

## Boolean logic puzzle using Scratch



### Use

A Boolean logic puzzle game has been created in Scratch to be used for this example. You can find the original program here:

[Boolean logic puzzle Game](https://scratch.mit.edu/projects/319357101) (scratch.mit.edu/projects/319357101)

At this stage, learners would take a look at the game and play it. The objective is to get the rocket to fly up the screen by working out where the two characters should stand. Some clues have been given on each sprite to help the player. After the learners have played the game, they should take a look inside and try to see what the code is doing.

### Modify

During the 'Modify' step, learners go from the code being "not mine" to "mine". This means that the activities should progress in complexity and help the learners gain a better understanding of the code. Key concepts used in this code are:

- Broadcasting
- 'if' statements
- Costume changes
- 'wait until'
- 'forever' loops
- Coordinates
- Movement
- Boolean logic

The purpose of this program is to introduce Boolean logic and it assumes that learners already have a good grasp of the other concepts used in the code.

Here are some typical questions/activities that you could ask your learners to try:

1. Change the costumes for the two characters
2. Change the stage
3. Introduce a "clue" sprite that gives a clue when it is clicked
4. Add another "AND" sprite that only activates when both characters are touching it
5. Add another "OR" sprite that activates if either characters are touching it
6. Add another "NOT" sprite that stops working when Abby is touching it
7. Incorporate a countdown timer for the puzzle
8. Add new challenges to the game that need to be overcome before the rocket will launch

### **Create**

For the 'Create' part of this framework, a good project would be to create a chatbot. There is already a tutorial on the [Raspberry Pi Projects site](https://projects.raspberrypi.org/en/projects/chatbot) ([projects.raspberrypi.org/en/projects/chatbot](https://projects.raspberrypi.org/en/projects/chatbot)) for this. You could take a look at the structure to see how it could be designed, and then ask your learners to design their own approach.

The chatbot could decide on its answers using AND, OR, and NOT to give your learners an opportunity to further practise using these Boolean operators.

For example:

```
If age>10 AND name="Ben" then  
    Say "Wow, you are old Ben"
```