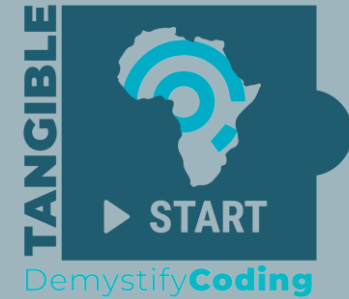




Cultivating the skills ecosystem of the future



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Skills Ecosystem

- Feeding the skills pipeline
 - Recruiting from other companies
 - Employing new graduates
- Not a solution to skills shortage
- Cultivating the pipeline
 - School level
 - Identify skills
 - Nurture skills



TANKS Mobile App

- No computers
- No electricity
- No internet
- Low budget
- Easy entry for teachers
- Fun
- Quality



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TANKS Mobile App



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when thousands of shoppers look for bargains on Friday.

Last year, shoppers using Takeslot.com ran into problems in the

from the surge of online shoppers across the country," Takeslot.com chief marketing officer Julie-Anne Walsh said.

plemented a "feature freeze" to tackle possible glitches.

"We have spent the last few weeks preparing our systems, spent the

year over the last four years.

Last year, it was one of the few e-commerce sites that did not fall over under the visitor load.

amount of time and effort ing and optimising our se city and our developmen focused on optimising ko

Student develops skills app for pupils

Odette Parfitt
parfitt@tisoblackstar.co.za

AN educational mobile application, the brainchild of a Nelson Mandela University student, will soon shape the next generation of software developers in the rural and township schools in the Eastern Cape.

The still unnamed app, designed by postgraduate student Byron Batteson, can teach pupils basic computer programming principles at primary school level.

This is what makes Batteson's creation – which is his project for honours studies – unique, according to Professor Jean Greyling, his supervisor in the university's department for computing sciences.

"Software development is the scarcest skill in the country at the moment," Greyling said.

"There is a desperate shortage of graduates in programming and this is the ideal tool to take to rural schools for workshops, as it works on cell-phones and doesn't require a computer."

The app has a military tank moving through a maze, following directions provided in the form of physical tokens that form a puzzle.

Batteson said: "The tokens work through image recognition and are laid out as a puzzle of the users' design and, when photographed, the



EDUCATIONAL GAME: Byron Batteson demonstrates his app with his supervisor, Professor Jean Greyling
Picture: EUGENE COETZEE

Our vision is to export it to America and Europe by this time next year

"I wanted to make something that was free and accessible to all."

The game has 20 levels, from simple sequences of moving forward, backward, left and right.

However, as the levels become more complex, the puzzle pieces also allow the tank to shoot down obstacles or move around it.

Greyling said: "It is designed for pupils between the ages of 10 and 14, but I know of children aged five and adults over 50 who have played and

can even be used for corporate team building events."

Though the app is aimed at workshops for schools – with the support of corporate sponsors – Greyling said the app had great commercial export potential.

"Our vision is to export it to America and Europe by this time next year, if not sooner. [You can also] build different games on the same tokens."

"Levels can also be added to the game, and there are a lot [of options] for expansion," he said.

The first step, however, is an informal launch of the application at the ICT Summit in East London this week.

The app will be introduced to the

Christmas in the Home expo on December 1. Batteson said the app was free to download on Androids.

The tokens could be printed on paper, so disadvantaged schools did not have to pay.

The set of 63 tokens would, however, be available for sale, he said.

Greyling said: "The project received a considerable grant from the Technology Innovation Agency, which has made it possible to commercialise the research."

"There are similar games in existence, but none that use programming concepts like this one."

For more information about the app, interested parties can contact Grey-

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Athena O'Reilly
oreillya@tisob

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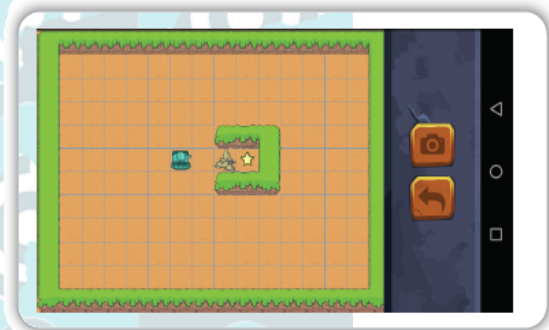


PROBLEM SOLVING GAME

TANKS Mobile App

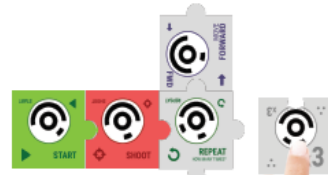
STEP 1

Observe the map. Note shootable and none shootable objects



STEP 2

Set up your chain of commands to the tank using your tokens



STEP 3

Capture and confirm your tokens then watch your tank go!



Supporting Tools



LESSON

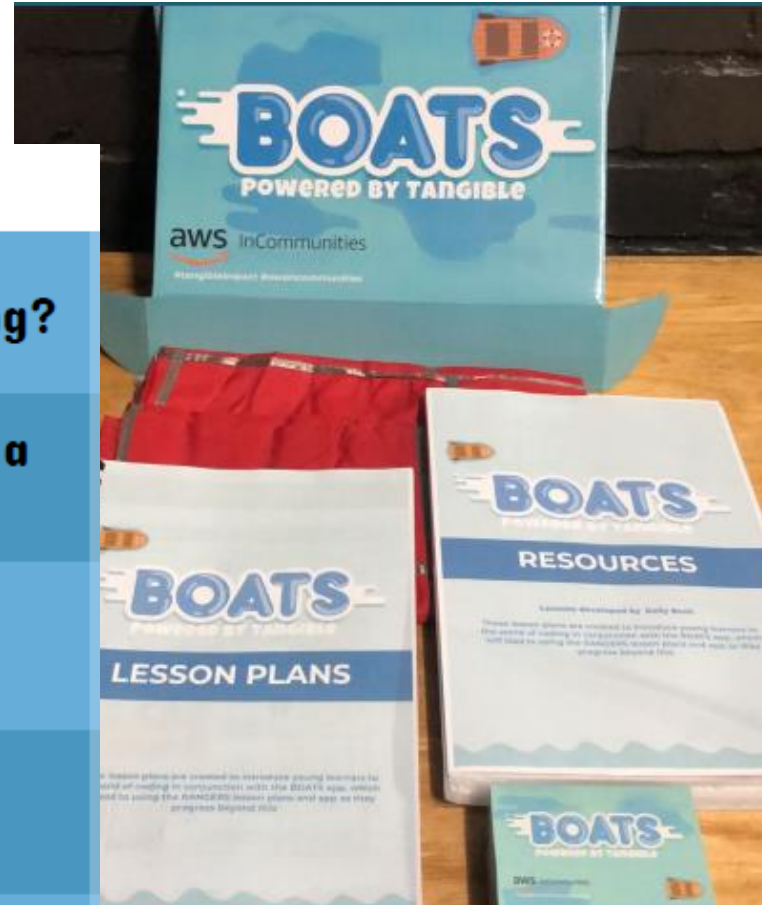
#1 - What is Coding?

#2 - Thinking like a computer

#3 - Types of instructions

#4 - Sequencing Tasks

#5 - Left & right, forwards & backwards



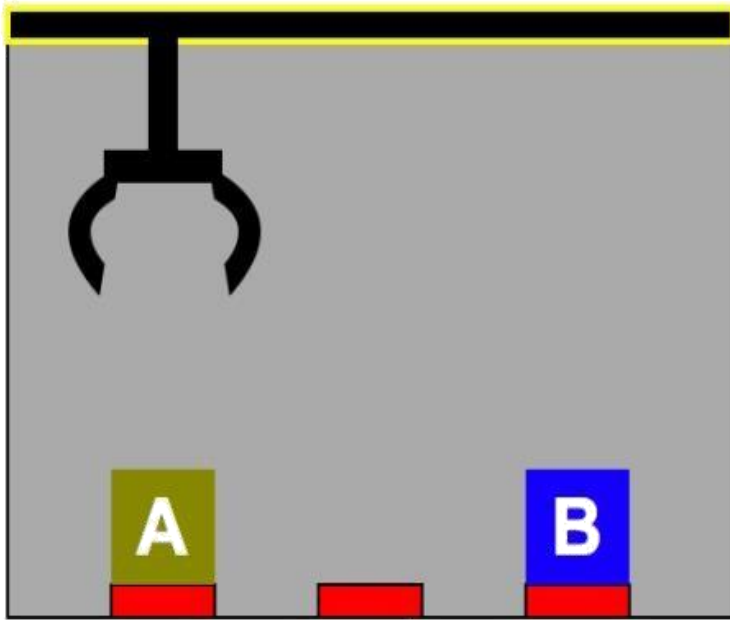
Why at a Physics Conference?



It's not about coding

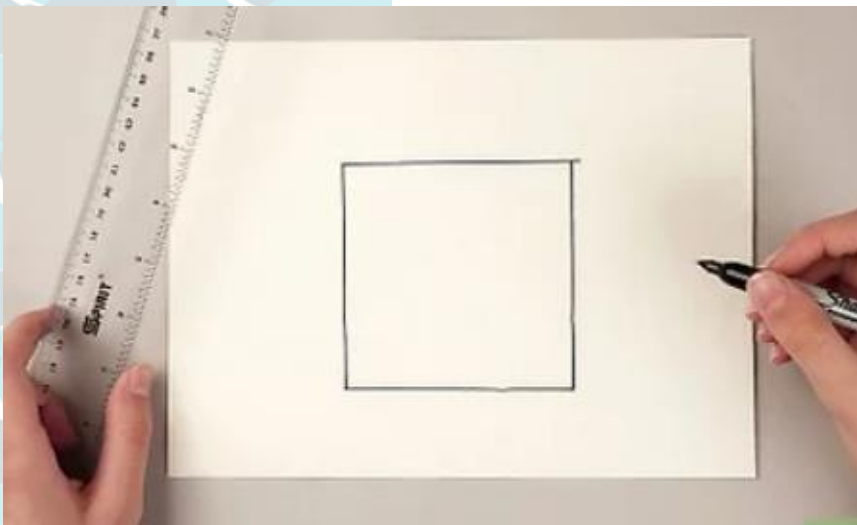


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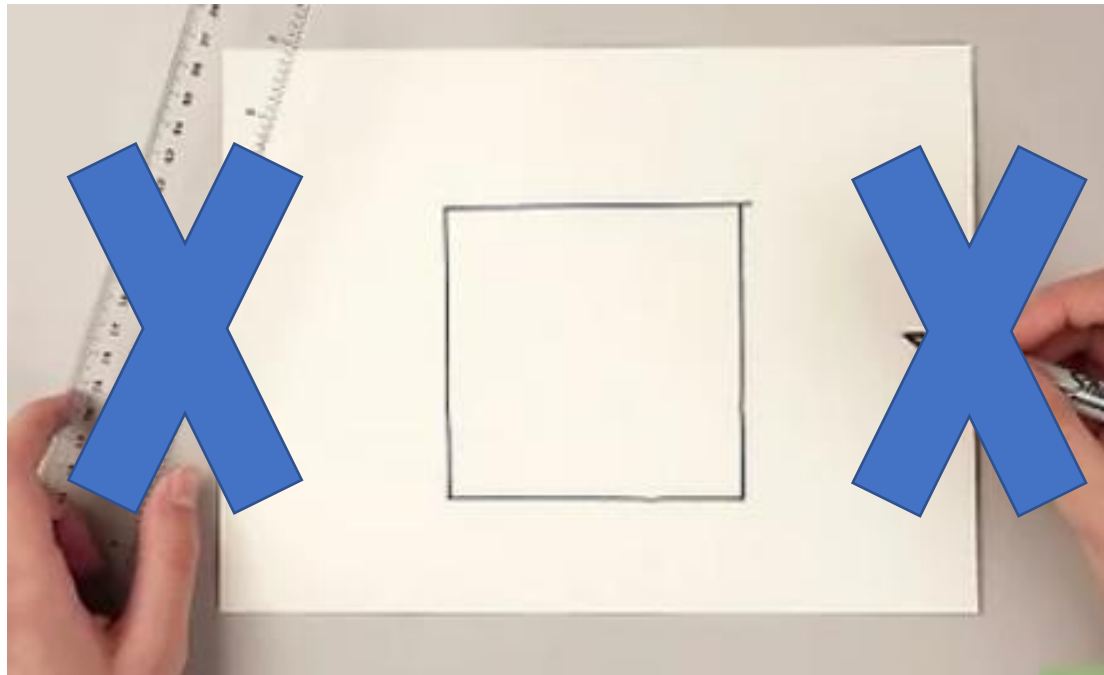
Computational Thinking

- Abstraction
- Decomposition
- Pattern Recognition
- Algorithm

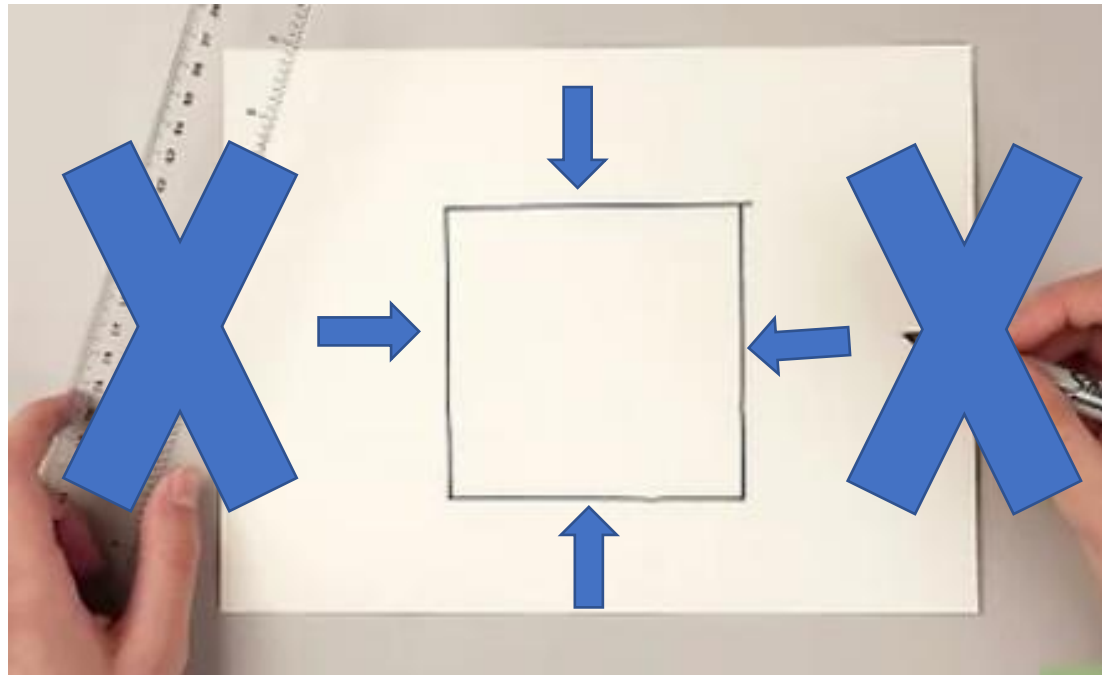




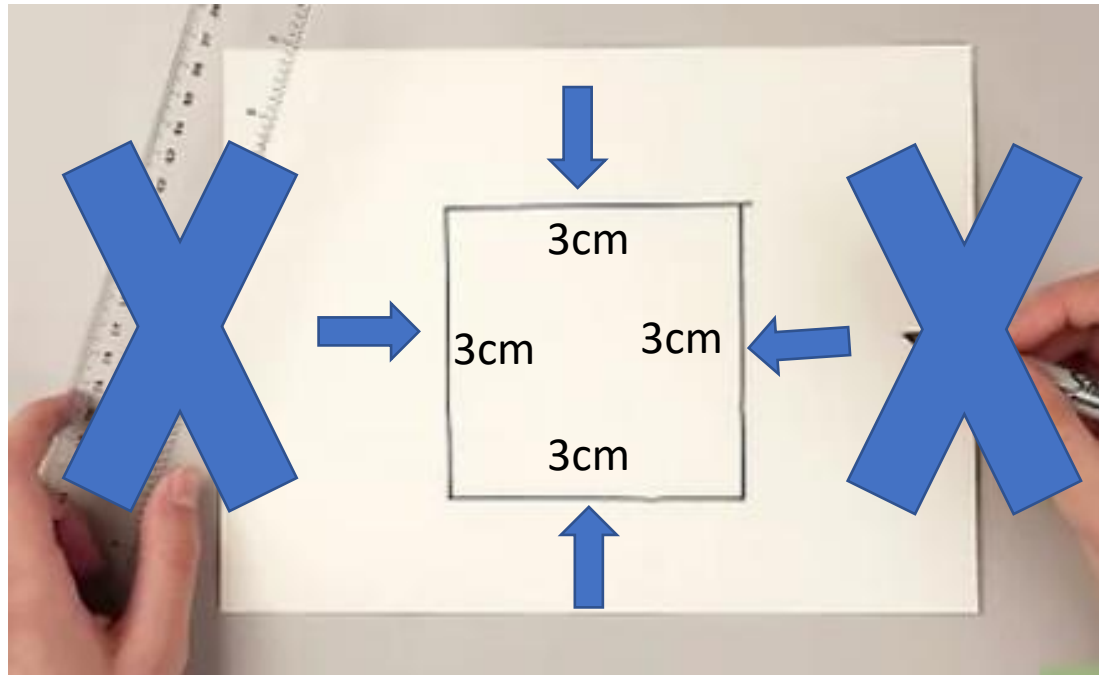
- **Abstraction**
- Decomposition
- Pattern Recognition
- Algorithm



- Abstraction
- **Decomposition**
- Pattern Recognition
- Algorithm

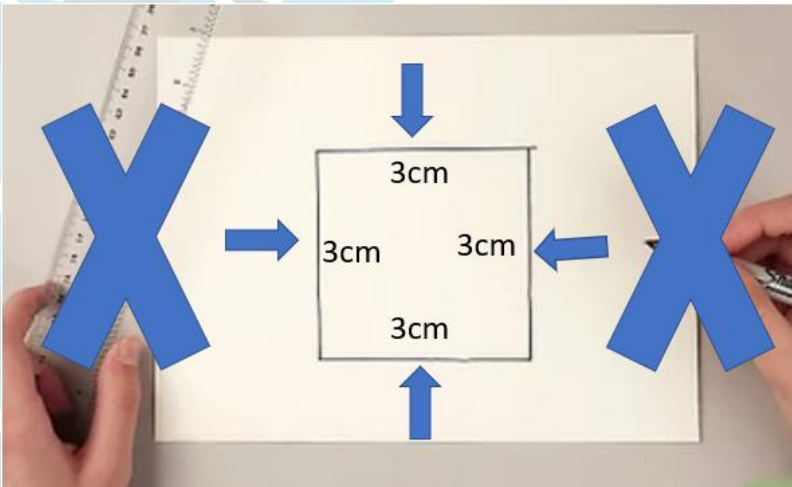


- Abstraction
- Decomposition
- **Pattern Recognition**
- Algorithm



- Abstraction
- Decomposition
- Pattern Recognition
- **Algorithm**

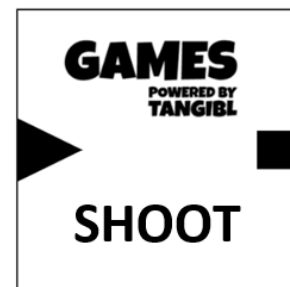
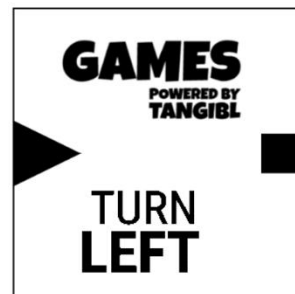
- Forward 3cm
- Turn Right
- Forward 3cm
- Turn Right
- Forward 3cm
- Turn Right
- Forward 3cm
- Turn Right



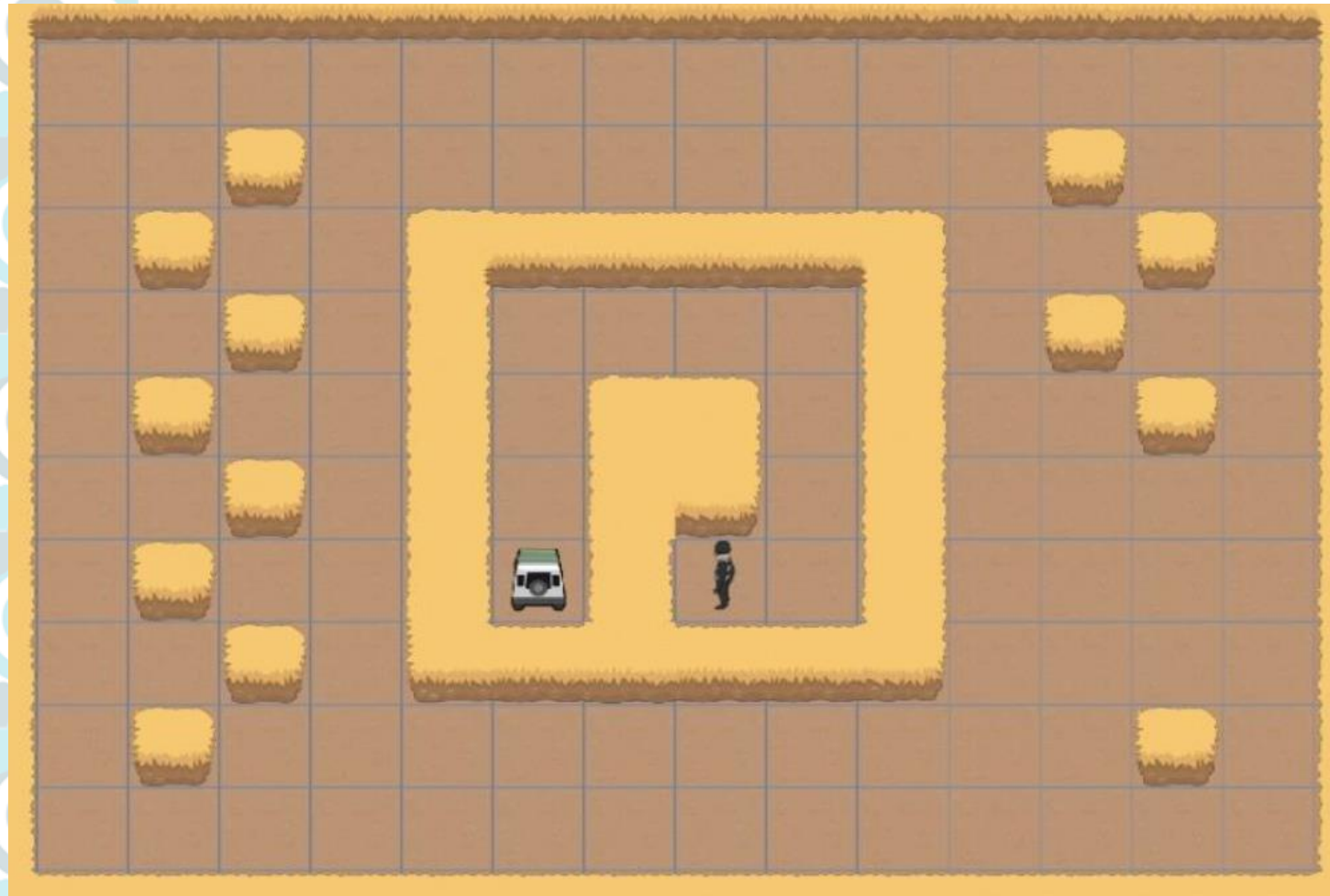
RANGERS Coding



RANGERS Coding

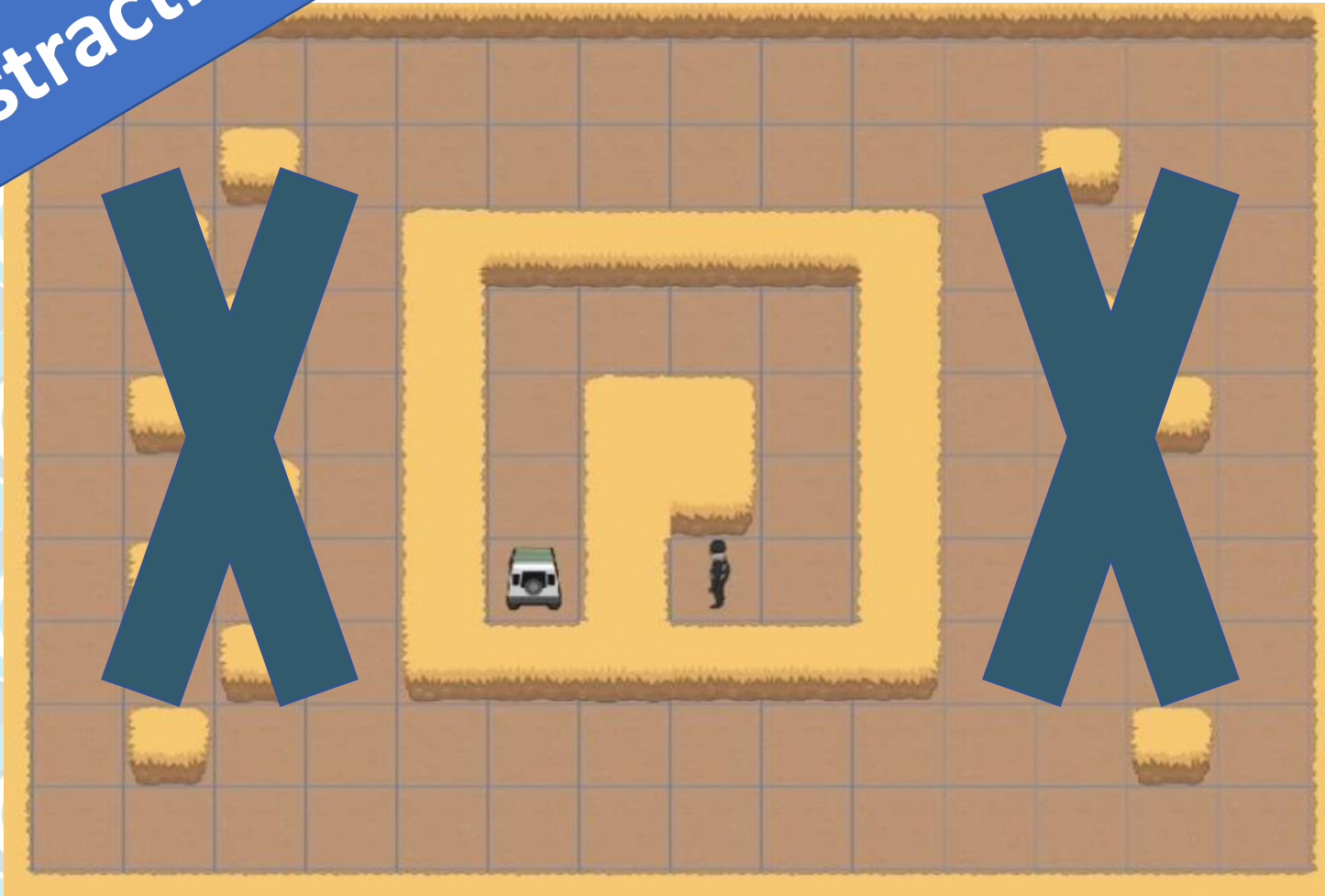


RANGERS Coding

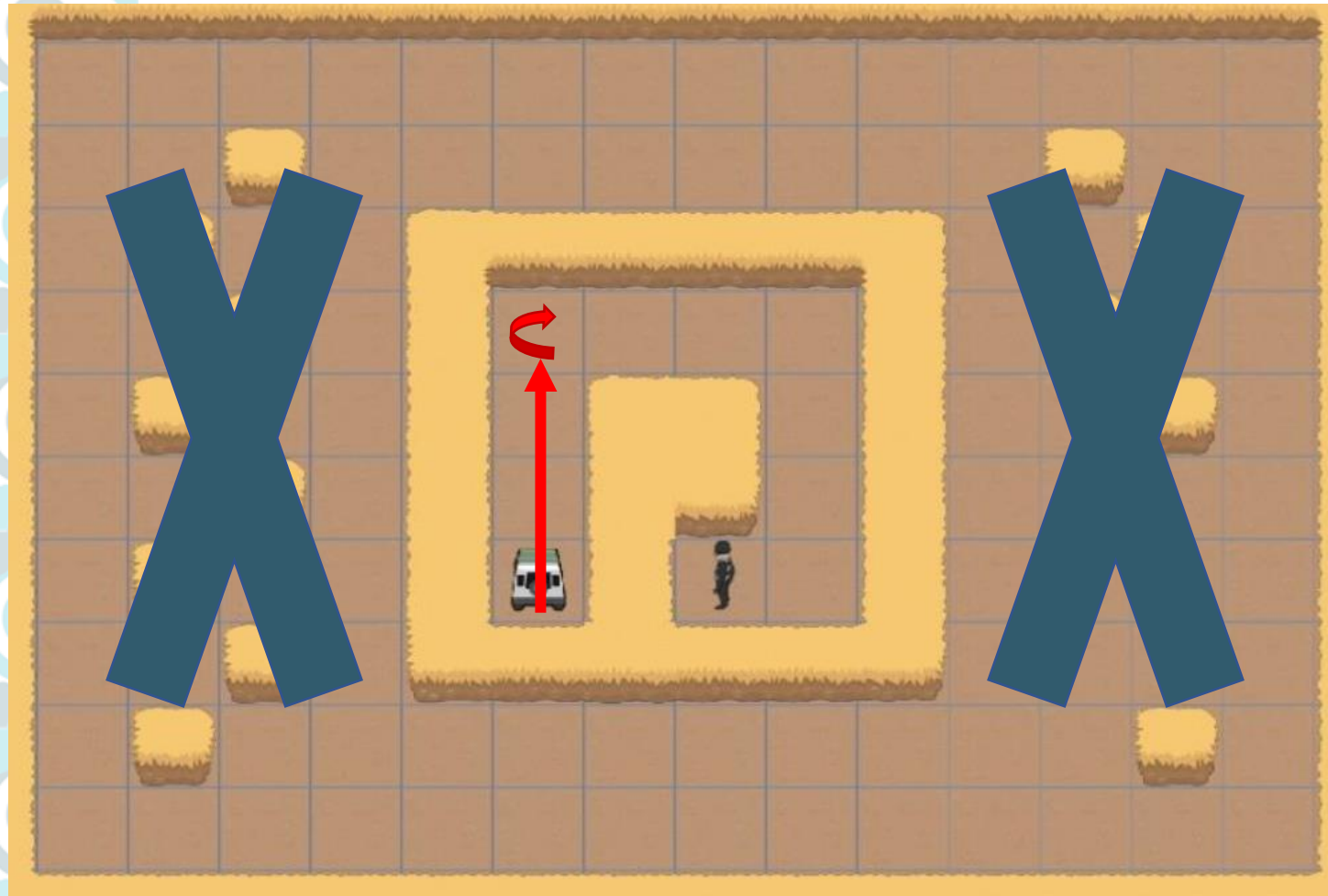


Abstraction

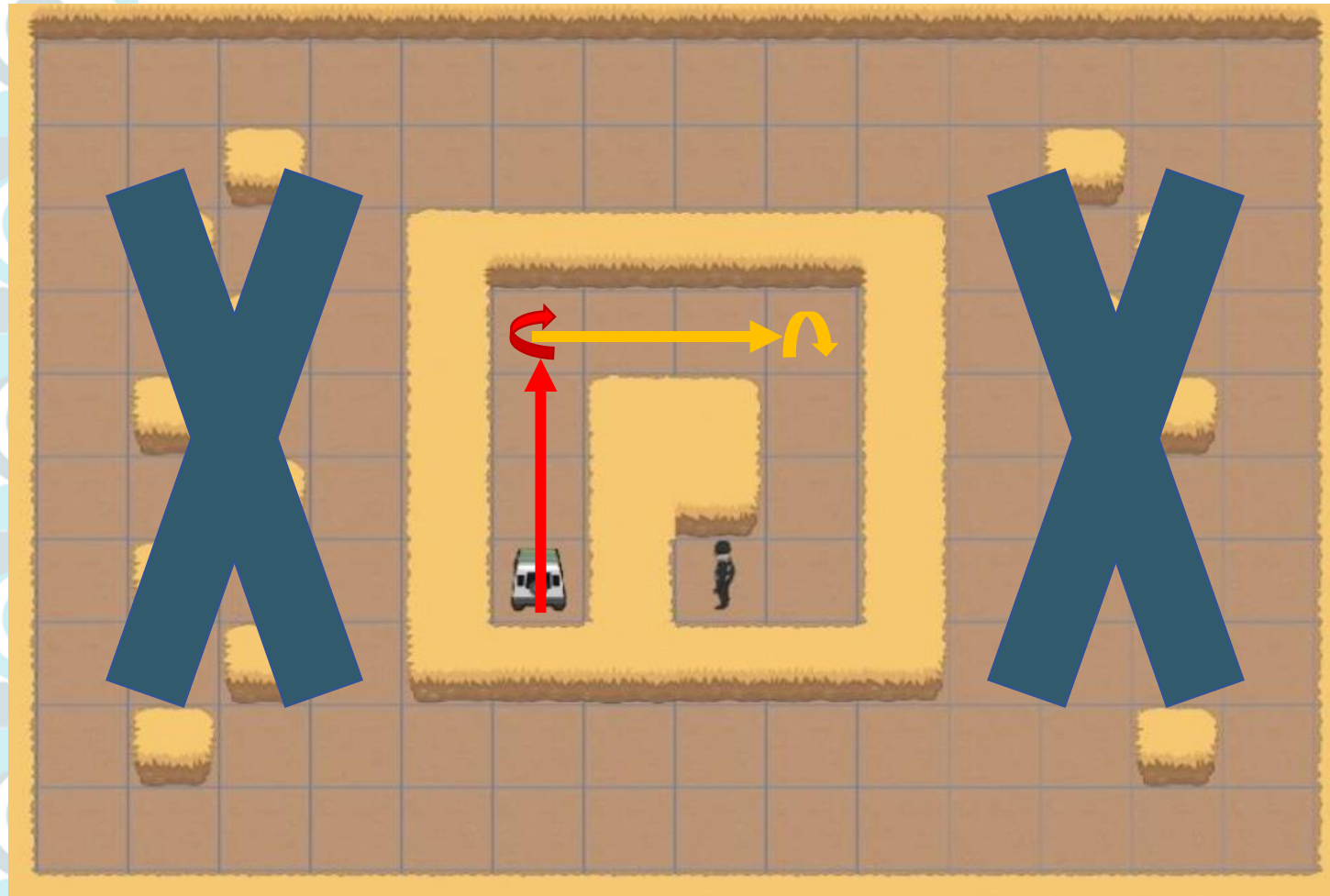
RANGERS Coding



RANGERS Coding

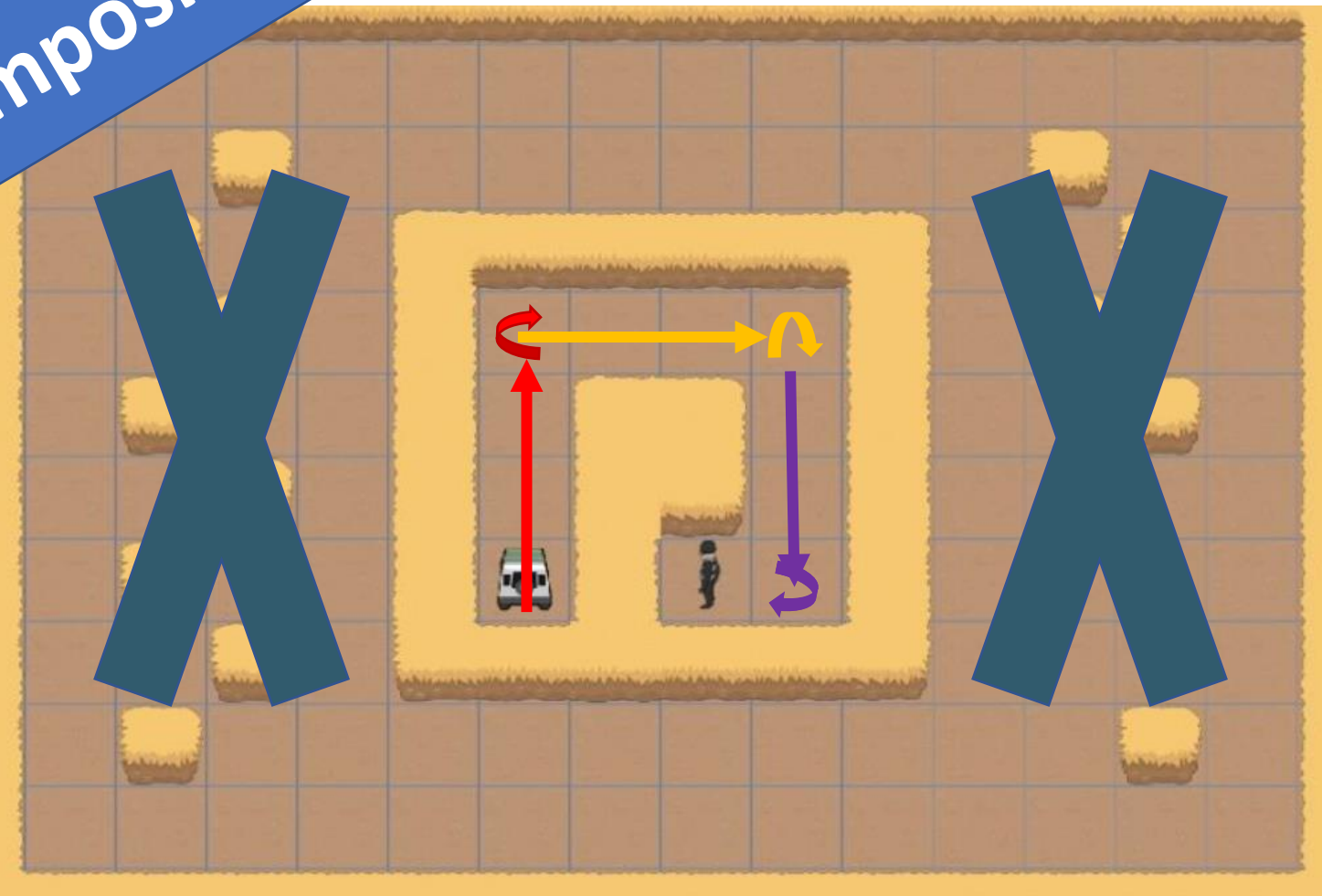


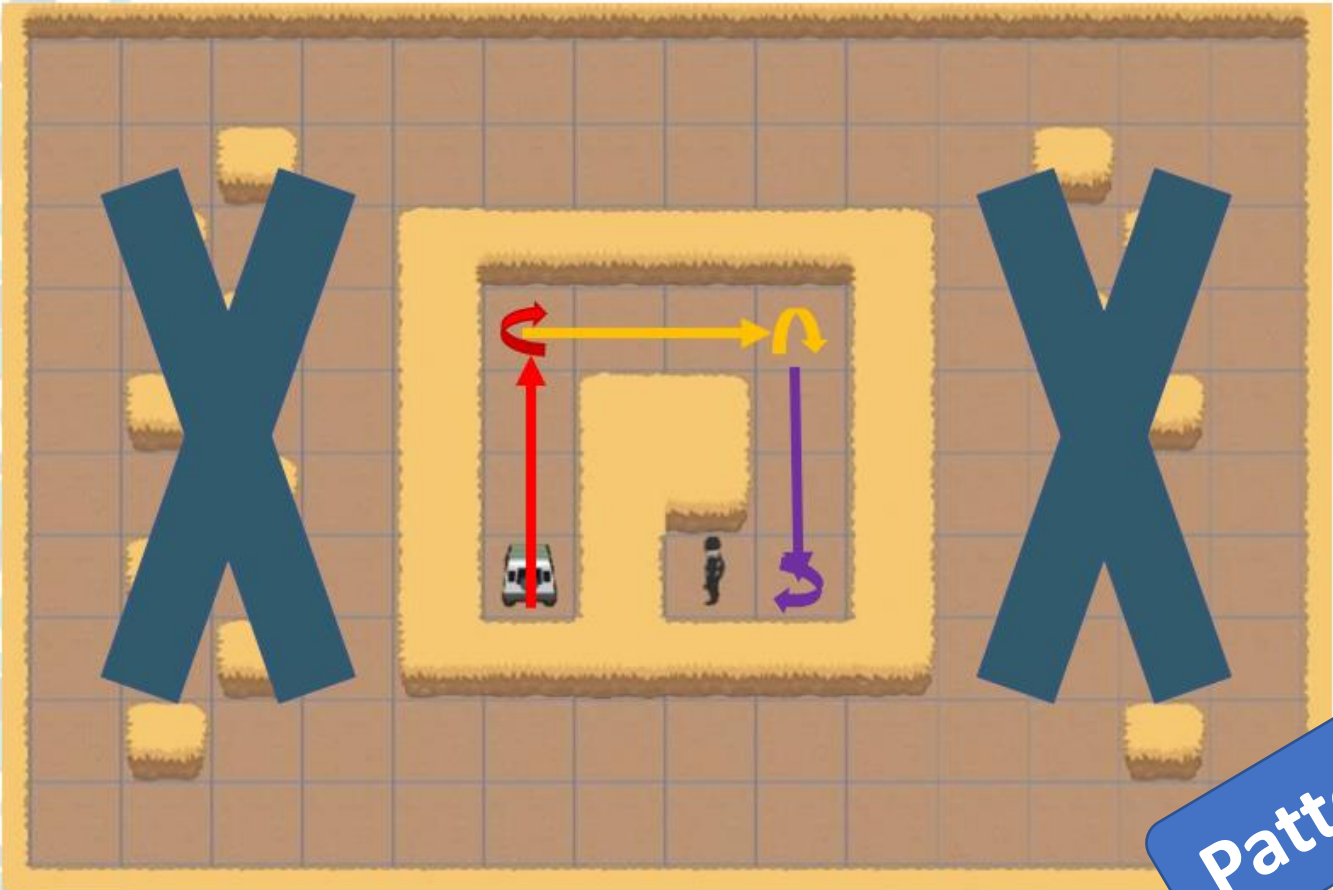
RANGERS Coding



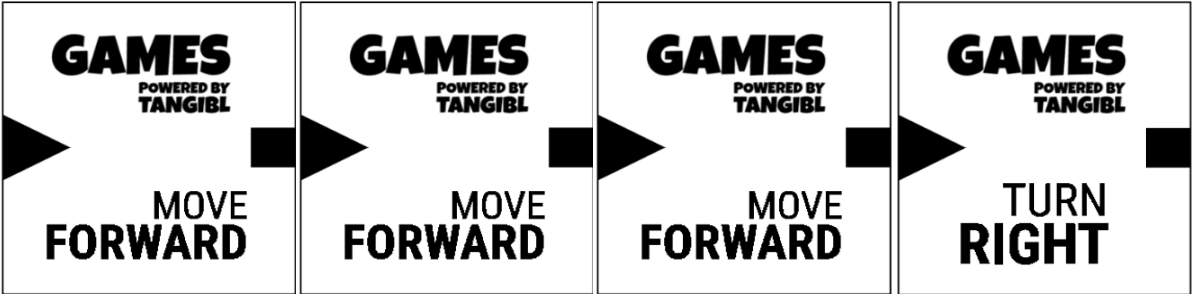
Decomposition

RANGERS Coding



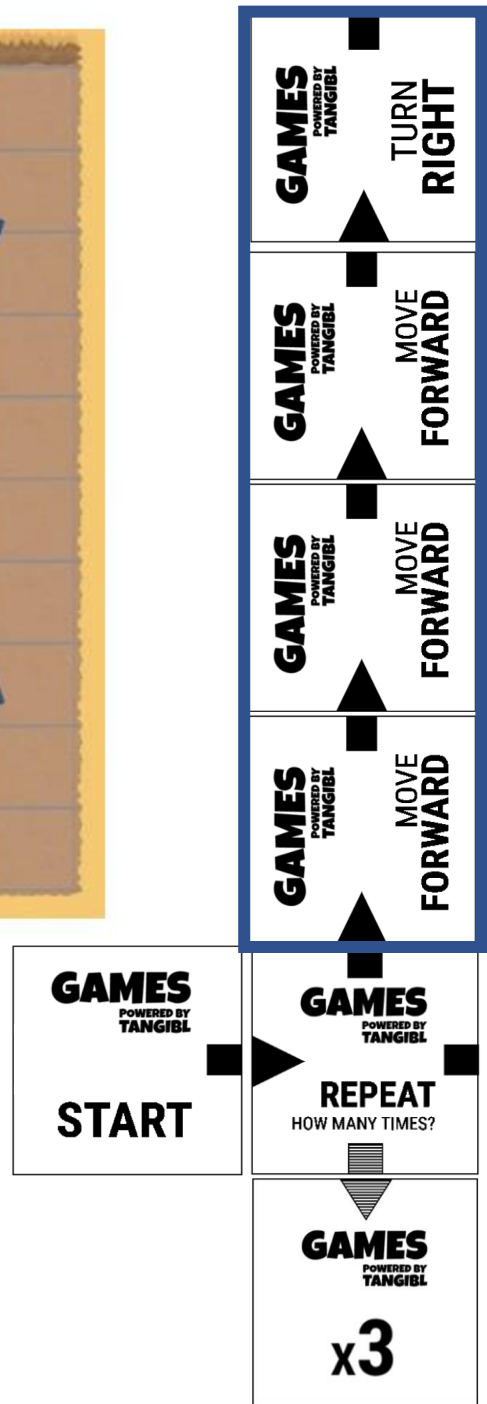
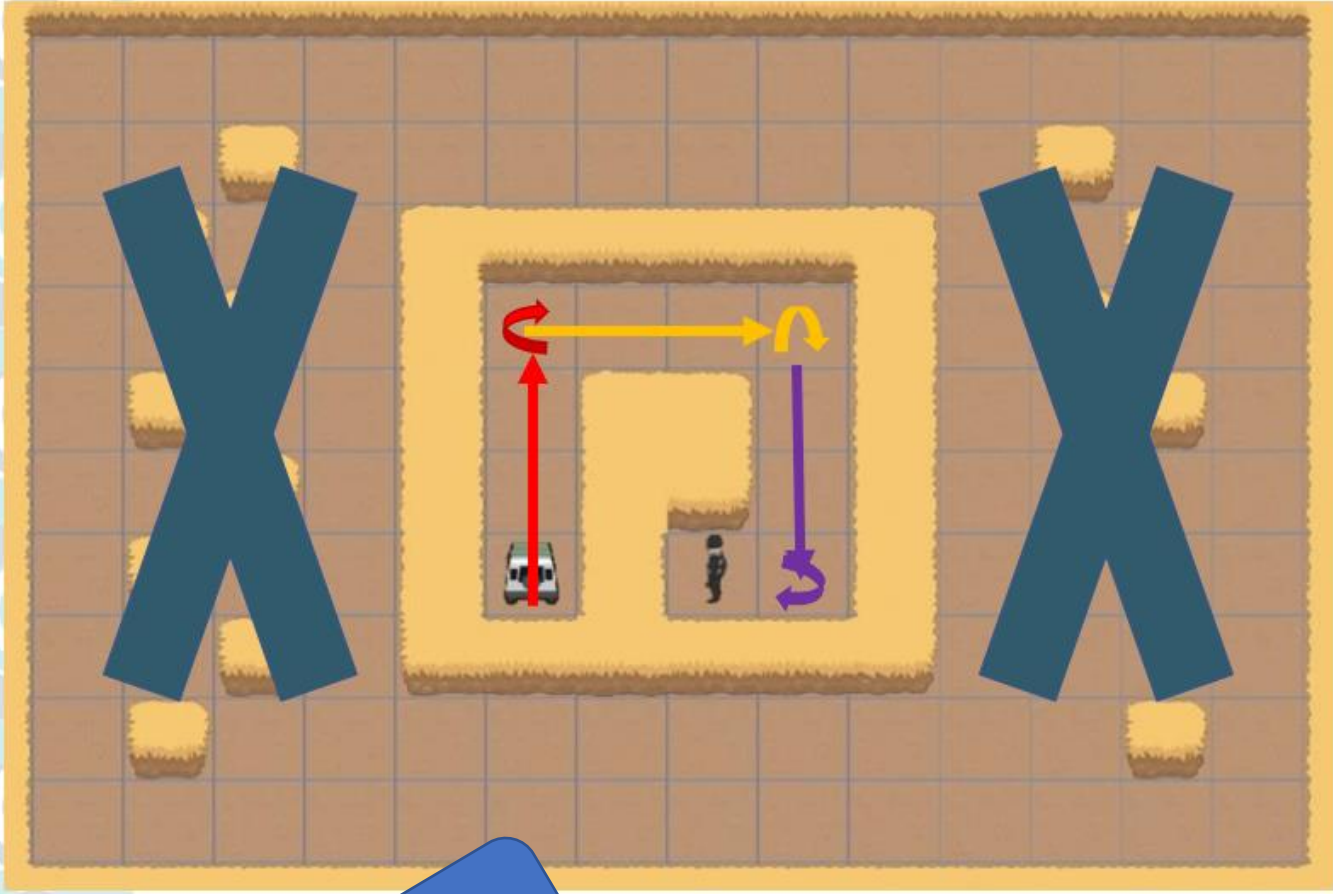


Pattern Recognition

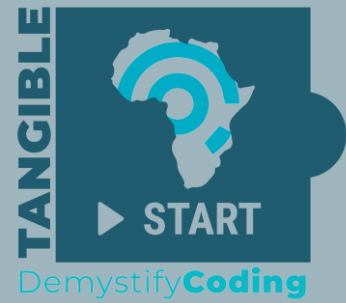
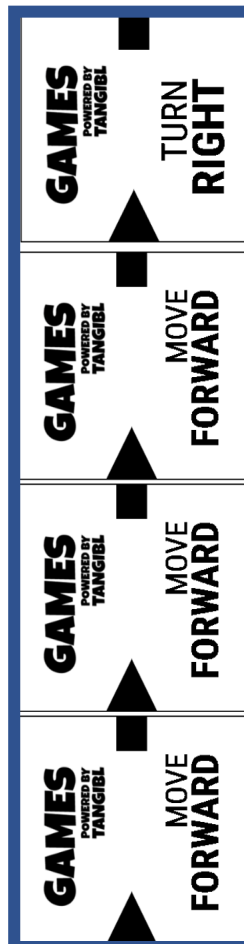
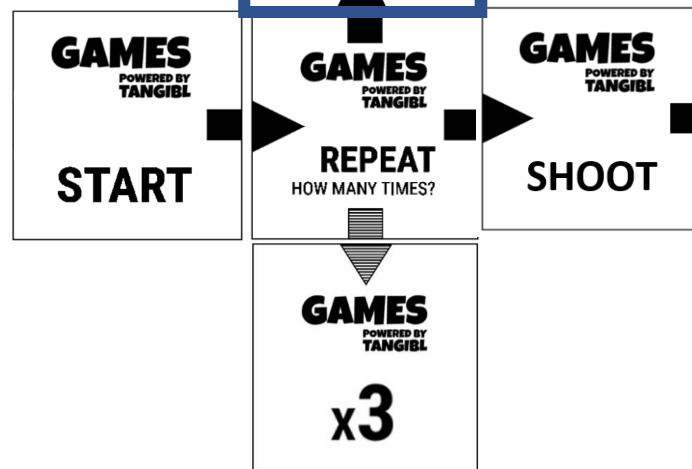
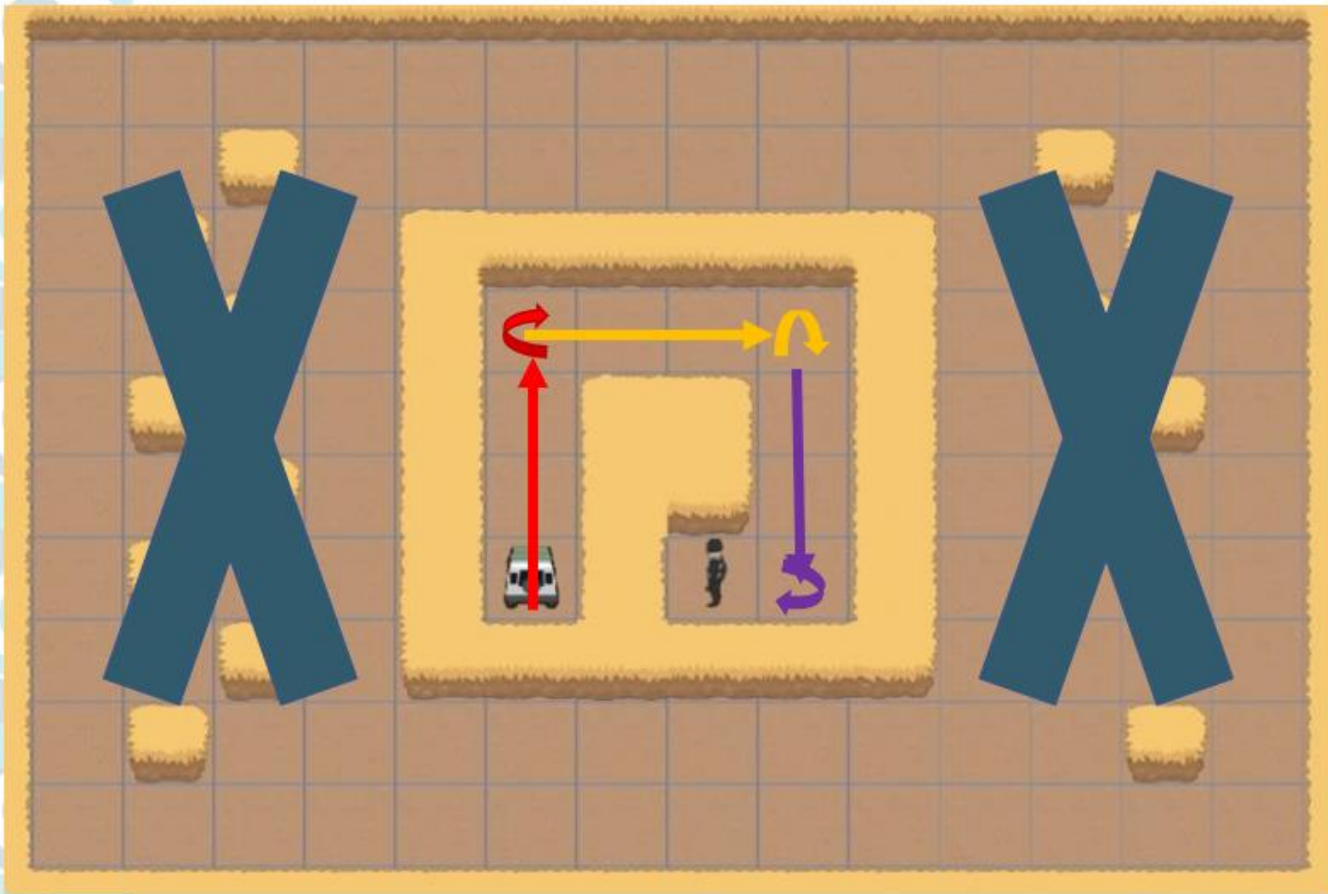


x 3

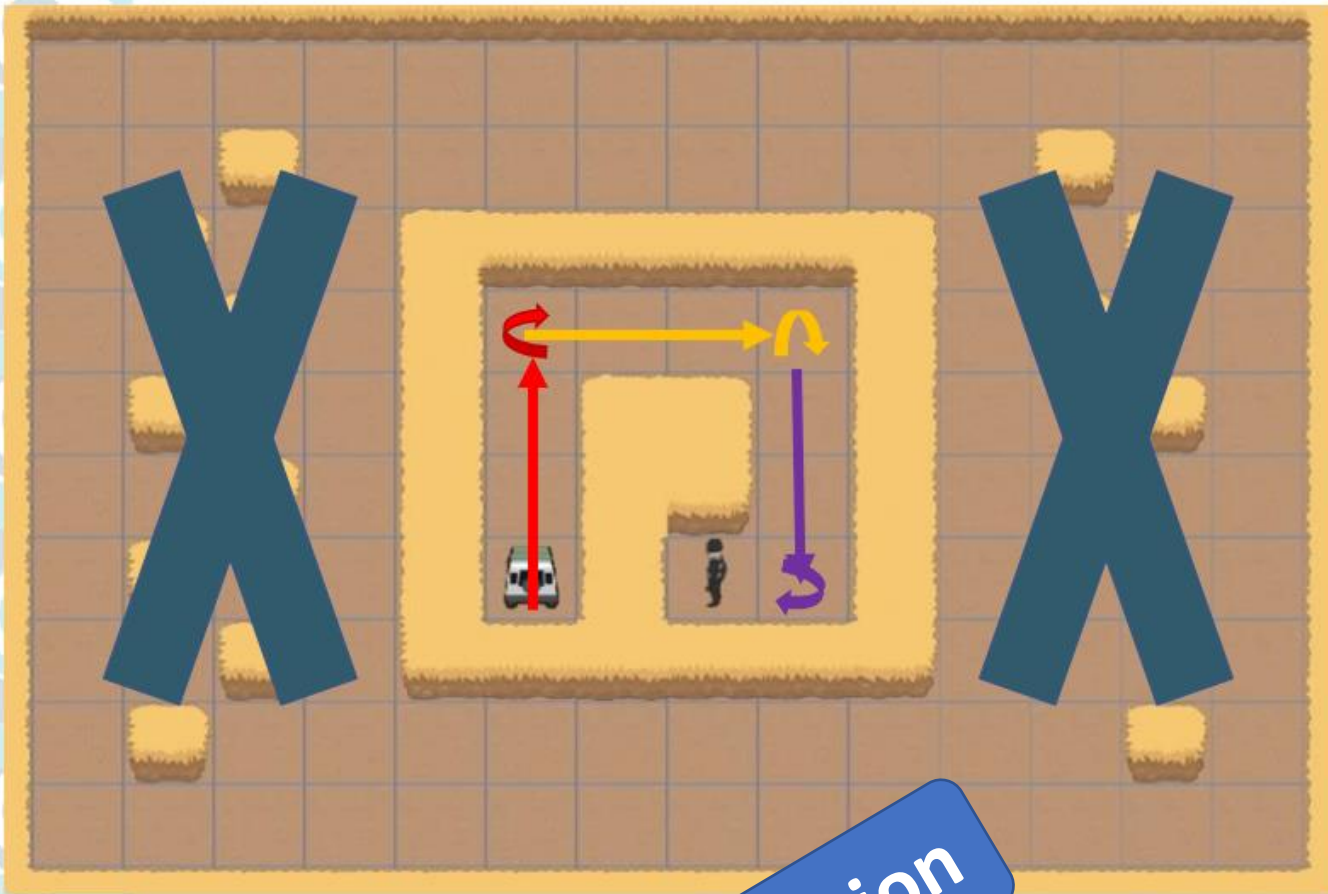
Algorithm



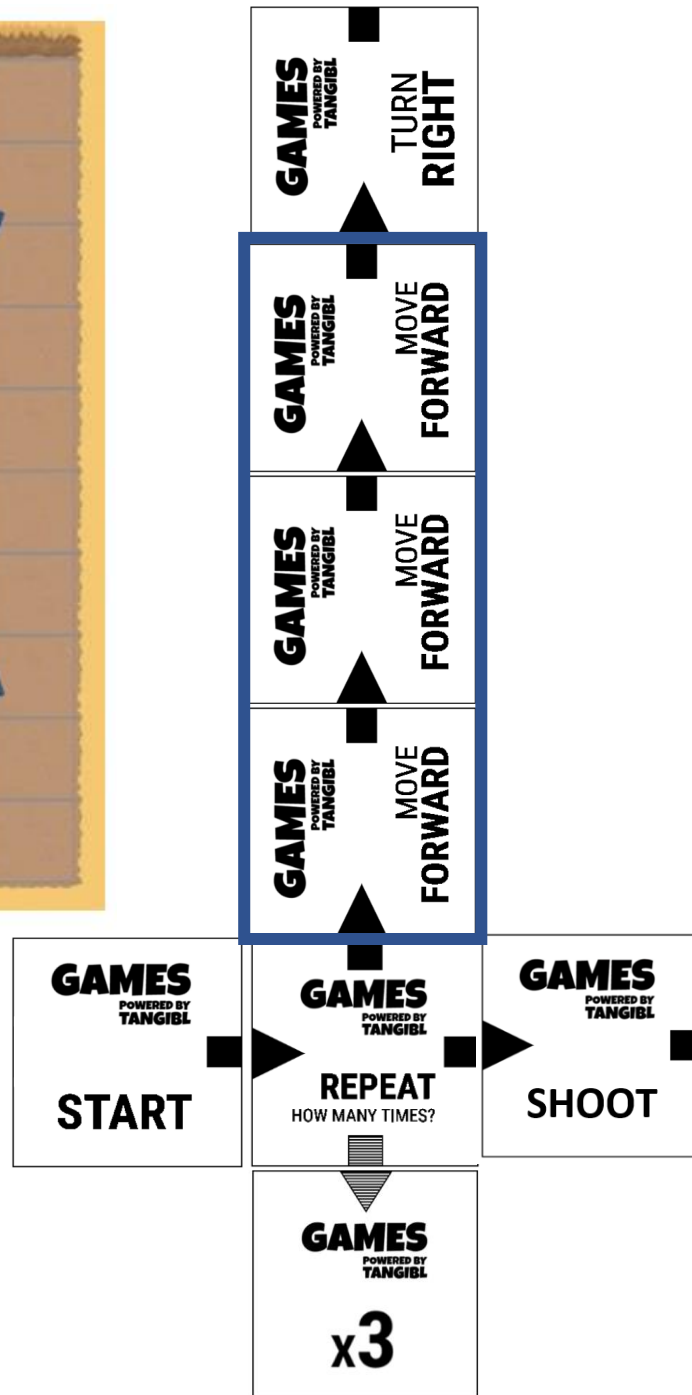
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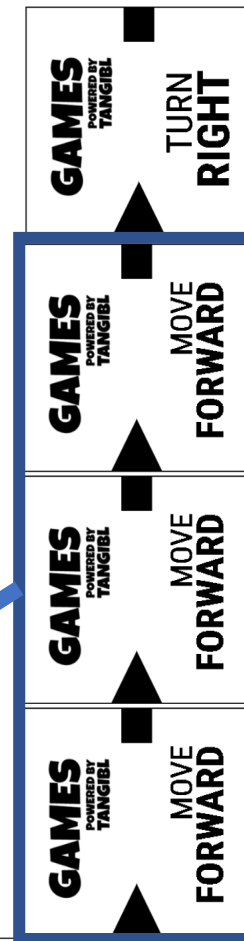
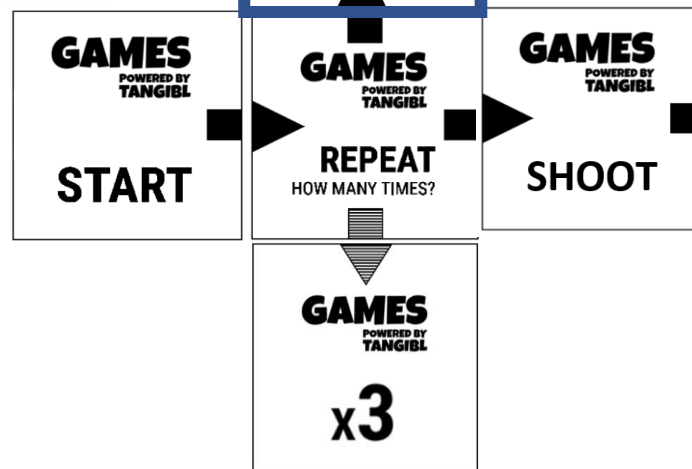
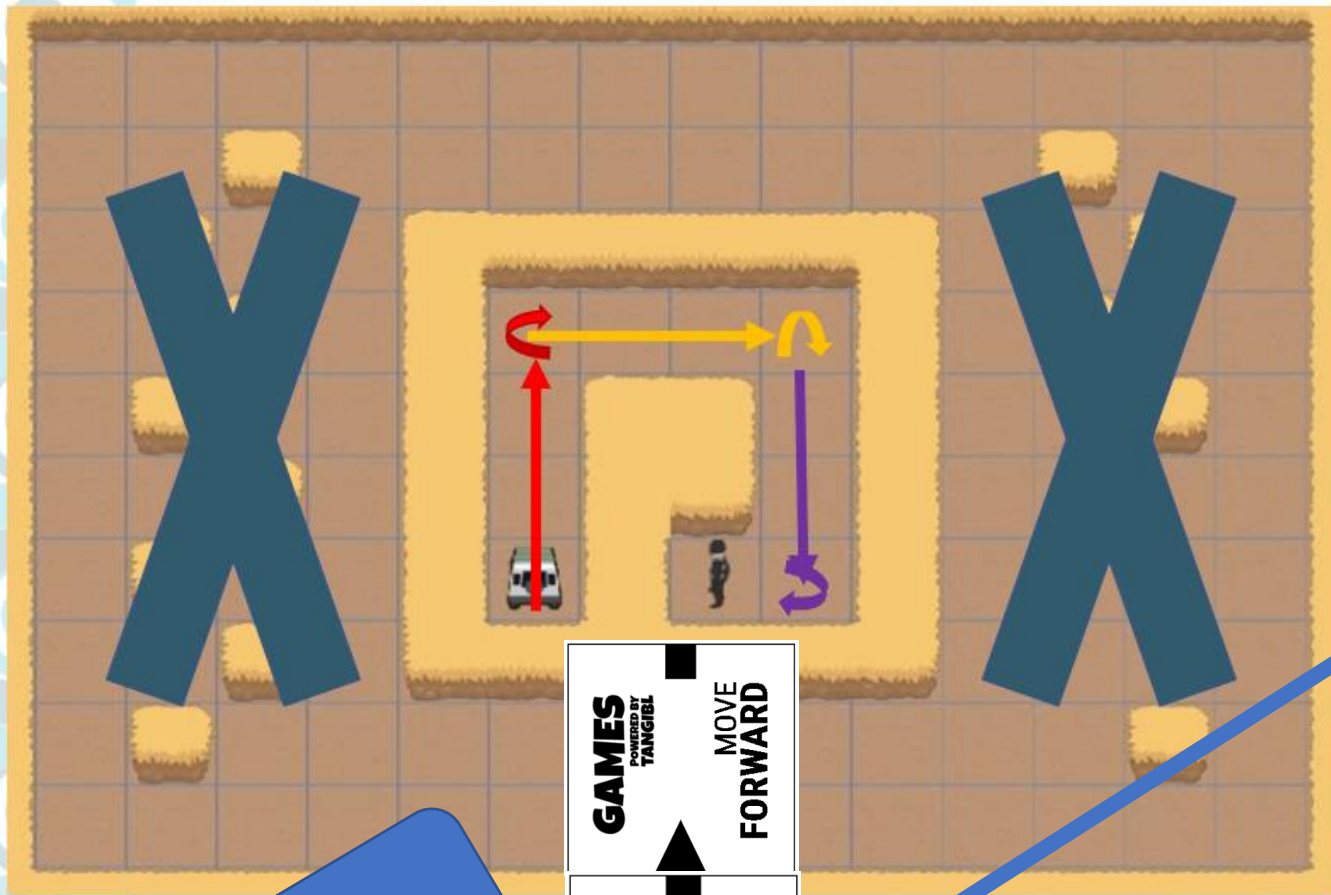
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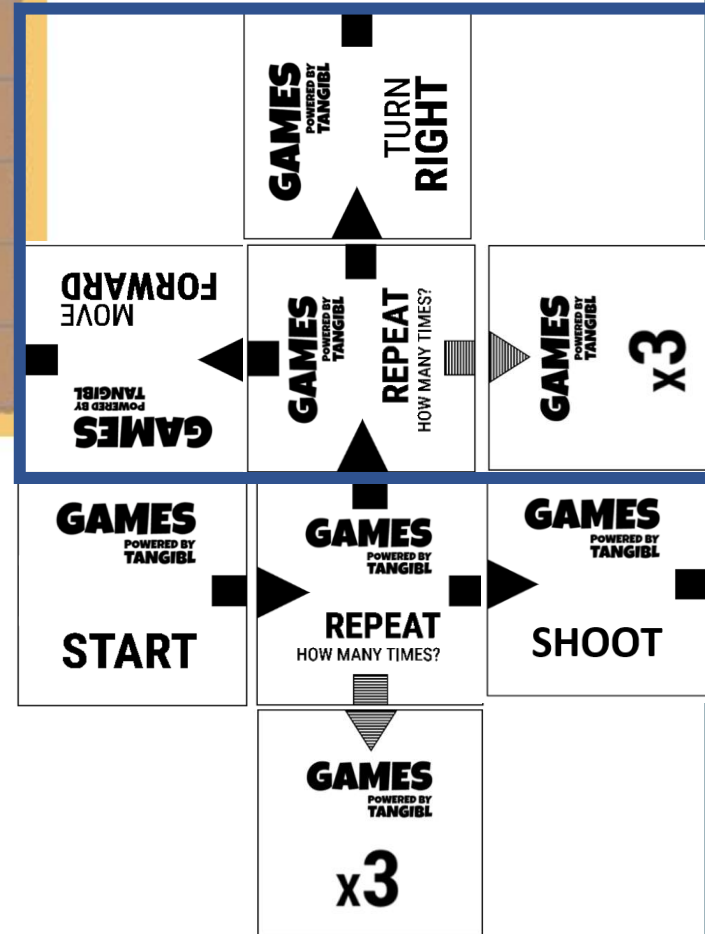
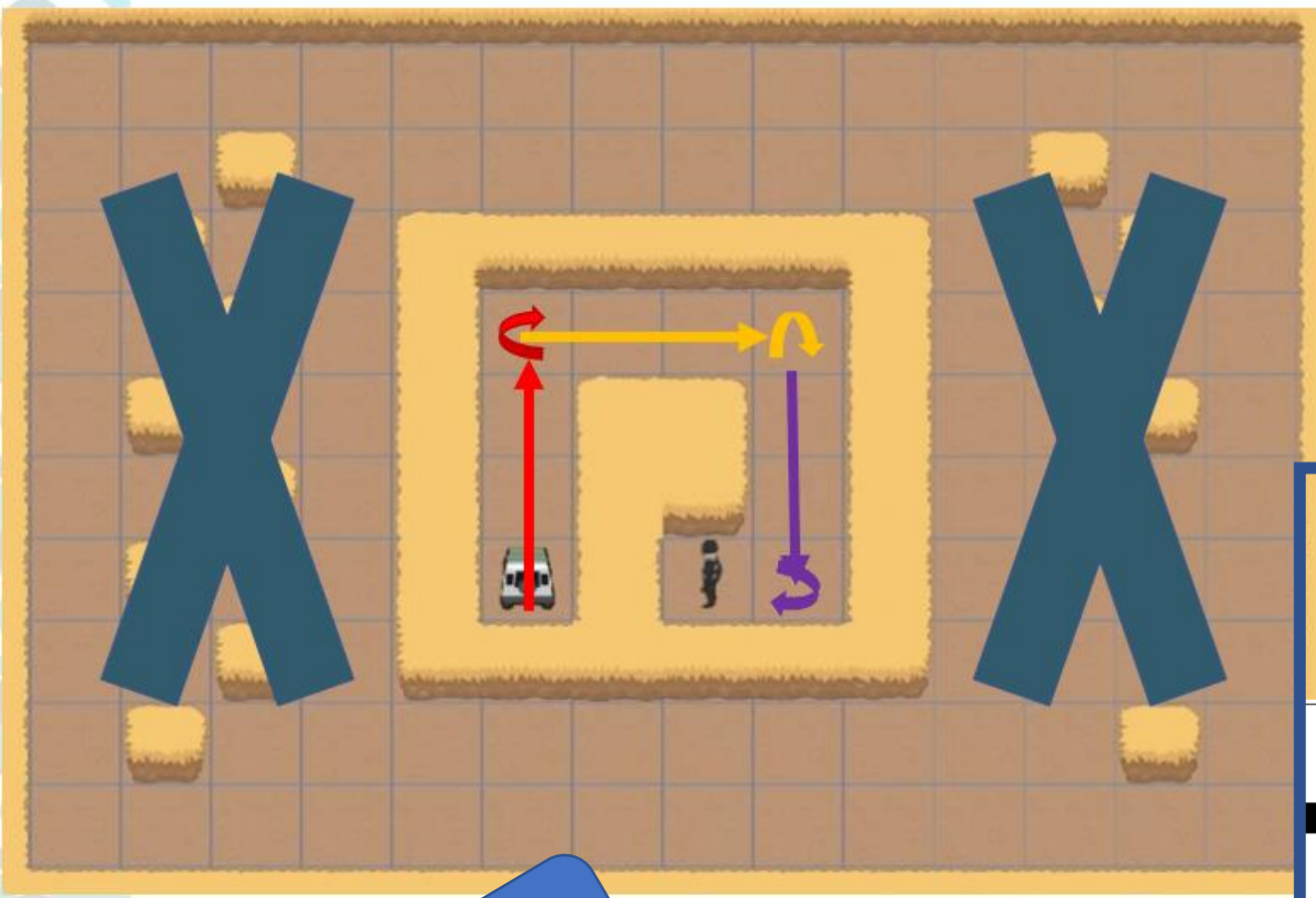
Pattern Recognition



Algorithm

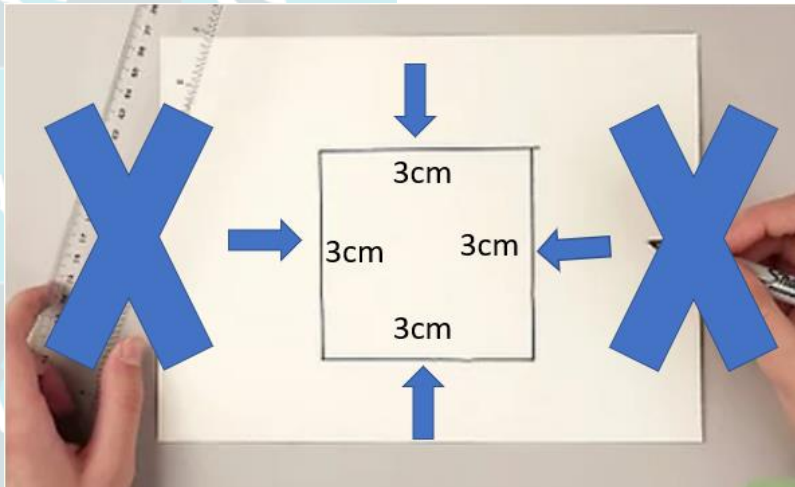


Algorithm



- Abstraction
- Decomposition
- Pattern Recognition
- **Algorithm**

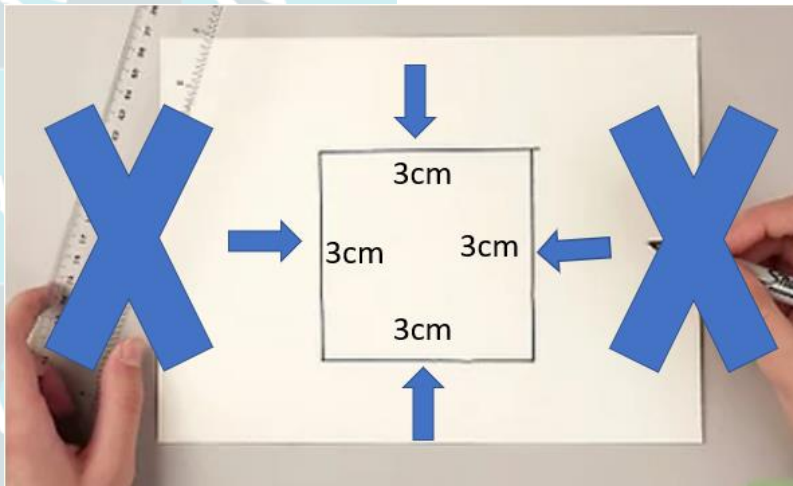
- Forward 3cm
- Turn Right
- Forward 3cm
- Turn Right
- Forward 3cm
- Turn Right
- Forward 3cm
- Turn Right



- Abstraction
- Decomposition
- Pattern Recognition
- **Algorithm**

- Forward 3cm
- Turn Right
- Forward 3cm
- Turn Right
- Forward 3cm
- Turn Right
- Forward 3cm
- Turn Right

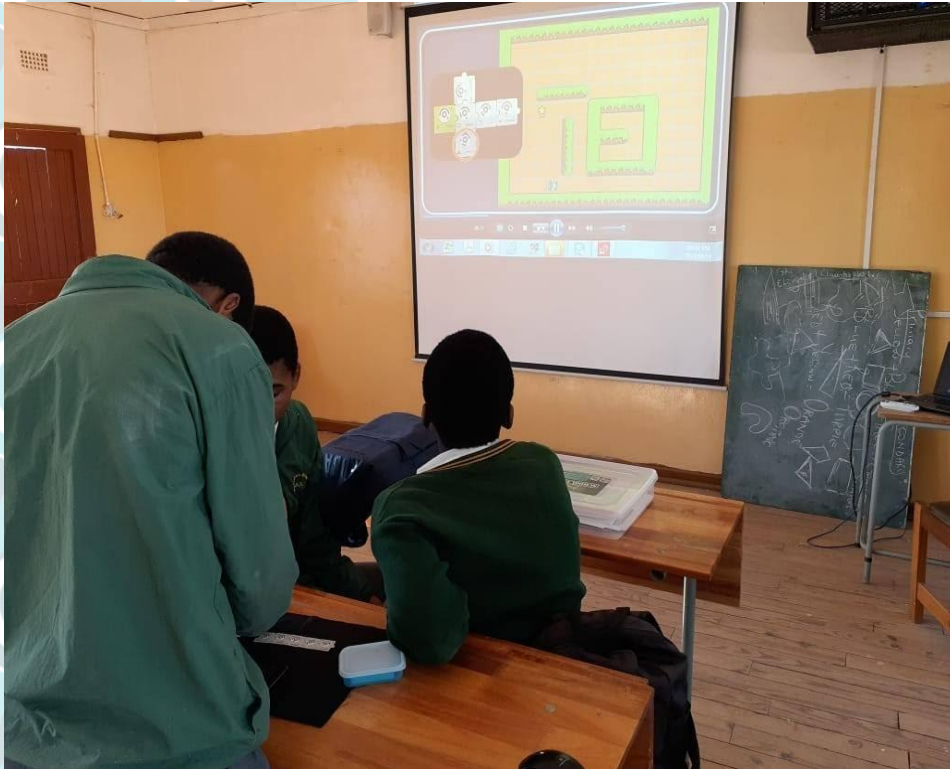
Repeat x3
Forward 3cm
Turn Right
End



Group work



Coding (Problem Solving) Clubs



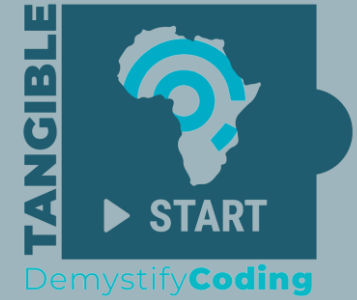
Impact since 2017

- Reached 100 000+ learners
- Trained nearly 30 000 teachers
- Helped to change the narrative
- Various national and global accolades



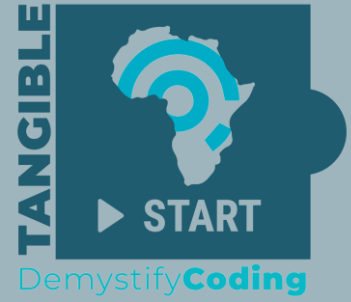
Tournaments

- Mandela Day
- 16 000 learners
- 500 schools and libraries



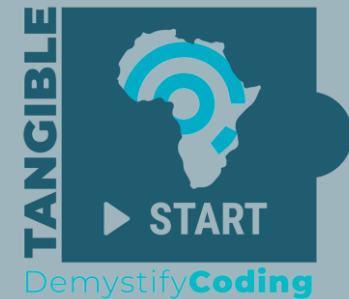
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Africa



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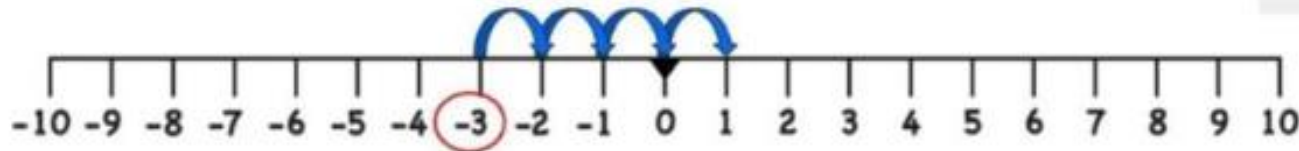


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Maths and Coding


Numbers, operations and relationships:

Lesson 1: Movement Blocks



Visually Impaired





Cultivating the **PHYSICS**
skills ecosystem of the future



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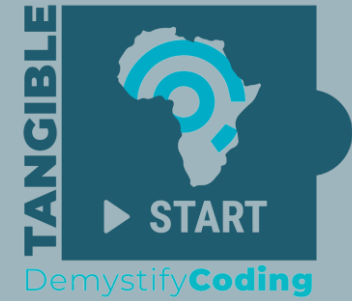
It is not about coding!



Your fraternity also need learners that can solve problems.



Enhance those skills
while having fun



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“The more I play, the better my thinking becomes.”





Tangible Africa



Jean Greyling



0835544183



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