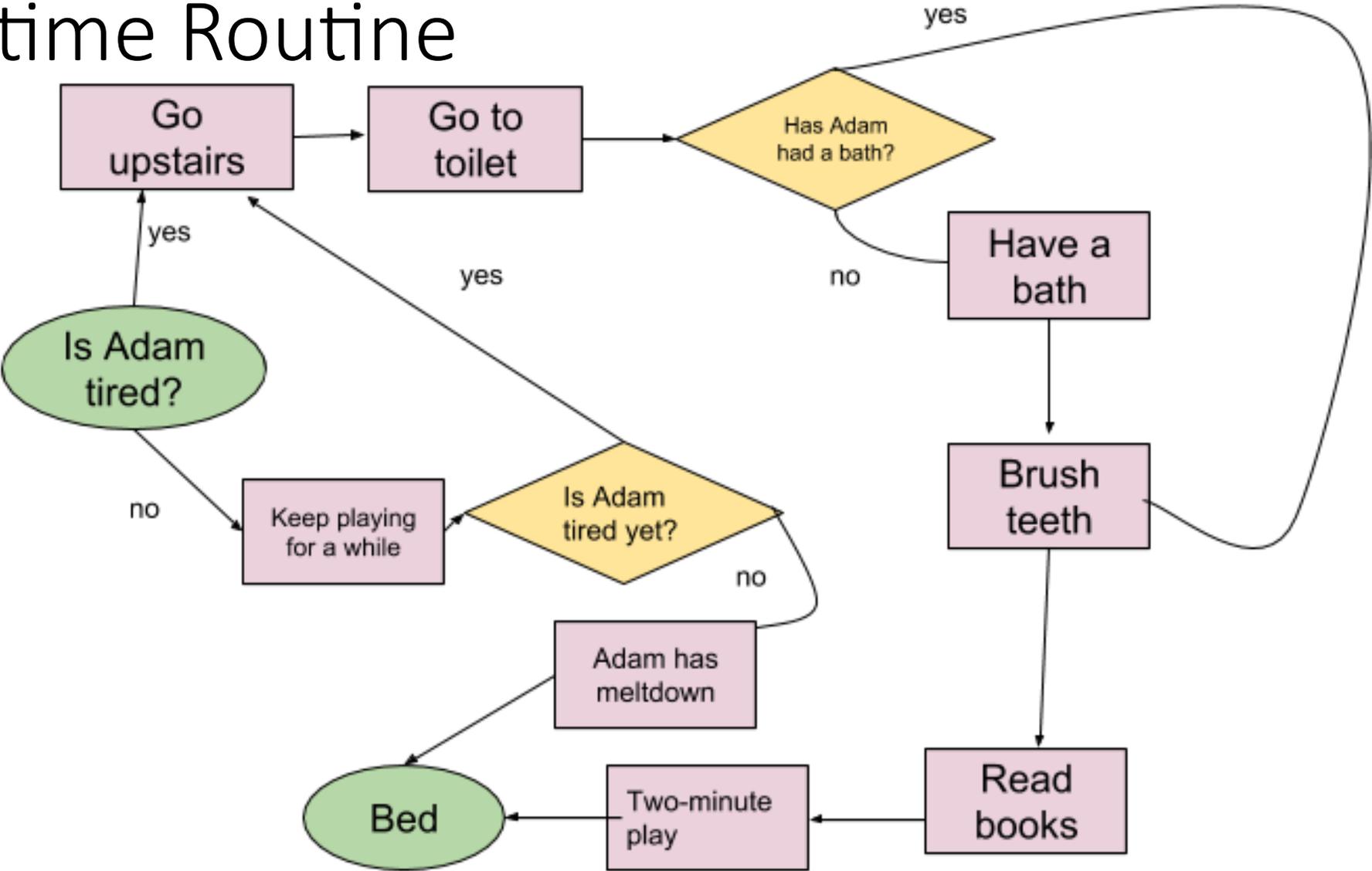
Use simple visual programming environments that include a sequence of steps (algorithm) involving decisions made by the user (branching)



Algorithm Shapes



Bedtime Routine

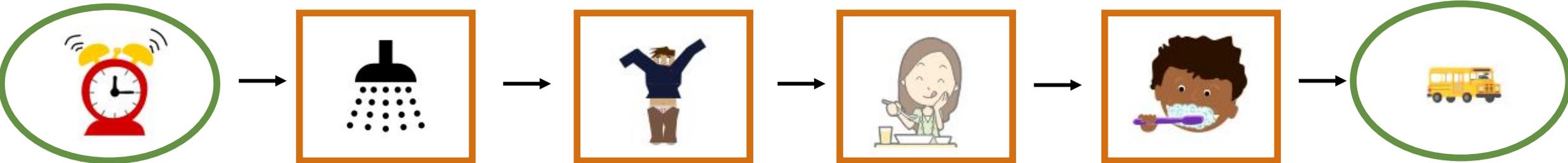


Before school routine algorithm

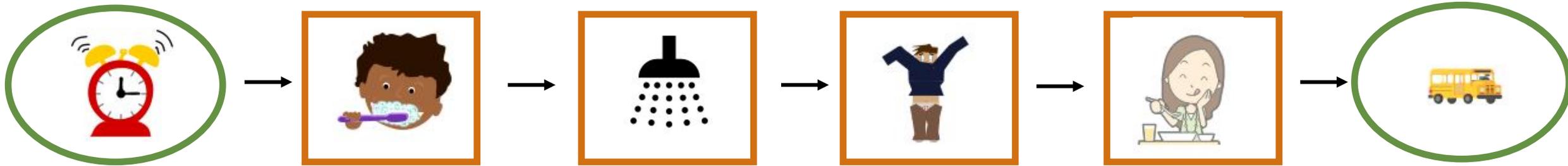
Investigating and defining

Year 3 Create a sequence of steps to solve a given task

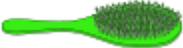
Year 4 Define a sequence of steps to design a solution for a given task



Debug the algorithm



Use ↑ ↓ ↑ → to complete the algorithm

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

Use ↑ ↓ ↑ → to complete the algorithm

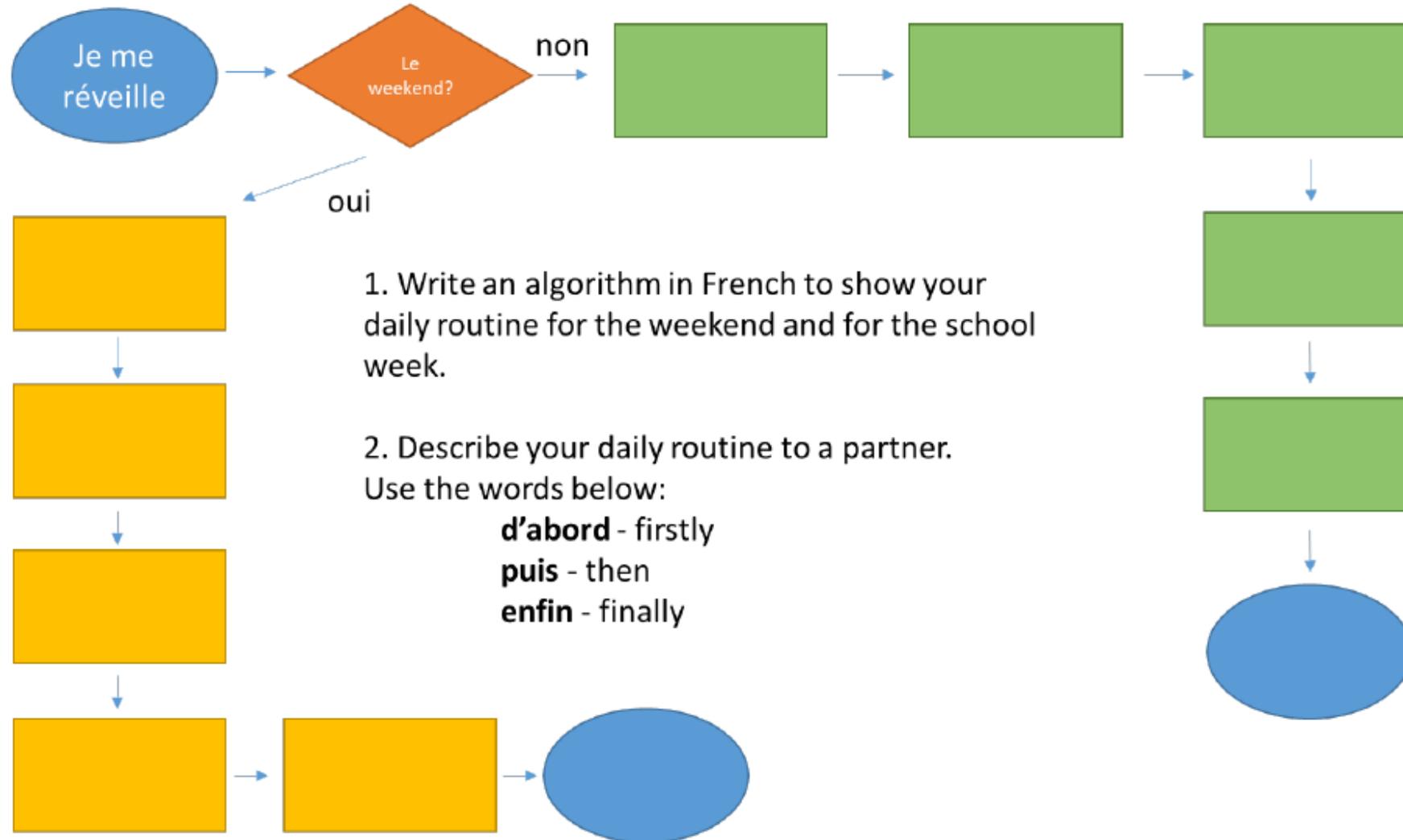
			↑ 
			↑ 
		↑ 	→ 
	↑ 	→	
→ 	→		

- | |
|------|
| 1. → |
| 2. → |
| 3. ↑ |
| 4. → |
| 5. ↑ |
| 6. → |
| 7. ↑ |
| 8. ↑ |



Mon Algorithme

Activity 12

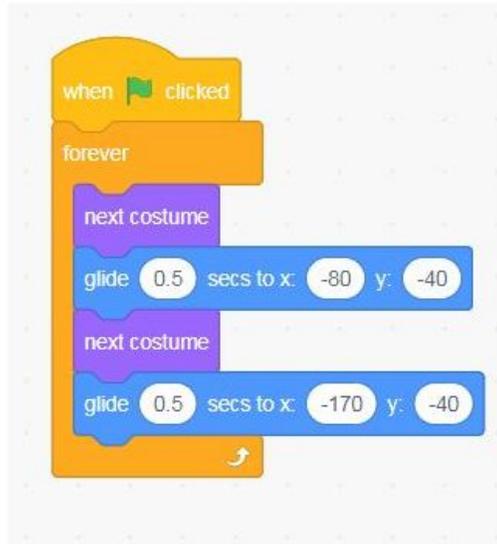


1. Write an algorithm in French to show your daily routine for the weekend and for the school week.

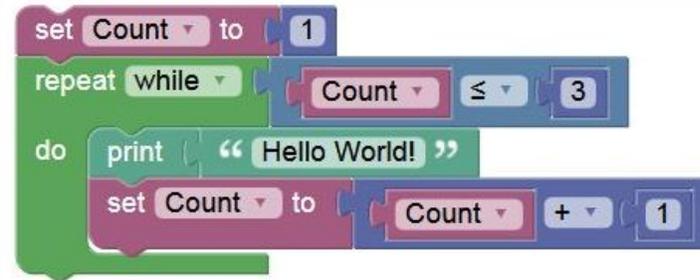
2. Describe your daily routine to a partner. Use the words below:

- d'abord** - firstly
- puis** - then
- enfin** - finally

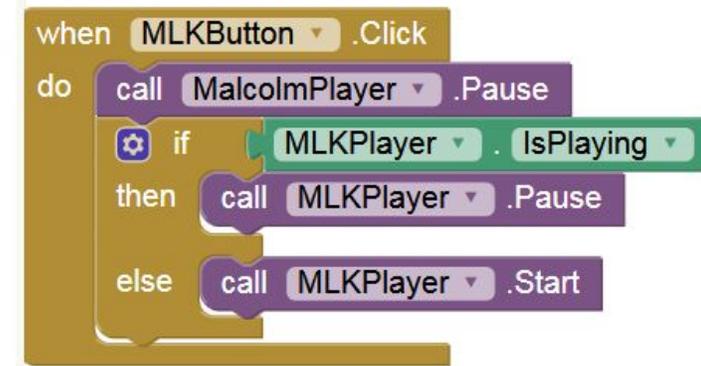
Visual Programming Language Blocks



Scratch

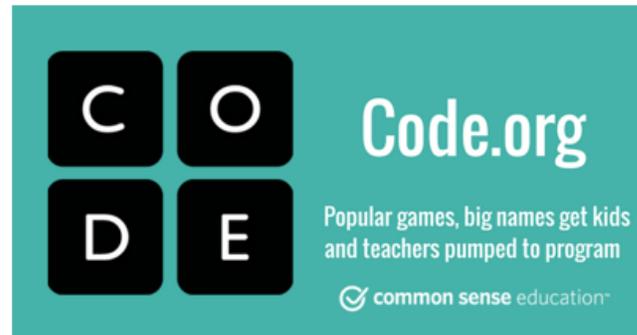


Blockly



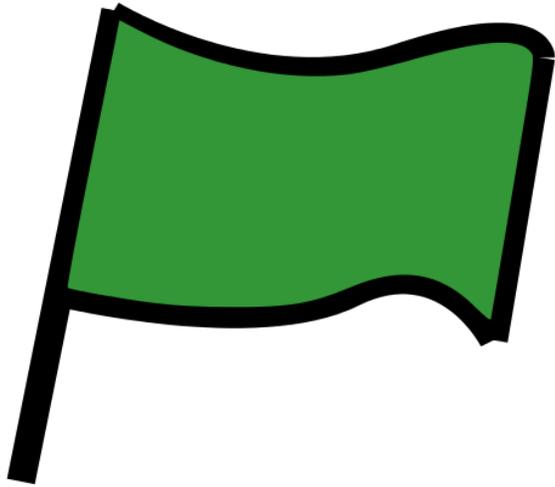
MIT App Inventor

Apps that
use Block-
based/visual
coding

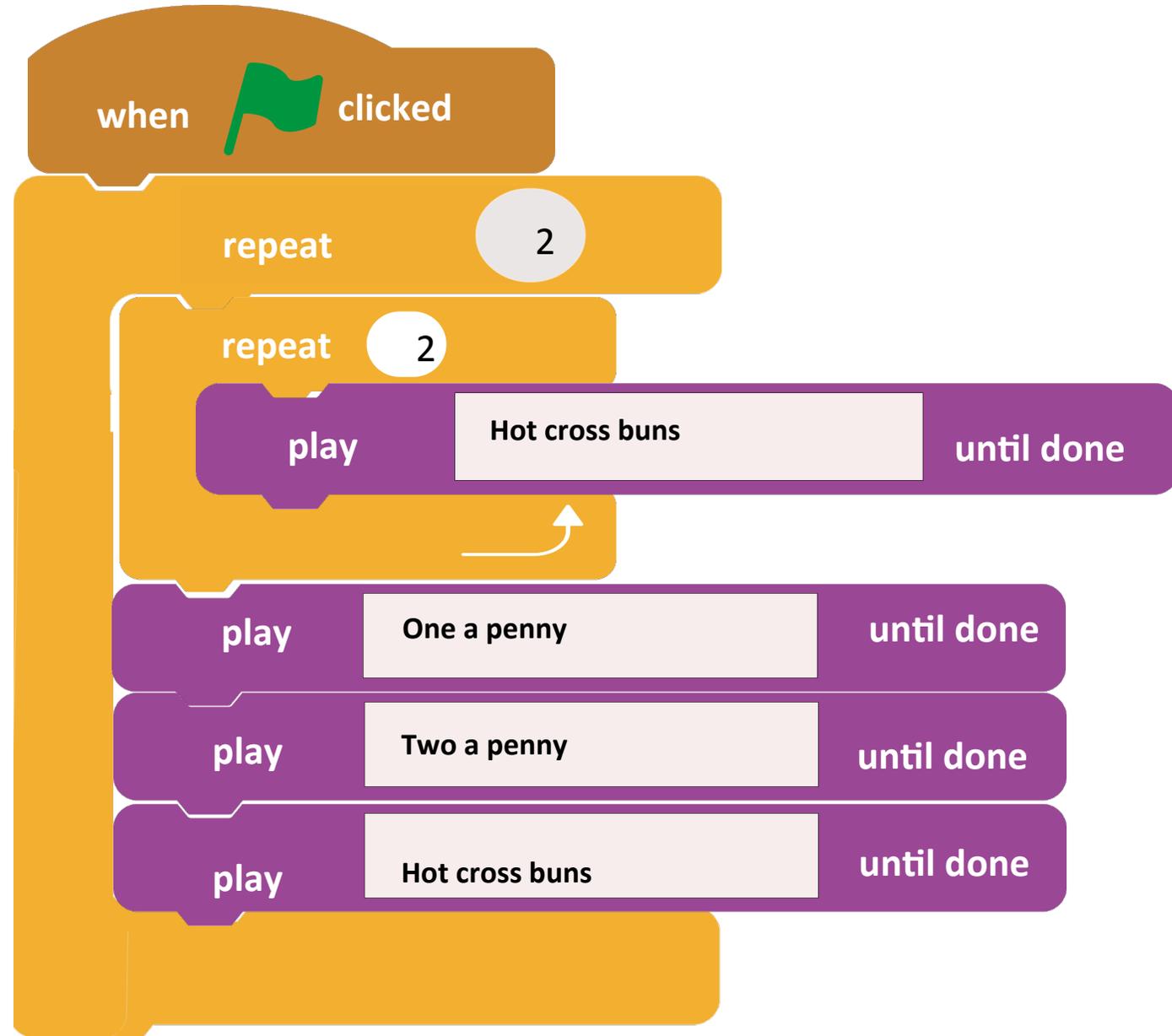


<https://scratch.mit.edu/projects/222629239/>

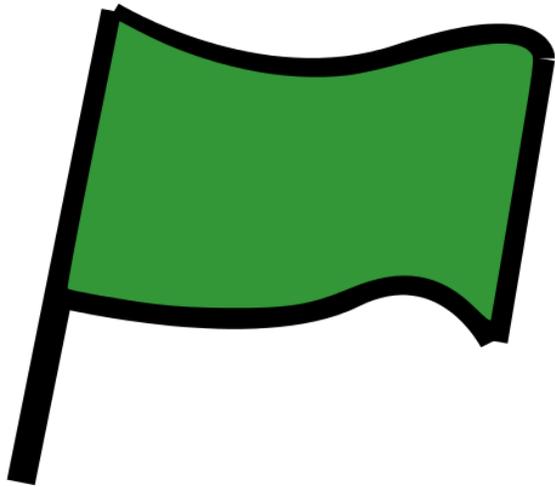
Hot Cross Buns



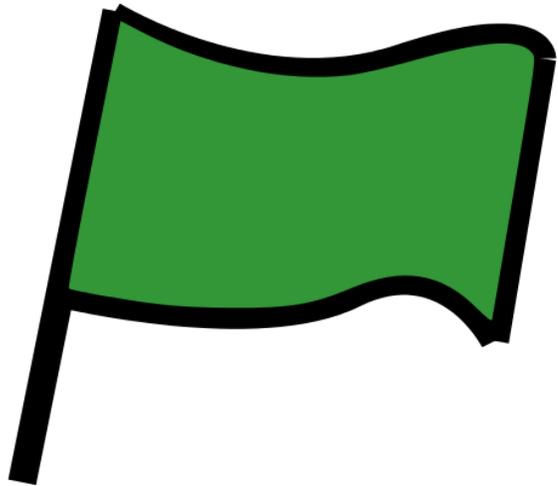
<https://youtu.be/VXRQpDXcAWc>



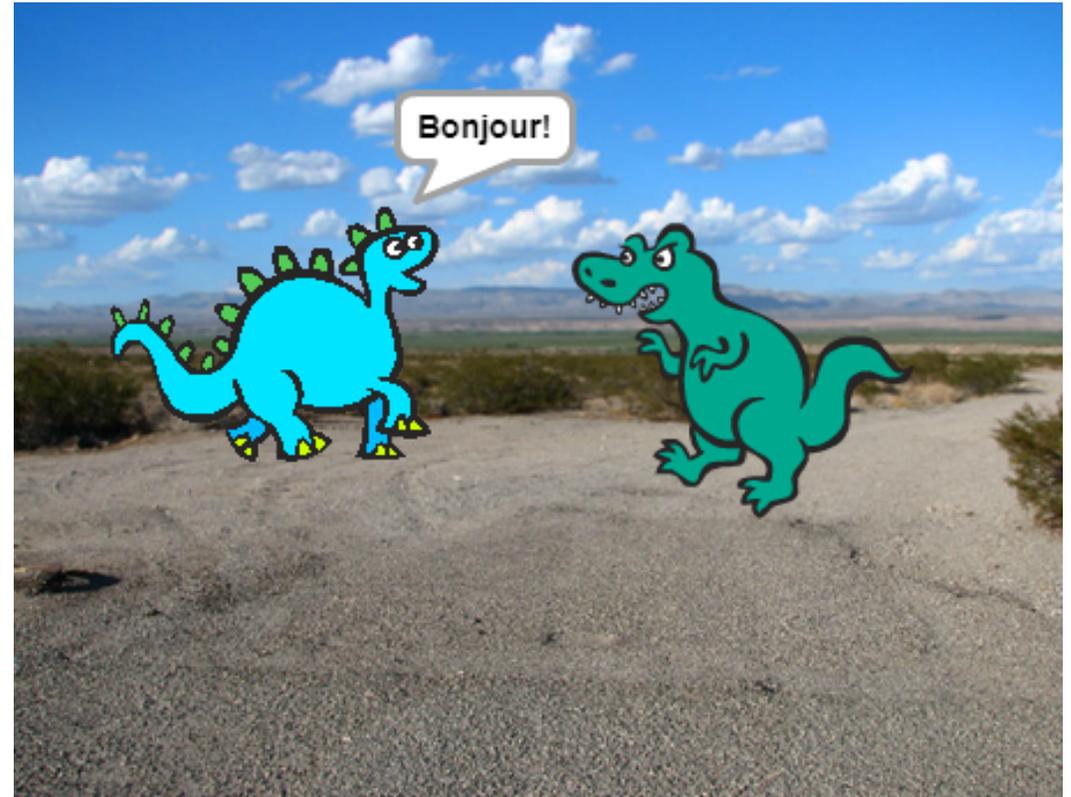
Happy Birthday



Frère Jacques



Les Dinosaurs



when clicked

switch costume to dinosaur3

glide 1 secs to x: -136 y: 14

glide 1 secs to x: -118 y: 12

start sound Bonjour

say Bonjour! for 2 seconds

wait 0.5 seconds

broadcast bonjour!

when I receive bonjour!!

start sound Comment ça va?

say Comment ça va? for 2.5 seconds

broadcast comment ça va?

when I receive au revoir henri!

switch costume to dinosaur2



when I receive je m'appelle simon. et toi? tu l'appelles comment?

start sound Je m'appelle Henri

say Je m'appelle Henri. for 2 seconds

broadcast je m'appelle henri.

when I receive ça va très mal!

start sound comment tu l'appelles

say Comment tu l'appelles? for 2 seconds

broadcast comment tu l'appelles?

when clicked

repeat 13

play sound drum funky until done



```
when clicked
  show
  switch costume to dinosaur2-a
  point in direction 79
  go to x: 85 y: 19
```

```
when I receive bonjour!
  wait 1 seconds
  glide 1 secs to x: 64 y: 18
  start sound bonjour2.mp3
  say Bonjour!! for 2 seconds
  broadcast bonjour!!
```

```
when I receive comment ça va?
  start sound cavatresmal.mp3
  say Ça va très mal! for 2 seconds
  switch costume to sick dino2
  wait 0.5 seconds
  switch costume to sick dino
  broadcast ça va très mal!
```

```
when I receive comment tu t'appelles?
  start sound jemappelleSimon.mp3
  say Je m'appelle Simon. Et toi? Tu t'appelles comment? for 5 seconds
  broadcast je m'appelle simon. et toi? tu t'appelles comment?
```

```
when I receive je m'appelle henri.
  wait 1.5 seconds
  start sound aurevoirHenri.mp3
  say Au revoir Henri!
  broadcast au revoir henri!
  repeat 10
    turn 15 degrees
  wait 1 seconds
  glide 1 secs to x: 243 y: 18
  hide
```





Activity

laugh

clap

yawn

blink

nod

wink

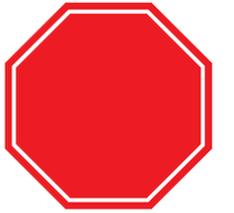
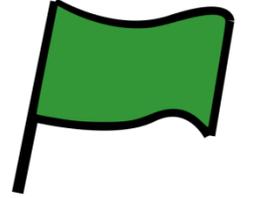
turn right

turn left

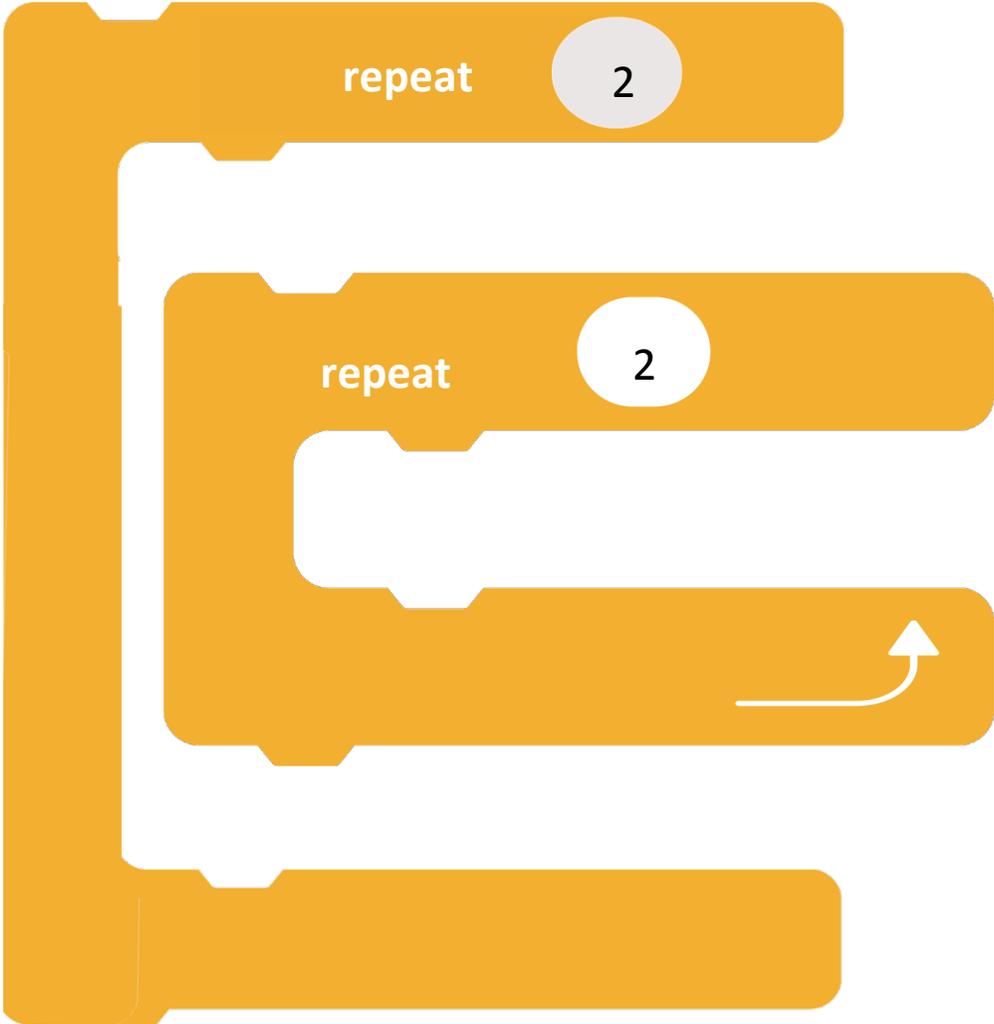
smile

jump

move forward 2 steps



when  clicked

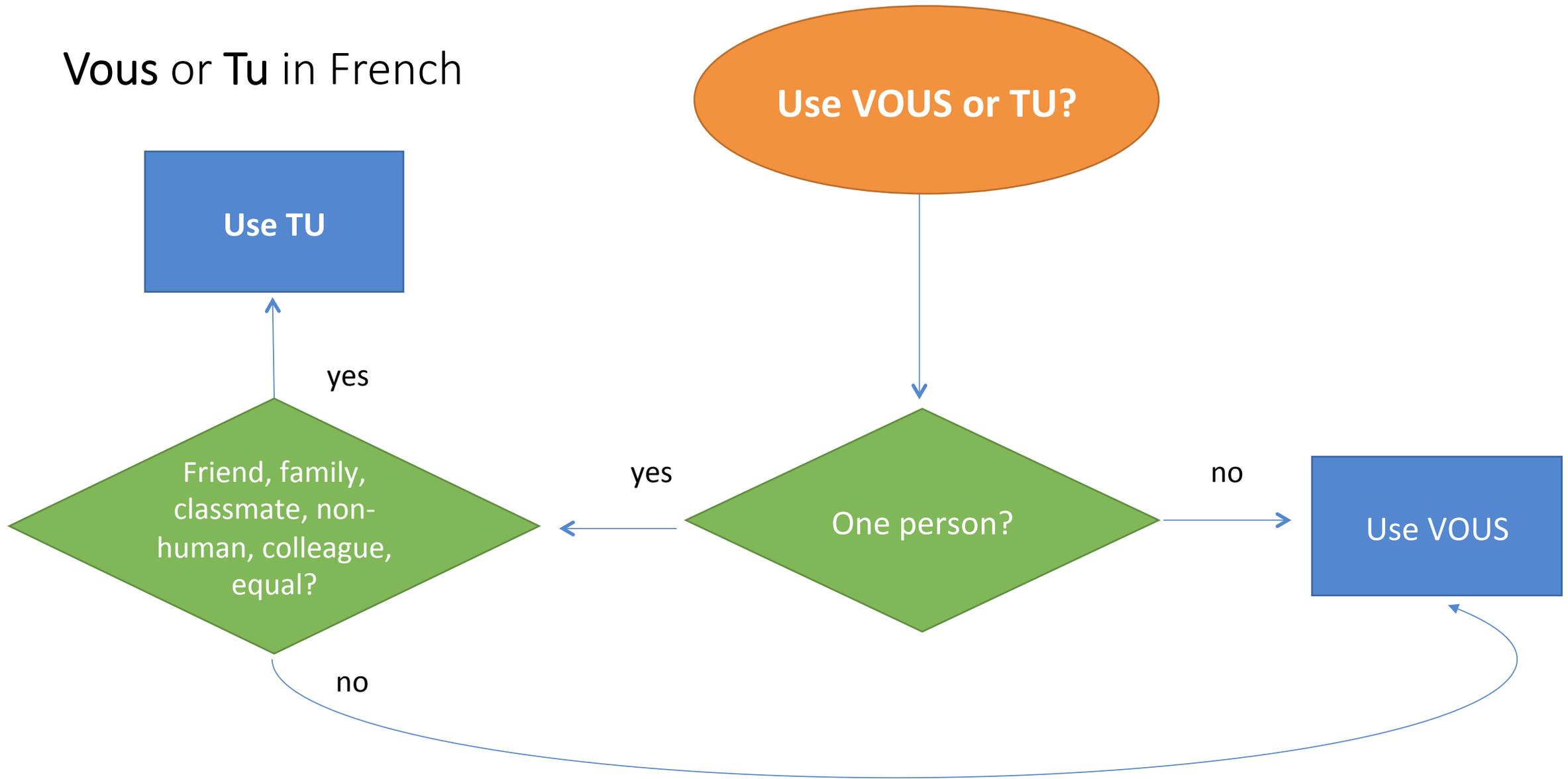


- play Happy birthday to you until done
- play Happy birthday dear _____ until done
- play One a penny until done
- play Two a penny until done
- play Hot cross buns until done
- play Happy birthday to you until done
- play Hot cross buns until done
- play [] until done



Block coding and algorithms
to present Language concepts

Vous or Tu in French



if

person

=

**SINGULAR and
friend, family, classmate, non-human,
colleague, or equal**

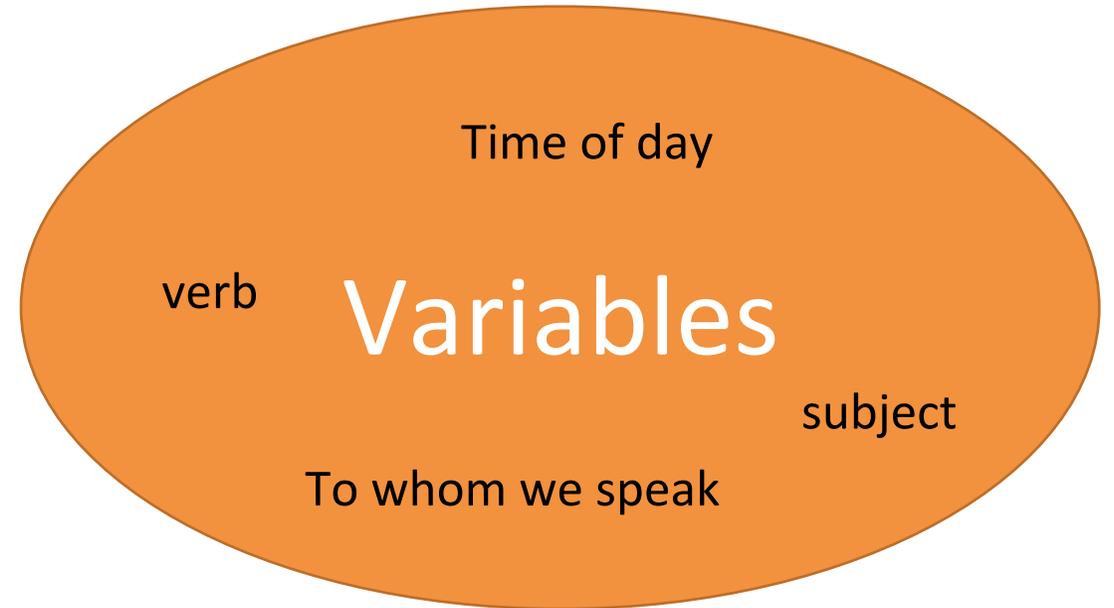
say

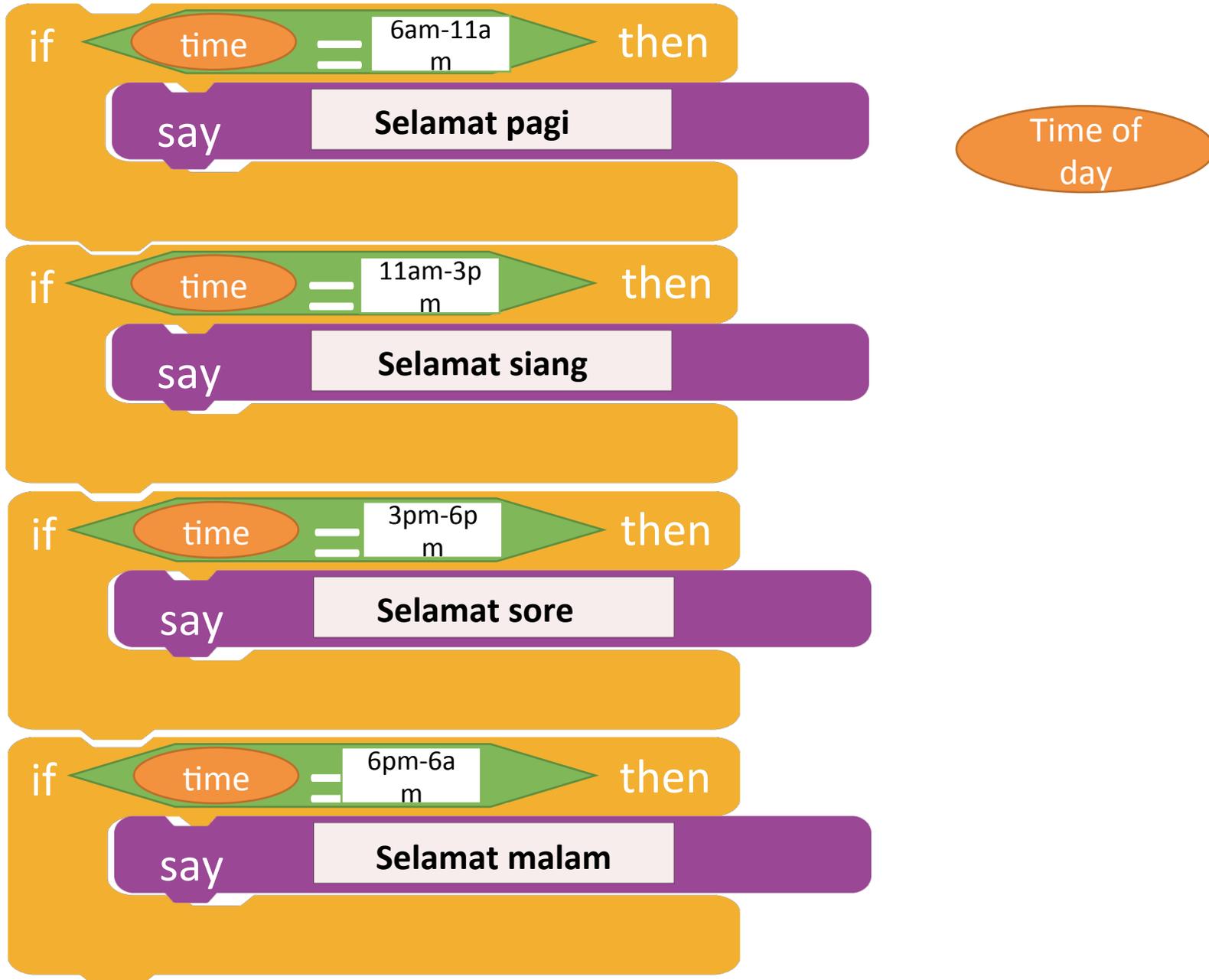
TU

else

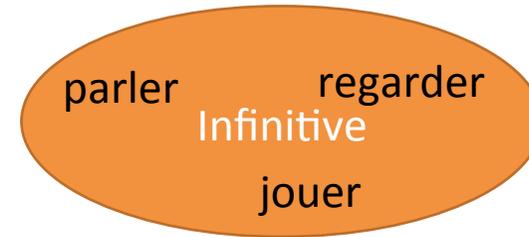
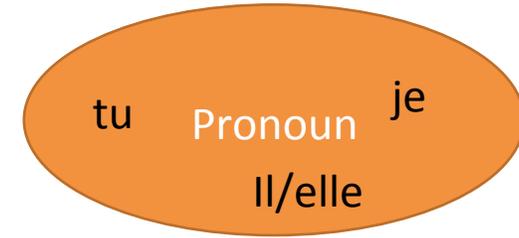
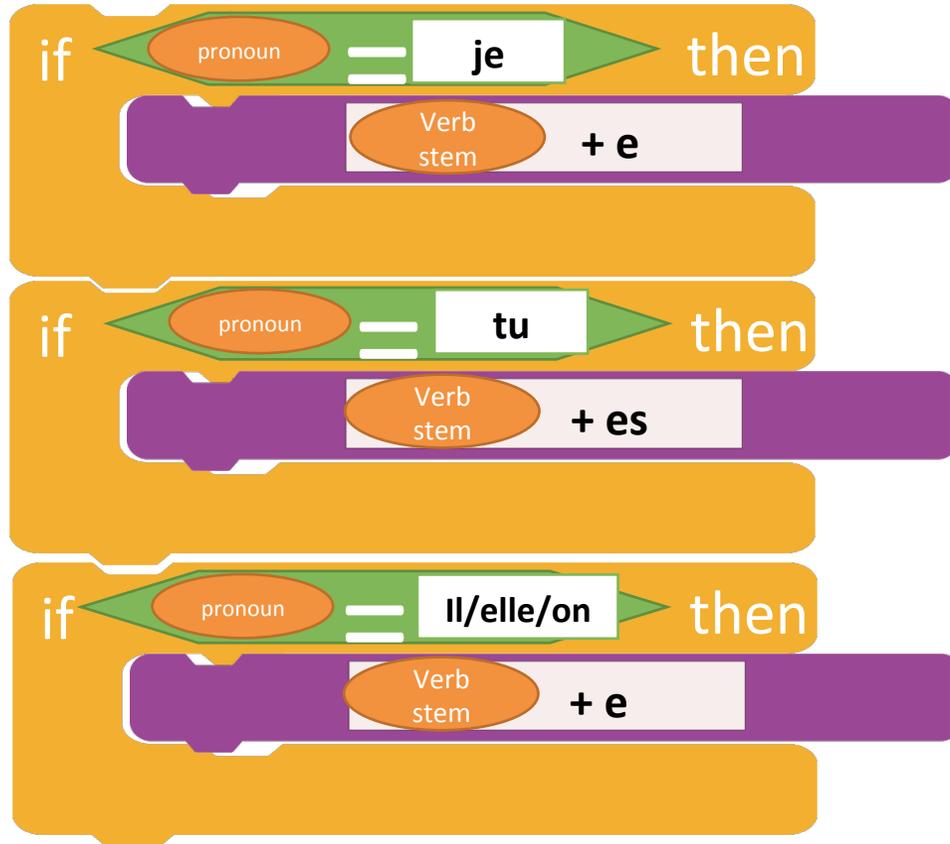
say

VOUS





Regular er verbs







Your ideas



What we did today

- Learned about algorithms and how to create them
- Looked at parts of the Digital Technologies Curriculum and how they can be integrated into Languages
- Learned how to make a simple program using block-based or visual coding
- Explored how to use coding principles to teach and learn target language.

