HOUR OF CODE 2023

SOLUTIONS GUIDE

This Solutions Guide includes the in-game solutions for Hour of Code: Generation AI in both MakeCode blocks and Python Notebooks.

SOLUTIONS OVERVIEW

Below you will find each of the solutions to the activities found throughout Hour of Code 2023: Generation AI in sequential order, as they appear in the game.

Activity 1: Build a Bridge

There is no official coding solution to this activity, as players will be manually building a bridge by placing blocks. If the player is able to physically make it onto the red pillar, they will be able to continue game play.

Example Solution:

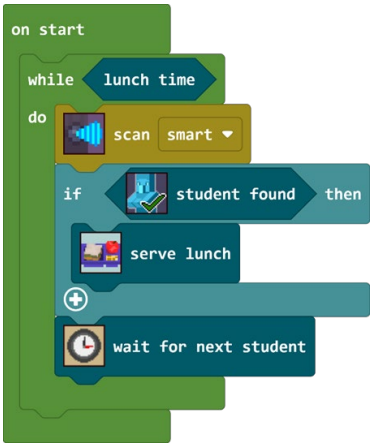
Activity 2: Lunchtime Service

FAIRNESS AND INCLUSIVENESS		
Activity	**Objective**	**Activity Explanation**
Lunchtime Service	Fix the existing AI code to scan for ALL students.	You made an AI to automatically serve lunch to your classmates at school. The AI is programmed to scan for individuals. However, the AI only scans for individuals

		at a certain height. This is causing a problem; we need to change the AI to be both fair and inclusive.

Coding Solution

Blocks



Python

```
while lunch_time():
    scan("smart")
    if detect_student():
        serve_lunch()
    wait_for_student()
```

Activity 3: Build a Bridge (with code)

Players will need to build a bridge to the yellow pillar. They should run the existing code FIRST before they change anything. Then, players should analyze what happened when they ran the code. Players should reset the activity; then they should adjust the existing code accordingly.

Coding Solution

Blocks

Python

```
agent_move("forward")
agent_place("down")

agent_move("forward")
agent_place("down")

agent_move("forward")
agent_place("down")

agent_move("forward")
agent_place("down")

agent_move("forward")
agent_place("down")

agent_move("forward")
agent_place("down")

agent_move("forward")
agent_place("down")
```

Activity 4: Smart Lawnmower

RELIABILITY AND SAFETY		
Activity	**Objective**	**Activity Explanation**

Smart Lawnmower	Change the code for the smart lawnmower to check for sprinkler heads before cutting the grass.	You made an AI to automatically mow your lawn! However, the lawnmower is running over the sprinkler heads and causing damage. You will need to change the existing code to have the lawnmower check the area for sprinkler heads and avoid causing any more damage!

Coding Solution

Blocks


```
# There's two ways of doing it
# one with nested loops and one without

## Nested Loops
for i in range(8):
    for i in range(3):
        move_lawnmower_forward()
        check_sprinkler_cut_grass()
    move_lawnmower_next_row()

## Without Nested Loops
for i in range(8):
    move_lawnmower_forward()
    check_sprinkler_cut_grass()
    move_lawnmower_forward()
    check_sprinkler_cut_grass()
    move_lawnmower_forward()
    check_sprinkler_cut_grass()
    move_lawnmower_next_row()
```

Activity 5: Build a Bridge (with advanced code)

Players will need to build a bridge to the green pillar. They should run the existing code FIRST before they change anything. Then, players should analyze what

happened when they ran the code. Players should reset the activity; then they should adjust the existing code accordingly.

Coding Solution

Blocks

Python

```
# This could also be done without
# loops using the same code from
# the previous pillar

for i in range(7):
    agent_move("forward")
    agent_place("down")
```

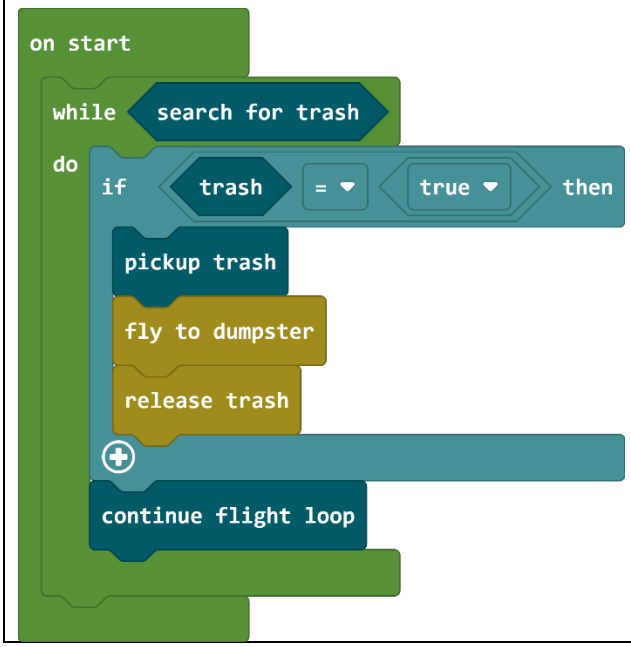
Activity 6: Trash Collector

TRANSPARENCY AND ACCOUNTABILITY		
Activity	**Objective**	**Activity Explanation**
Trash Collector	Follow the birds to investigate what is happening in the	You made special AI birds, who collect garbage around the town and fly it over to the landfill. However, there is garbage

	code. Decode the secret words and then update the code to handle the trash in a better way.	everywhere! Something is clearly not working right... Players will need to investigate the relay boxes, follow the birds to decode the secret words, and then update the code to fix the trash problem.

Coding Solution

Blocks

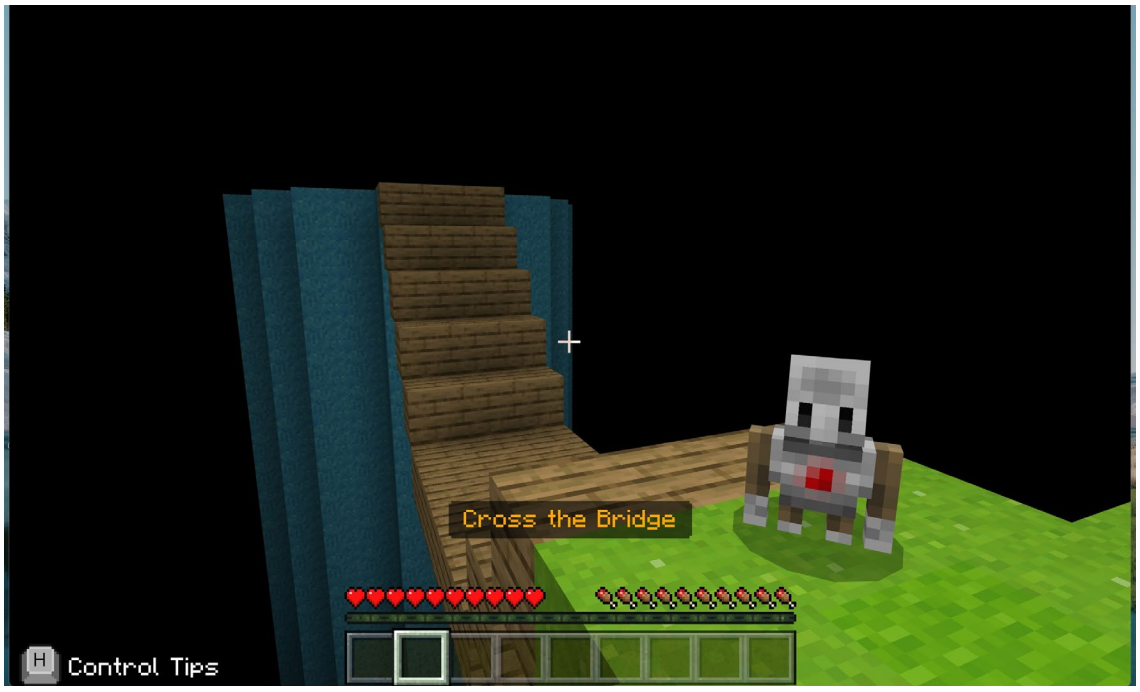


Python

```
while search_for_trash():
    if trash == True:
        pickup_trash()
        fly_to_dumpster()
        release_trash()
    continue_flight_loop()
```

Activity 7: Build a Bridge (by using prompts from the Agent)

Players will use the prompts to create their bridge to the blue pillar. There are multiple ways for players to create a bridge. There are no coding solutions for this activity.

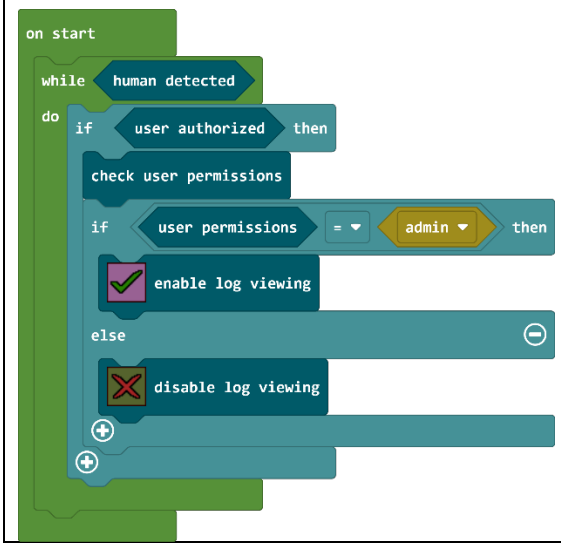


Activity 8: Door Access

PRIVACY AND SECURITY		
Activity	**Objective**	**Activity Explanation**
Door Access	Check the door for access bugs. Then, use the Co-Crafter AI Assistant on the computer to check the code. Change the code to resolve the problem.	You made the most secure smart locks on the market, known as AI Tech Locks. Unfortunately, a customer is not very happy with their smart lock. Every time they sit down for dinner, salespeople show up at their door. How do they always know when they home?!

Coding Solution

Blocks

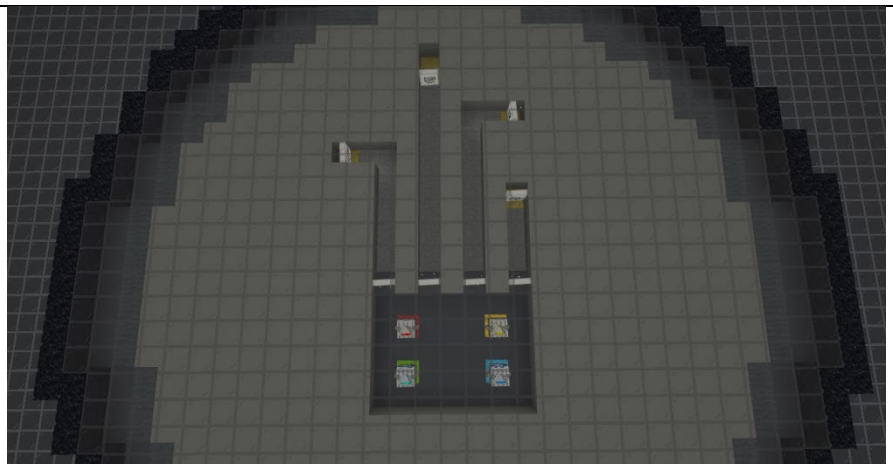


Python

```python
while human_detect():
    if user_authorized():
        check_user_permissions()
        if user_permissions() == permission_group("admin"):
            enable_log_viewing()
        else:
            disable_log_viewing()
```

Activity 9: Train the Responsible AI

Players are responsible for training the AI. They will need to consider the principles of responsible AI and match the AIs to the correct statements.



Coding Solution

Blocks

Python

```
match_blue_agent(4)
match_green_agent(3)
match_yellow_agent(2)
match_red_agent(1)
```