

## ID 41) Write a script for illuminating a region.

### **Script Behavior**

The script is designed to quickly place a single torch beneath the agent and acts based on its current inventory. It first centers the agent and camera, similar to our crafting scripts, and looks downwards. This is due to how the only guaranteed place a block can be placed is where the agent is standing. The agent then checks its inventory for torches. If any are found, it places the torch below itself, and then is forced to look upwards. Forcing the agent to look upwards helps ensure that the agent does not immediately break the torch upon returning to its previous objective.

If the agent does not have any torches, it checks its inventory for sticks and coal in that order. The number of sticks in the inventory is checked first to avoid wasting time in the event the agent needs to smelt charcoal. If there are no sticks, then the inventory is checked for the right number (two or more) of wooden planks required to make sticks. In the case the agent does not possess enough planks, the agent makes a final attempt to craft sticks by checking if it has enough logs to make into planks, and then craft into sticks. The script then checks if the agent has the right number of logs based on whether the agent has any coal. If the agent does have coal, then it only needs to have one or more logs, otherwise it will need at least two logs. If the agent does not have, or cannot craft, any sticks, then the script immediately terminates.

Should the agent possess sticks, or the resources to make them, the agent will then act based on the amount of coal in its inventory. If there is no coal, it will check for any logs and smelt one into charcoal. When smelting, the agent will use any nearby furnaces, or craft one to use if it has enough stone in its inventory and none are nearby. In the event none are nearby, the agent will place the crafted furnace directly below itself, smelt coal, and then destroy the furnace. If no logs are in possession, then the agent will immediately terminate.

Once the agent has obtained its missing resources, it will craft a torch. Finally, it will follow the same path as if it had already had a torch, placing it below itself and facing itself upwards to avoid destroying it.