

Compound Conditionals

SAM Space vs. SAM Blockly



A compound conditional is where two or more conditions are tested within one conditional statement, using AND/OR. For example 'If it is raining, do take an umbrella'.

Try this unplugged activity to encourage students to apply compound conditionals to the world around them.

Unplugged Compound Conditionals with Playing Cards:

1. Divide students into small groups and give each group a pack of cards.
2. Ask them to divide the cards equally between themselves.
3. Students should turn over one card with each turn, using the following scoring rules:
 - If the overturned card is red AND above '5' = do: win a point
 - If the overturned card is black AND above '5' = do: win 2 points
 - If the overturned card is (red OR black) AND below '4' = do: lose a point.

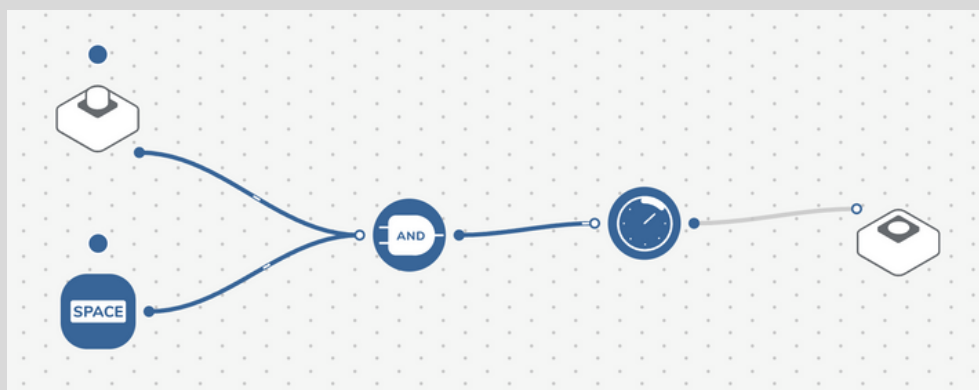
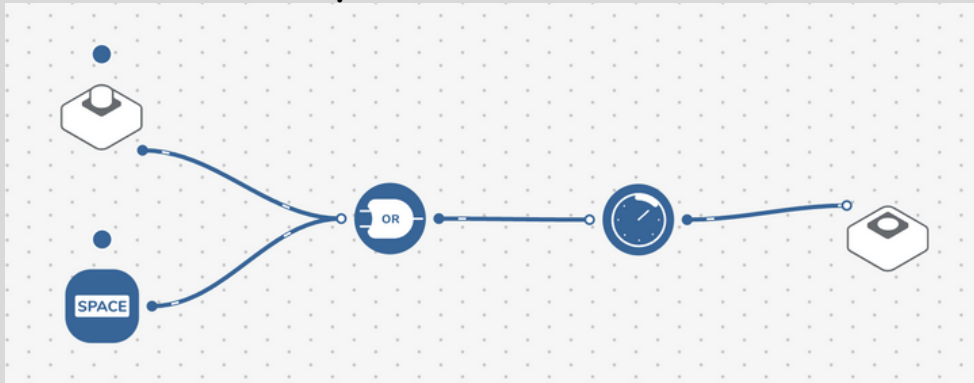
Discuss with students the difference between the AND vs. OR logic needed to play the game. Tag @SAMLabs and #CSweek

SAM LABS CELEBRATES COMPUTER SCIENCE WEEK



SAM Space

- Tell students they will need to create a flashing light using a compound conditional, 2 inputs, and 1 output
- Pair the RGB LED and 2 input blocks (or use virtual blocks)
- Encourage students to think about what Behavior blocks would work as a compound conditional.
 - First build the flashing light with the OR block
 - Second build the flashing light with the AND block
- Discuss with students the similarities and differences between how the system runs



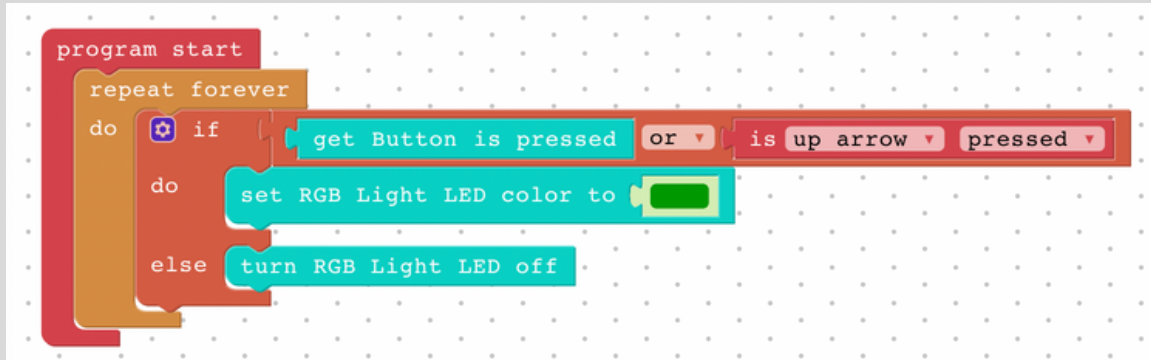
Challenge students to think about what technology may use AND/OR logic. Can they replicate that system in SAM Blockly?

SAM LABS CELEBRATES COMPUTER SCIENCE WEEK

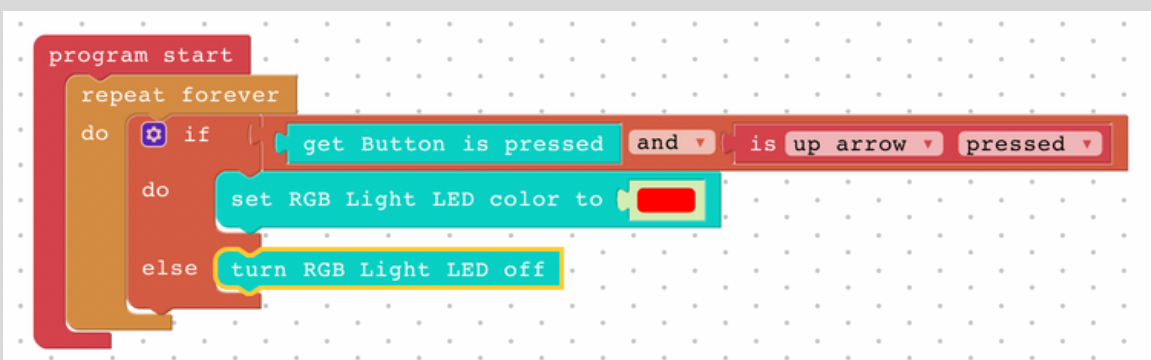


SAM Blockly

- Tell students they will need to create a flashing light using a compound conditional, 2 inputs and 1 output
- Pair the RGB LED and 2 input blocks (or use virtual blocks)
- Encourage students to think about what category may have logic blocks to make a compound conditional
 - Challenge students to first build the system with OR logic, then AND logic (as pictured below)
 - Challenge students to think about how they would program the light to flash



```
program start
repeat forever
do
  if [get Button is pressed] or [is up arrow pressed]
  do
    set RGB Light LED color to [green]
  else
    turn RGB Light LED off
```

The image shows a Blockly script on a white background with a light gray dot grid. It starts with a 'program start' block, followed by a 'repeat forever' loop. Inside the loop, there is an 'if' block with a gear icon. The 'if' block has two conditions: 'get Button is pressed' and 'is up arrow pressed', connected by an 'or' operator. The 'do' block of the 'if' block contains a 'set RGB Light LED color to' block with a green color swatch. The 'else' block contains a 'turn RGB Light LED off' block.

```
program start
repeat forever
do
  if [get Button is pressed] and [is up arrow pressed]
  do
    set RGB Light LED color to [red]
  else
    turn RGB Light LED off
```

The image shows a Blockly script on a white background with a light gray dot grid. It starts with a 'program start' block, followed by a 'repeat forever' loop. Inside the loop, there is an 'if' block with a gear icon. The 'if' block has two conditions: 'get Button is pressed' and 'is up arrow pressed', connected by an 'and' operator. The 'do' block of the 'if' block contains a 'set RGB Light LED color to' block with a red color swatch. The 'else' block contains a 'turn RGB Light LED off' block.

Challenge students to think about what technology may use AND/OR logic. Can they replicate that system in SAM Space?