

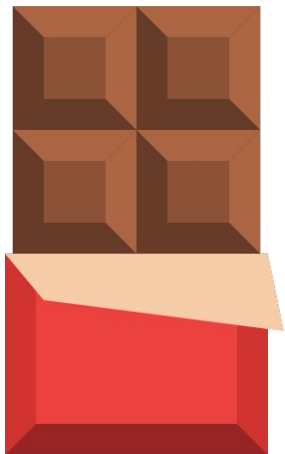
Lesson 1

Introduction to Artificial Intelligence



CS IN SCHOOLS

Demo: The Chocolates Game!



Let's play a game!

There are 12 chocolates on the table.

The winner gets all the chocolates!

When it's your turn, you can take 1, 2 or 3 chocolates.

When it's my turn, I can take 1, 2 or 3 chocolates.

The person who takes the last chocolate(s) wins the whole lot!

Since you are my guest, I'll even let you go first.

There are 12 chocolates remaining!



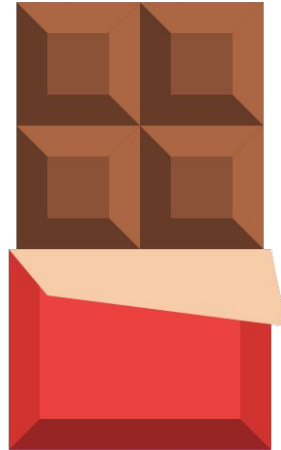
Enter the number of chocolates you'll like to take:

[Click here to play the game and see if you can beat the computer...](#)



Chocolates Game

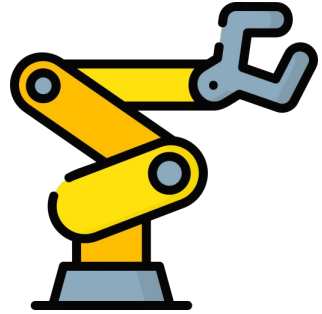
- Did you figure out the “trick” to the game?
 - Do you think that was an example of “Artificial Intelligence”?
- Why or why not?



Learning objectives

By the end of this lesson, you should be able to:

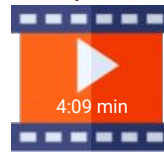
- Understand what “Artificial Intelligence” means
- Identify some simple “rules-based” AI systems
- Write simple AI rules
- Identify AI rules in games and magic tricks



ACARA Digital Technologies v9.0 curriculum content addressed in the lesson include:

- **Levels 5 - 6, AC9TDI6P02** - design algorithms involving multiple alternatives (branching) and iteration
- **Levels 7 - 8, AC9TDI8P05** - design algorithms involving nested control structures and represent them using flowcharts and pseudocode





What is Artificial Intelligence?

- Let's break down the 2 words:

Artificial Intelligence



What is Artificial Intelligence?

- Let's break down the 2 words:

Artificial Intelligence



What is Artificial Intelligence?

- Let's break down the 2 words:

Artificial Intelligence

- What do you think “Artificial” means?

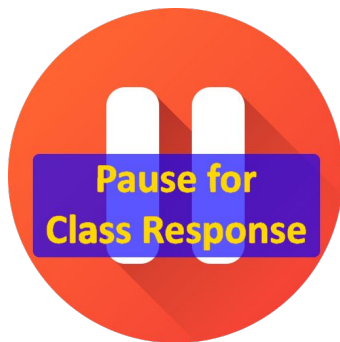


What is Artificial Intelligence?

- Let's break down the 2 words:

Artificial Intelligence

- What do you think “Artificial” means?



What is Artificial Intelligence?

- Let's break down the 2 words:

Artificial Intelligence



What is Artificial Intelligence?

- Let's break down the 2 words:

Artificial Intelligence

“Human made; not occurring in nature”



What is Artificial Intelligence?

- Let's break down the 2 words:

Artificial **Intelligence**



What is Artificial Intelligence?

- Let's break down the 2 words:

Artificial **Intelligence**

- What do you think “Intelligence” means?

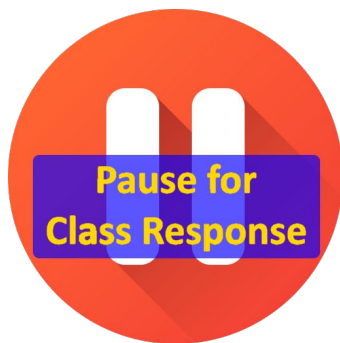


What is Artificial Intelligence?

- Let's break down the 2 words:

Artificial **Intelligence**

- What do you think "Intelligence" means?



What is Artificial Intelligence?

- Let's break down the 2 words:

Artificial Intelligence



What is Artificial Intelligence?

- Let's break down the 2 words:

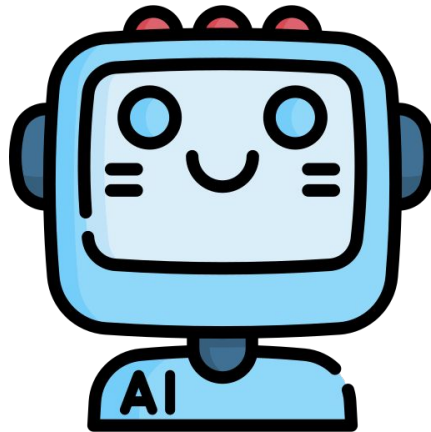
Artificial **Intelligence**

“ability to apply and
acquire knowledge
and skills”



What is Artificial Intelligence?

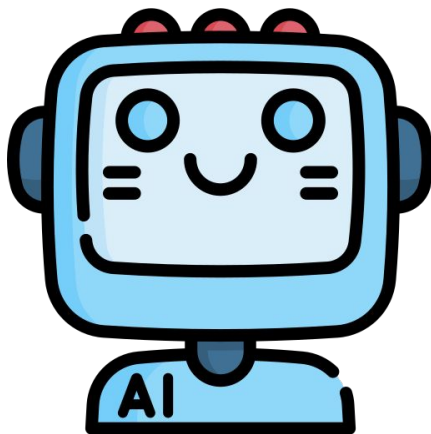
- AI is a “technology that enables computers and machines to simulate human intelligence and problem-solving capabilities.”



What is Artificial Intelligence?

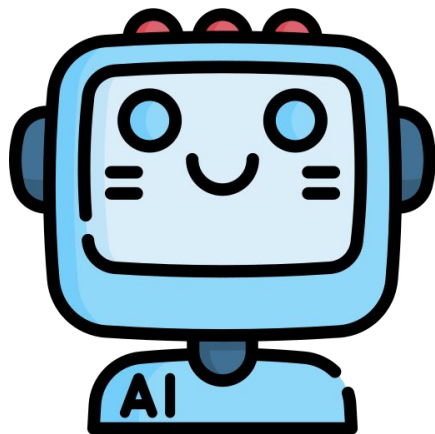
- AI is a “technology that enables **computers and machines to simulate** human intelligence and problem-solving capabilities.”

Artificial: “Human made; not occurring in nature”



What is Artificial Intelligence?

- AI is a “technology that enables computers and machines to simulate human intelligence and problem-solving capabilities.”



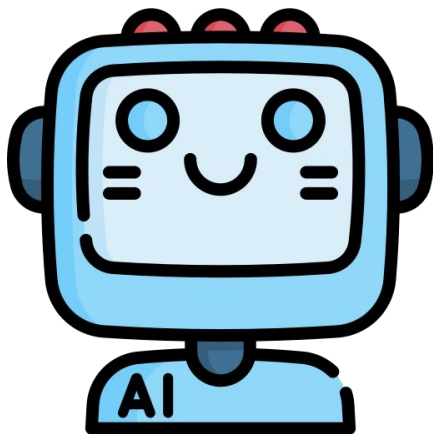
Artificial: “Human made; not occurring in nature”

Intelligence: “ability to apply and acquire knowledge and skills”



What is Artificial Intelligence?

- AI is a “technology that enables computers and machines to simulate human intelligence and problem-solving capabilities.”



Artificial: “Human made; not occurring in nature”

Intelligence: “ability to apply and acquire knowledge and skills”



Was that Artificial Intelligence?

We can categorise AI into 2 main types:

- “Rules-based” AI
- “Pattern-based” AI

The game what we played earlier uses “Rules-based” AI



Was that Artificial Intelligence?

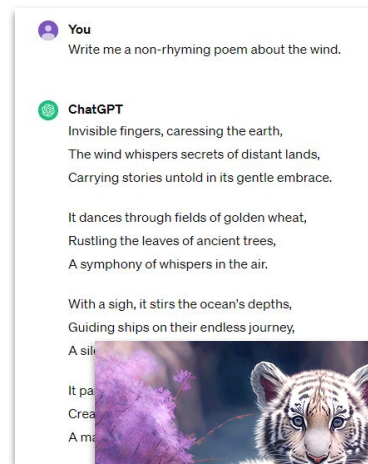
We can categorise AI into 2 main types:

- “Rules-based” AI
- “Pattern-based” AI

The game what we played earlier uses “Rules-based” AI.

“Pattern-based” AI is used in Generative AI systems such as ChatGPT, and Dall.E and in image and voice recognition.

We will cover this type of AI in future lessons.



Was that Artificial Intelligence?

We can categorise AI into 2 main types:

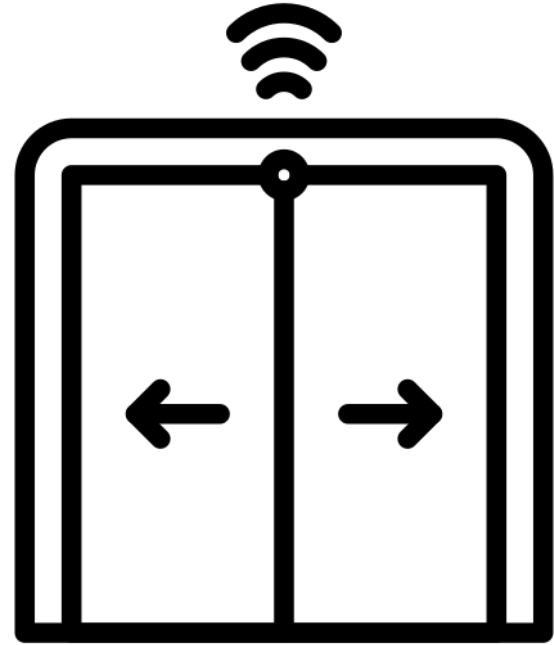
- “Rules-based” AI
- “Pattern-based” AI

We'll look at some simple AI rules in the rest of this lesson.



Rules

Think about an automatic door...

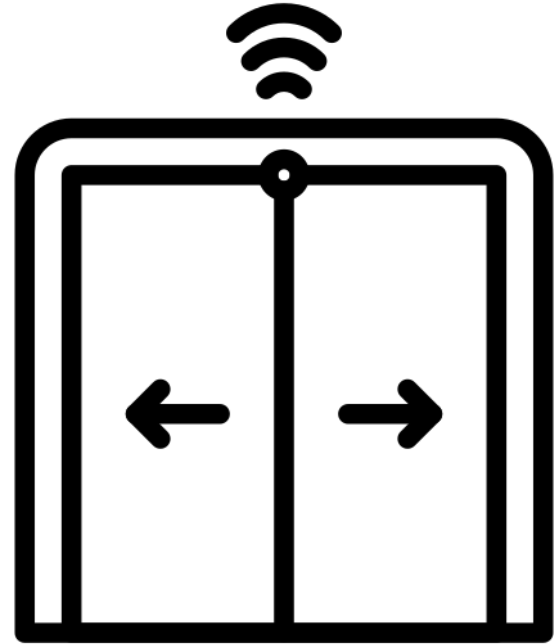


Rules

Think about an automatic door...

IF , THEN

ELSE

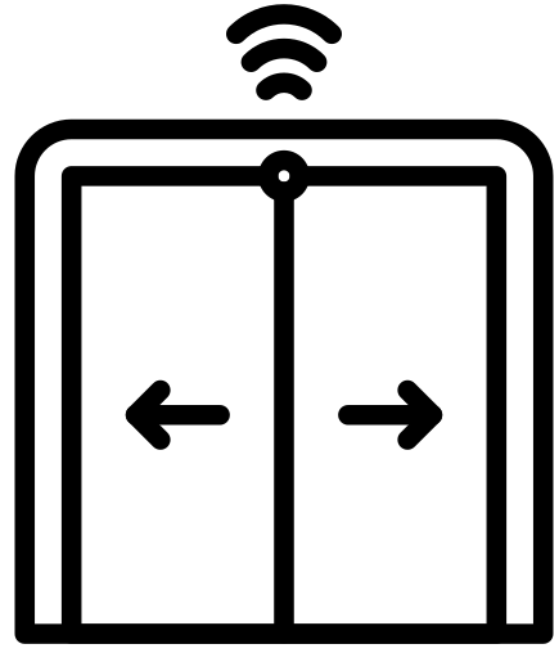


Rules

Think about an automatic door...

IF a person is standing in front of the door, THEN

ELSE

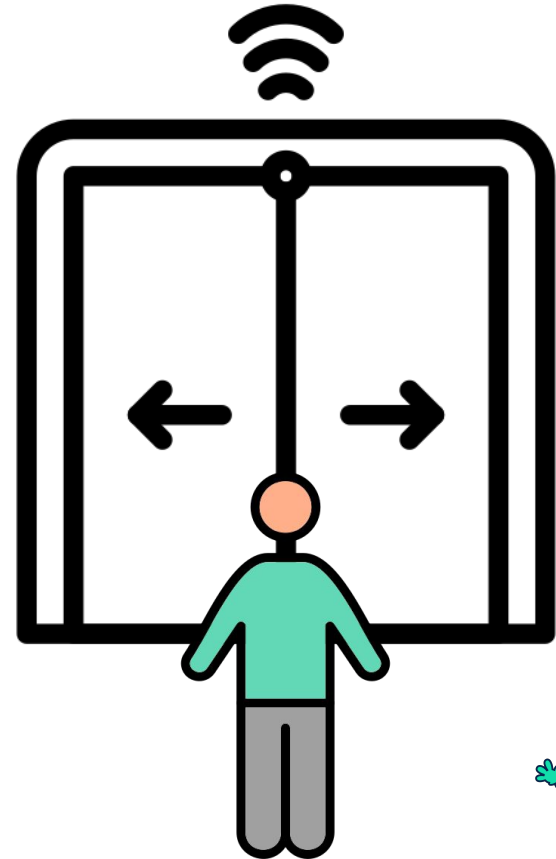


Rules

Think about an automatic door...

IF a person is standing in front of the door, THEN

ELSE



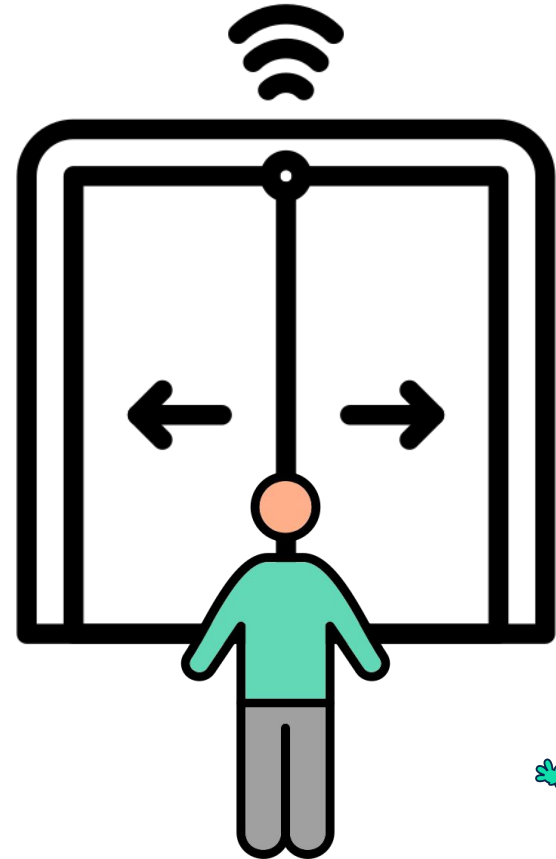
Rules

Think about an automatic door...

IF a person is standing in front of the door, THEN

Open the door

ELSE



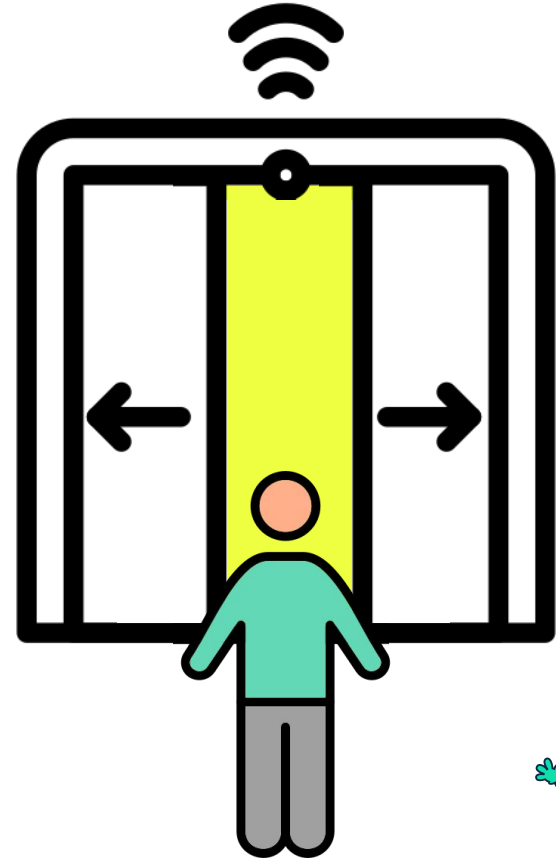
Rules

Think about an automatic door...

IF a person is standing in front of the door, THEN

Open the door

ELSE



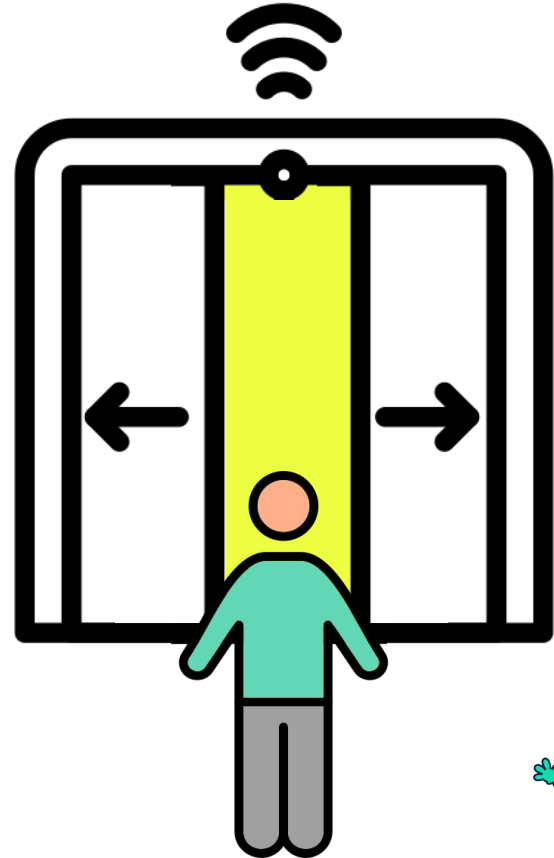
Rules

Think about an automatic door...

IF a person is standing in front of the door, THEN

Open the door

ELSE



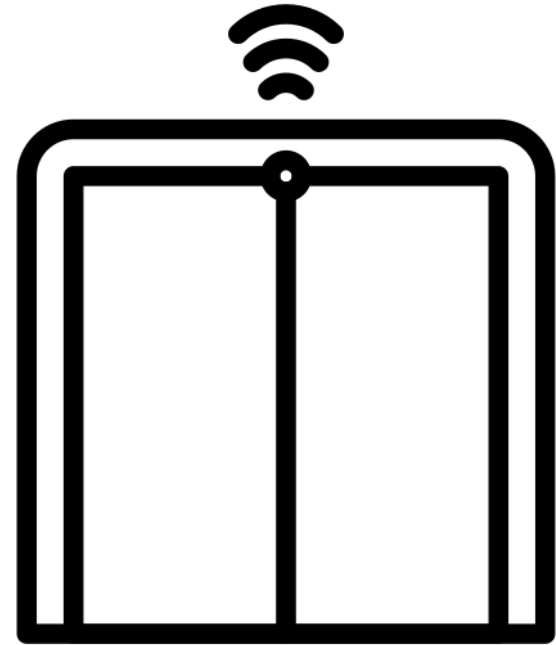
Rules

Think about an automatic door...

IF a person is standing in front of the door, THEN

Open the door

ELSE



Rules

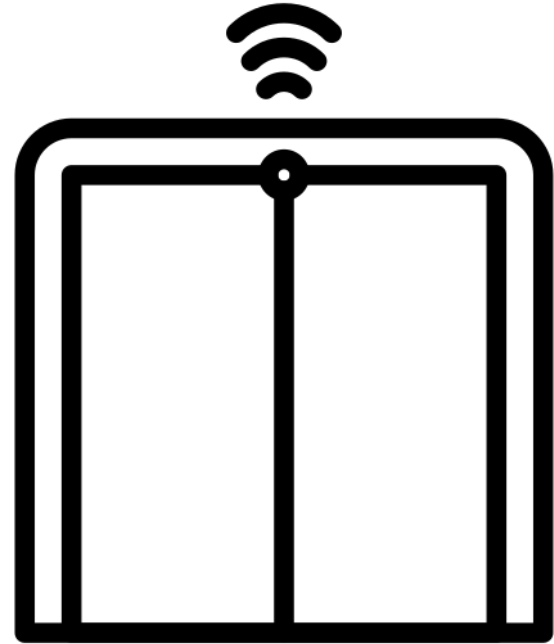
Think about an automatic door...

IF a person is standing in front of the door, THEN

Open the door

ELSE

Keep door closed



Rules

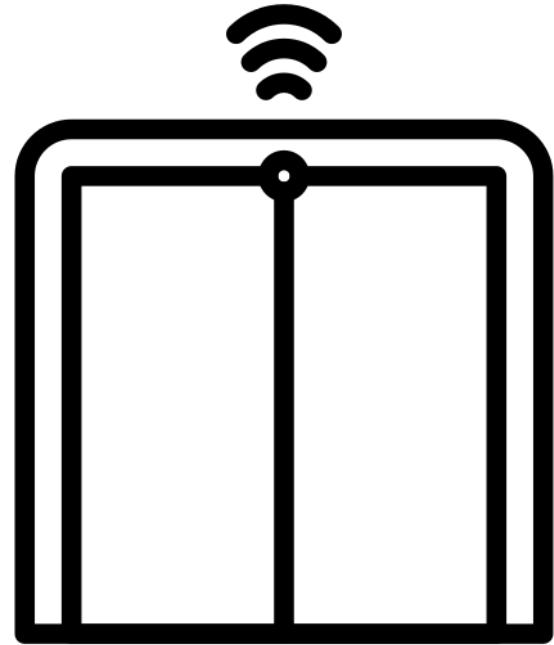
Think about an automatic door...

IF a person is standing in front of the door , THEN

Open the door

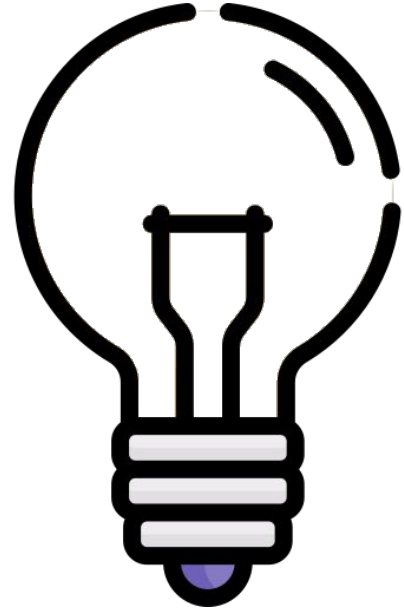
ELSE

Keep door closed



Rules

Think about motion sensing light...

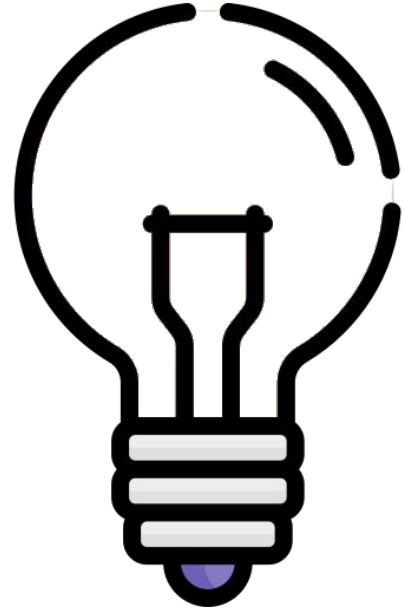


Rules

Think about motion sensing light...

IF , THEN

ELSE

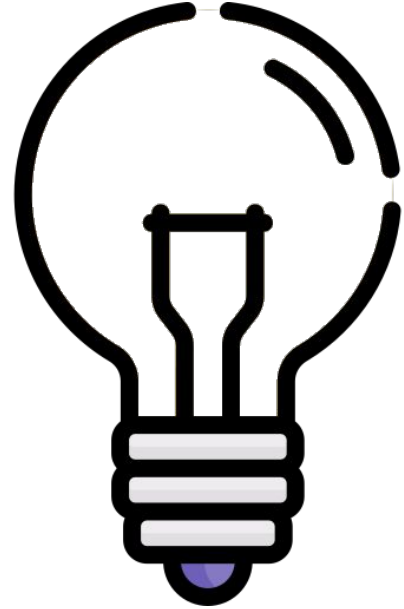


Rules

Think about motion sensing light...

IF movement is detected, THEN

ELSE

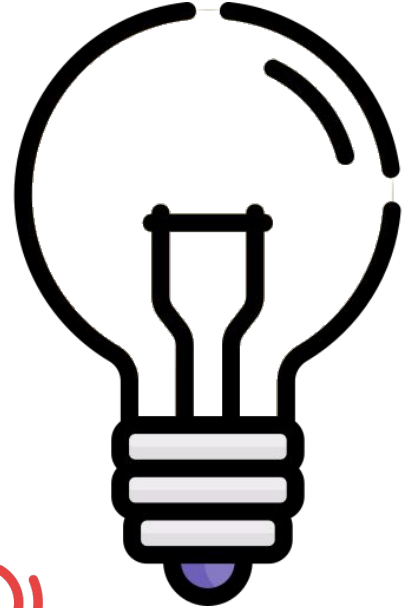


Rules

Think about motion sensing light...

IF movement is detected, THEN

ELSE



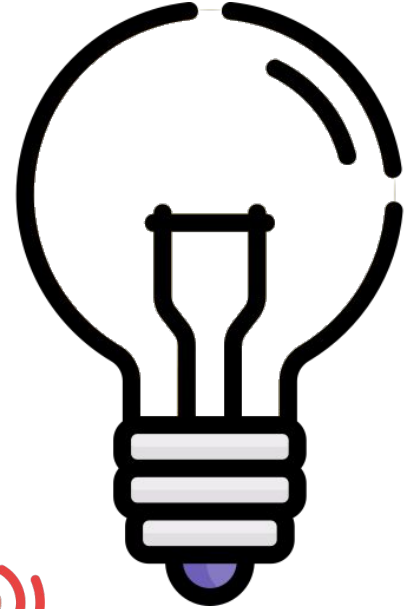
Rules

Think about motion sensing light...

IF movement is detected, THEN

Turn on the light

ELSE



Rules

Think about motion sensing light...

IF movement is detected, THEN

Turn on the light

ELSE



Rules

Think about motion sensing light...

IF movement is detected, THEN

Turn on the light

ELSE



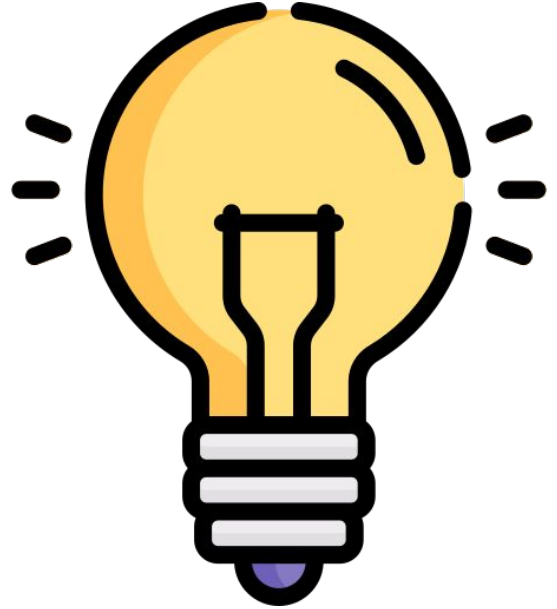
Rules

Think about motion sensing light...

IF movement is detected, THEN

Turn on the light

ELSE



Rules

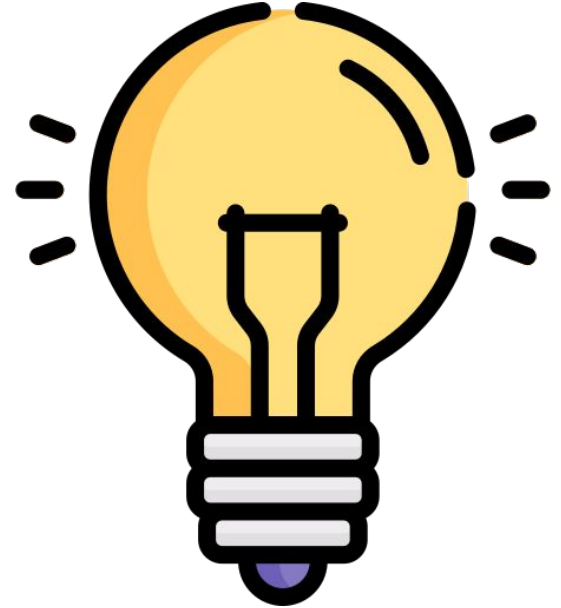
Think about motion sensing light...

IF movement is detected, THEN

Turn on the light

ELSE

Turn off the light



Rules

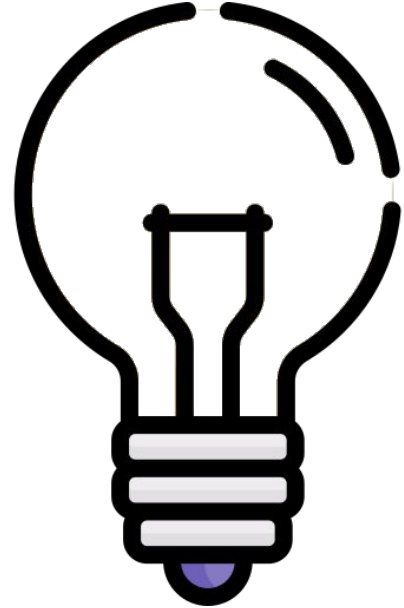
Think about motion sensing light...

IF movement is detected, THEN

Turn on the light

ELSE

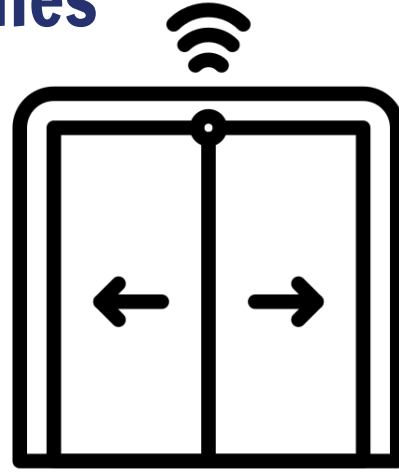
Turn off the light



The Structure of Simple AI Rules

IF , THEN

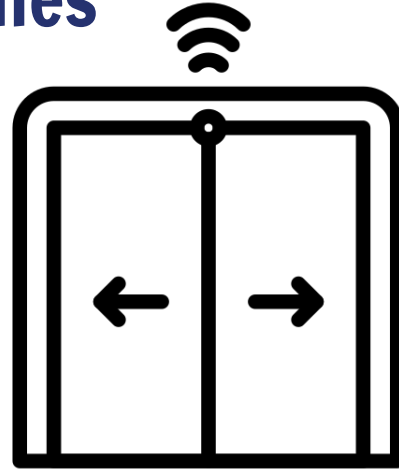
ELSE



The Structure of Simple AI Rules

IF (something happens) , THEN

ELSE

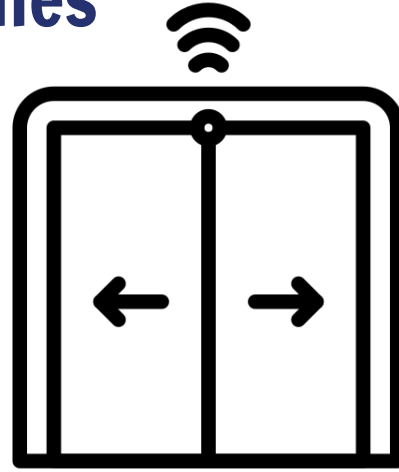


The Structure of Simple AI Rules

IF (something happens) , THEN

(do this)

ELSE



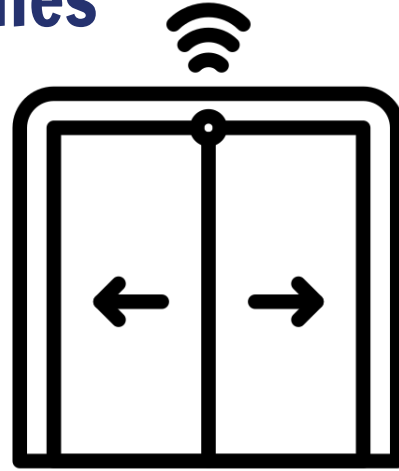
The Structure of Simple AI Rules

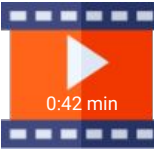
IF (something happens) , THEN

(do this)

ELSE

(do something else)





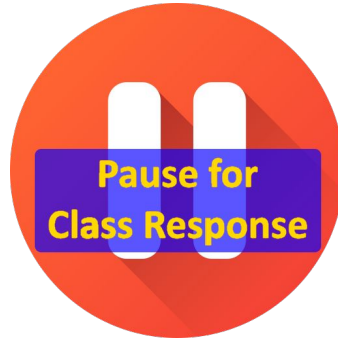
Does “Rules-Based” AI always work?

What are some disadvantages or limitations of “Rules-Based” Artificial Systems?



Does “Rules-Based” AI always work?

What are some disadvantages or limitations of “Rules-Based” Artificial Systems?



Does “Rules-Based” AI always work?

What are some disadvantages or limitations of “Rules-Based” Artificial Systems?

- We need to know all the rules in advance
 - What if we **don't know all** the rules, or if there are **too many rules** and combinations?
- Humans are still needed to tell the computer and machines what the rules are (the machines don't “learn” the rules themselves)



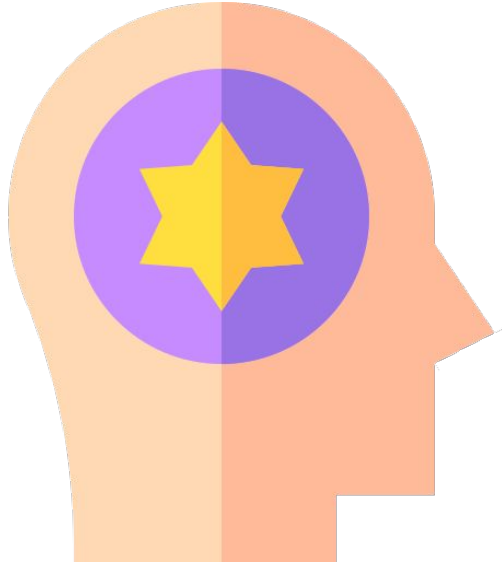
Worksheet Activity



Complete Questions 1 - 4

([PDF](#), [MS Word](#))

Bonus: Mind-Reading Trick....

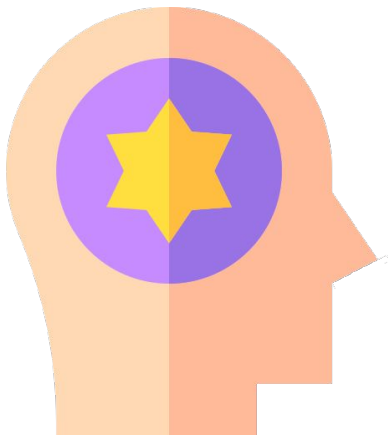


[Click here for the computer to read your mind....](#)

Mind-Reading Trick

- Did you figure out the “secret” to the trick?
- Do you think that was an example of “Artificial Intelligence”?

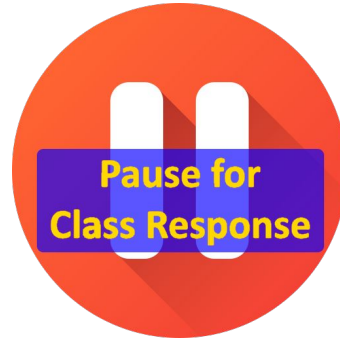
Why or why not?



Mind-Reading Trick

- Did you figure out the “secret” to the trick?
- Do you think that was an example of “Artificial Intelligence”?

Why or why not?



Summary

You should now be able to:

- Understand what “Artificial Intelligence” means
- Identify some simple “rules-based” AI systems
- Write simple AI rules
- Identify AI rules in games and magic tricks



ACARA Digital Technologies v9.0 curriculum content addressed in the lesson include:

- **Levels 5 - 6, AC9TDI6P02** - design algorithms involving multiple alternatives (branching) and iteration
- **Levels 7 - 8, AC9TDI8P05** - design algorithms involving nested control structures and represent them using flowcharts and pseudocode



License Information

These [CS in Schools](#) lessons plans, worksheets, and other materials were created by the CS in Schools team. They are licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](#).

Images all taken from [flaticon](#).

