Computer Sciences Minecraft Escape Room – Lesson Guide

IMPORTANT: Please note that if there is a mistake, the map will have to be restarted, and the progress will be lost. The learner will have to restart the map.

How to use a command block:

Please make sure that the learners are left clicking to use the signs, command blocks and buttons. If they right click, they may break blocks.

Command blocks in Minecraft are special blocks that can execute commands automatically when powered by Redstone. They are primarily used in Creative mode, multiplayer servers, and custom maps to automate tasks and create complex gameplay mechanics.

Learners must click the command block to insert the co-ordinates and then click the button to move on once complete. It is advised that the learners write down the co-ordinates as it may be challenging to copy and paste the coordinates into the command block.

Signpost:

Command blocks are a specialized type of block within a Minecraft world that allows the use of console commands in-game. The same commands that players can type from chat can be run automatically by command blocks using Redstone power.

For example:

/fill <x y z> <x2 y2 z2> iron_bars

The fill command takes 2 coordinates that you have to get yourself and then fills in the 2 selected coordinates with whichever block is set at the end of the command.

<---- Try it with the command block and coordinates on the signs to the right.

The learners will then move to the NPC and read what the NPC has to say.

NPC:

Rhino poaching is a critical issue in South Africa, posing a severe threat to the survival of these majestic animals. South Africa is home to the majority of the world's rhino population, making it a primary target for poachers. Thousands of rhinos have been killed over the past decade, primarily for their horns. Rhino horns are highly valued in illegal markets where they are used in traditional medicine and as status symbols. Poachers often use clever techniques, including high-powered rifles, tranquilizers, and helicopters, to track and kill rhinos.

To combat that, there are many anti-poaching efforts that are being implemented in South Africa. Some of these efforts use AI tools to combat poaching. AI analyses data to predict poaching hotspots, helping deploy resources effectively. AI-powered cameras,

drones, and sensors detect and track poachers in real-time.AI processes large datasets to identify poaching trends and develop better conservation strategies.AI enables quick and accurate responses to potential poaching incidents. These AI-driven approaches enhance the efficiency and effectiveness of wildlife conservation efforts.

As you work through this activity you will have to code various instructions that will allow AI to put anti-poaching measures in place to protect the rhinos.

The learner will then be teleported to the viewing tower.

NPC

Fences play a crucial role in protecting wildlife, especially rhinos, from poaching and other threats. Fences, especially those equipped with advanced technology like the Smart Fence, can detect and stop poachers. For example, in South Africa's Hluhluwe-iMfolozi Park, a Smart Fence detects any tampering and sends alerts to rangers, allowing them to respond quickly and prevent poaching incidents. Fences help create a controlled environment where rhinos can thrive without the constant threat of poachers. Sanctuaries like the Ngulia Rhino Sanctuary in Kenya have used fencing to secure their rhino populations, resulting in increased births and no poaching incidents since 2016. By using fences, conservationists can distribute their resources more efficiently. Fences reduce the area that needs to be patrolled, allowing rangers to focus their efforts on high-risk zones and respond more effectively to threats. Fences also help manage habitats by preventing overpopulation and ensuring that rhinos have enough space to roam. This reduces stress and aggression among rhinos, promoting healthier populations. Fencing projects often involve local communities, providing them with employment opportunities and fostering a sense of ownership and responsibility towards wildlife conservation.

Overall, fences are a vital tool in the fight against rhino poaching and play a significant role in ensuring the survival and well-being of these magnificent creatures.

The learner can leave the viewing tower to go to the next activity. Ladders can be climbed by holding in the SPACE bar and can be climbed down by Holding SHIFT.

Activity 1:

Learners must find four walls that have specific-coloured blocks that match coordinates of the same colour. Learners must find the corresponding coordinates and copy and paste them into the command blocks.

Signpost:

Find the 2 signs written in lime green ink.

Take the 2 coordinates on the signs and fill them in the command block.

Once you've filled in the command block correctly, it should put up a fence in the set coordinates. If it doesn't, you might have filled it incorrectly.

Example:

/fill x y z x2 y2 z2 iron_bars

"/fill -54 -35 -169 -72 -37 -148 iron_bars"

Co-ordinates:

x y z

-146 -35 149

x2 y2 z2

-146 -37 188

Signpost:

Find the 2 signs written in red ink.

Take the 2 coordinates on the signs and fill them in the command block.

Once you've filled in the command block correctly, it should put up a fence in the set coordinates. If it doesn't, you might have filled it incorrectly.

Example:

/fill 4x y z x2 y2 z2 iron_bars

"/fill -54 -35 -169 -72 -37 -148 iron_bars"

Co-ordinates:

x y z

-145 -35 189

x2 y2 z2

-91 -37 189

Signpost:

Find the 2 signs written in white ink.

Take the 2 coordinates on the signs and fill them in the command block.

Once you've filled in the command block correctly, it should put up a fence in the set coordinates. If it doesn't, you might have filled it incorrectly.

Example:

/fill x y z x2 y2 z2 iron_bars

"/fill -54 -35 -169 -72 -37 -148 iron_bars"

Co-ordinates:

x y z

-90 -35 149

x2 y2 z2

-90 -37 188

Signpost:

Find the 2 signs written in light blue ink.

Take the 2 coordinates on the signs and fill them in the command block.

Once you've filled in the command block correctly, it should put up a fence in the set coordinates. If it doesn't, you might have filled it incorrectly.

Example:

/fill x y z x2 y2 z2 iron_bars

"/fill -54 -35 -169 -72 -37 -148 iron_bars"

Co-ordinates:

x y z

-91 -35 148

x2 y2 z2

-145 -37 148

Activity 2:

The learner will go back up the viewing tower and speak to the NPC. A command block will appear behind the earner. The learner will climb down the tower and count the blocks between the short sides of the fence. This will be 50 blocks in length. The learner will go back up the viewing tower and will click left on the command block. They will fill in the code with rx=25.

NPC:

I want you to track how many rhinos we have in the fenced-out area.
To do that I want you to is to get the longest distance of the fence that is measured in blocks. you can to this by counting the blocks between the two shortest parallel fences.

Activity 3:

The learner will need to set up cameras along the fence. They must go to each corner of the fenced area and answer the questions that follow.

NPC:

I want you to setup some sort of camera or alarm system to alert us of any danger that might be approaching the fence. Go to each corner of the fence and see if you can find any sort of way to setup the alarm system.

NPC:

For the alarm system complete the following coding in order to detect any threats in the area:

/testfor @e[type=myname:_____]

Answer: Poacher

NPC:

We want to set up a camera 4 blocks above this corner of the fence.

The coordinates of the top part of the corner are "-90 -34 189". If we want the camera to be 4 blocks above that point, you'll have to increase the y-axis by 4 blocks.

Remember that coordinats look as follows: "x y z"

Finish the following line of coding correctly to put the camera 4 blocks above the corner:

"camera @a set minecraft:free pos ___ ___ ___ rot 25 100"

Answer: -90 -30 189

NPC:

We want to set up a camera 4 blocks above this corner of the fence.

The coordinates of the top part of the corner are "-90 -34 148". If we want the camera to be 4 blocks above that point, you'll have to increase the y-axis by 4 blocks.

Remember that coordinates look as follows: "x y z"

Finish the following line of coding correctly to put the camera 4 blocks above the corner:

"camera @a set minecraft:free pos ___ ___ ___ rot 25 180"

Answer: -90 -30 148

NPC:

We need some sort of contacting system to contact the authorities to capture any poachers that try to hurt the rhinos.

Who do you think should we put on the contacting system?

Answer: Police

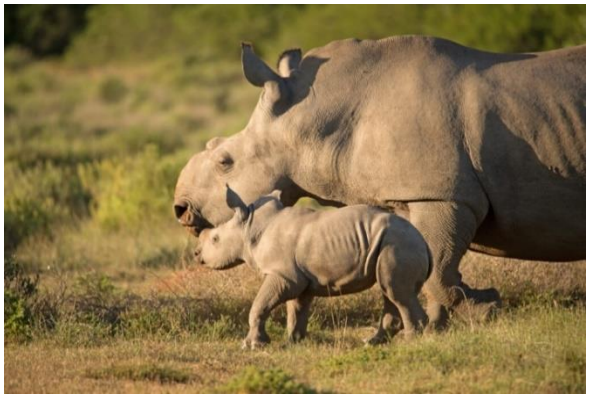
Once all of the answers have been answered correctly, they will be teleported to a third room. Here they will speak to the NPC and select begin, where they will guard the rhinos. They will have to select a button to check the cameras to find the poachers. They will then have to call the police. This will be repeated 5 times in 5 minutes. Once all the poachers have been caught the learner will be able to view another room with success stories about anti-poaching efforts. While the learners wait for the alerts, they can complete an activity in the Book and Quill provided. They can write their own suggestions on how to combat rhino poaching. Should the teacher want to see or mark what is written, their answer can be exported, saved and sent to the teacher.

Extension – the NPC can lead the player around the room where they can learn about various success stories of anti-poaching efforts in South Africa.

NPC:

Thandi, the miracle poaching survivor:

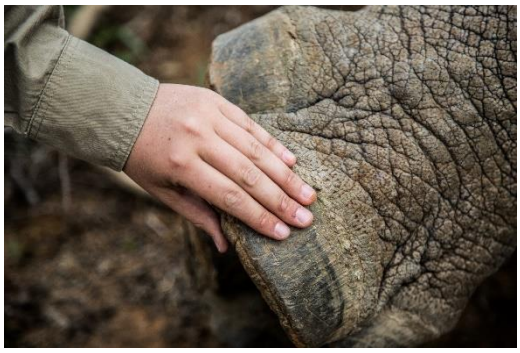
Thandi is a female white rhino who survived a brutal poaching attack in March 2012 at Kariega Game Reserve in South Africa. Despite severe injuries, she made a remarkable recovery thanks to pioneering medical treatments, including skin grafts. Thandi's story gained international attention, inspiring many to support rhino conservation efforts.



Over the years, Thandi has given birth to four calves: Thembi (2015), Colin (2017), Mthetho (2019), and Siya (2021). Her resilience and ability to thrive despite her traumatic experience have made her a symbol of hope and determination in the fight against rhino poaching.

NPC:

Kwandwe Private Game Reserve, located in South Africa's Eastern Cape, has become a beacon of hope in the fight against rhino poaching. By leveraging cutting-edge technology, Kwandwe has developed innovative strategies to protect these majestic creatures.



In the early 2000s, southern Africa faced a severe rhino poaching crisis, with poaching syndicates targeting less protected regions. Despite being in a vulnerable area, Kwandwe has emerged as a conservation success story. The reserve has implemented solar-powered Rouxcel Technology foot collars that track rhino movements and behaviours, providing real-time data to anti-poaching units. Additionally, AI machine learning is used to analyse data and predict poaching activities, while drones offer enhanced surveillance capabilities. Kwandwe's comprehensive anti-poaching strategy, which includes dedicated units and advanced technology, has significantly impacted rhino conservation. The success of these efforts has not only benefited Kwandwe but has also had a transformative impact on the Eastern Cape region, showcasing the potential of technology in wildlife conservation.

NPC:

The Rhino Rescue Project is a groundbreaking initiative aimed at protecting rhinos from poaching in South Africa. Founded in 2010, the project employs innovative techniques to deter poachers and safeguard these majestic animals.

The Rhino Rescue Project was established following a poaching incident at the Rhino & Lion Nature Reserve in Gauteng, South Africa. The founders, Dr. Charles van Niekerk and Dr. Lorinda Hern, developed a proactive solution involving the infusion of rhino horns with a mixture of ectoparasiticides (animal-friendly toxins) and indelible dye. This treatment contaminates the horn, rendering it useless for ornamental or medicinal purposes, and serves as a visual deterrent. The dye is invisible to the naked eye as it is injected into the rhino's horn, so don't believe the images you see of rhinos with pink horns. The project also incorporates microchips, tracking technology, and DNA sampling to enhance rhino protection. By placing signs around reserves, the project spreads awareness and deters poaching activities. While many horn, infusions are funded by rhino owners, the project seeks donations to support underfunded provincial and municipal parks. The Rhino Rescue Project showcases the potential of innovative and proactive approaches to wildlife conservation.

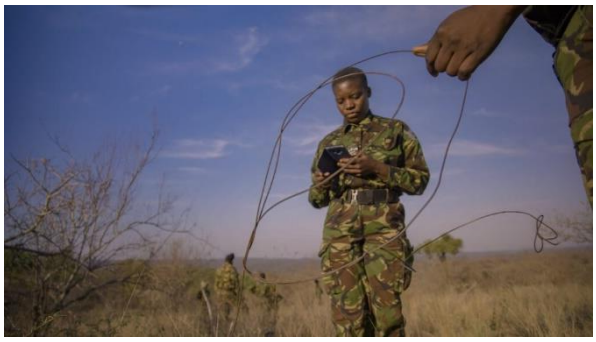
NPC:

The Black Mamba Anti-Poaching Unit is a groundbreaking all-female team dedicated to protecting wildlife in South Africa's Greater Kruger National Park. This area supports the largest population of rhinos globally but faces significant poaching threats.

The Black Mambas patrol 20,000 hectares, focusing on early detection and prevention of poaching activities. Their efforts have led to a 63% reduction in poaching incidents since their formation. Beyond their patrol duties, they engage with local communities to promote conservation and demonstrate the benefits of protecting wildlife over poaching.

The unit was founded in 2013 by Craig R. Spencer and Amy Clark from Transfrontier Africa. The team consists of 42 members, with 35 being women rangers.

Each member spends 21 days a month patrolling the reserves, starting their day with a military-style parade before heading out on their missions. They are trained in tracking and combat, but work unarmed, creating a visible police presence to deter poachers.



The Black Mambas have received numerous awards, including the Champions of the Earth Award from the United Nations Environment Program in 20152. Despite financial challenges, they continue to operate through fundraising and donations, making a substantial impact on wildlife conservation and community empowerment.

NPC:

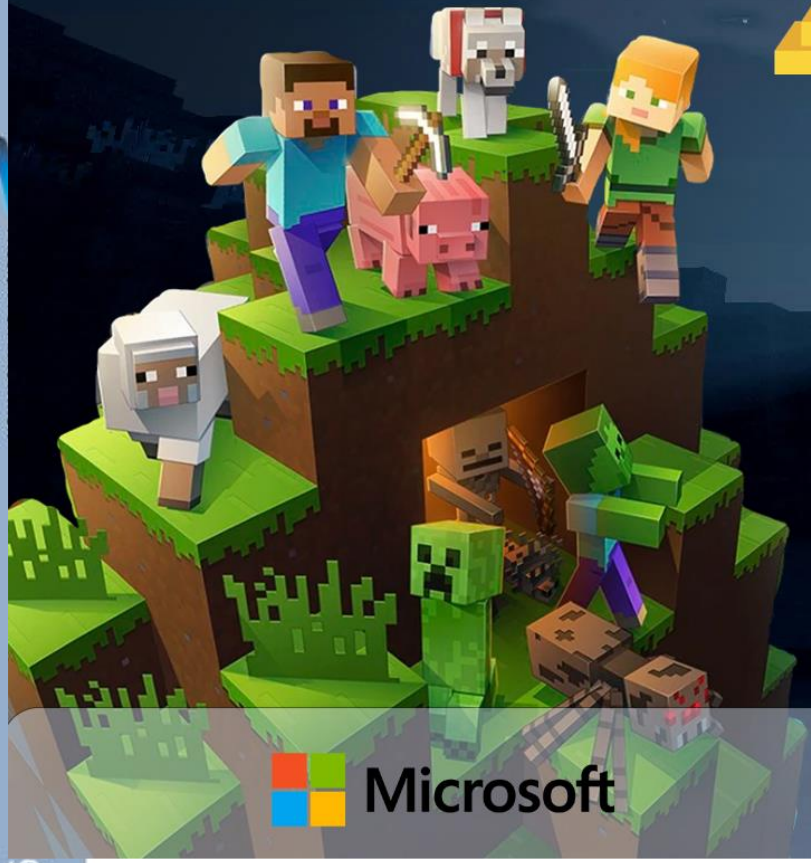
The Pelorus Foundation is dedicated to preserving and protecting the world's wildlife and wild places for future generations. Their efforts are particularly focused on the critically endangered black rhino, whose population has drastically declined due to poaching and habitat loss.

Fifty years ago, there were an estimated 65,000 black rhinos in Africa. Today, only about 4,880 remain. The foundation works closely with conservationists and rangers to protect these remaining rhinos. One of their key strategies is dehorning rhinos to make them less attractive targets for poachers. This method, while not ideal aesthetically, has proven effective in reducing poaching incidents.

The Pelorus Foundation also supports translocation projects, moving rhinos from areas with significant populations to those with fewer rhinos but sufficient anti-poaching measures. This helps to establish new populations and prevent genetic bottlenecks. Their work is crucial in ensuring the survival and recovery of the black rhino species.

Please ask the students to complete the skills assessment at the end of the map.

*Should your learners not complete the lesson at one time, please ask the learners to export their world and save it so that they can access their work in the next lesson. This is due to a temporary issue and once this issue is solved, your learners will be able to access the map from the "My Worlds" folder in Minecraft.



This certificate is awarded to:

for successful completion of the Minecraft

Computer Science Escape Room

demonstrating an understanding of Computer Science .

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PASSION FOR INNOVATION

MINECRAFT
EDUCATION

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