Light Sensor Blackout Warning with Blocks (Nighttime Dance Party 2)

Time required: 45 minutes

Please read the directions carefully before beginning the assignment.

- Comment your code as shown in the tutorials and other code examples.
- Follow all directions carefully and accurately.
- Think of the directions as minimum requirements.

Understanding

Demonstrate understanding of:

code blocks, light sensor

Knowledge Points

We will do some math to determine the normal light in a room when the program first runs. If the light level falls below 80% of the room illumination, the robot sounds an alarm!

Requirements

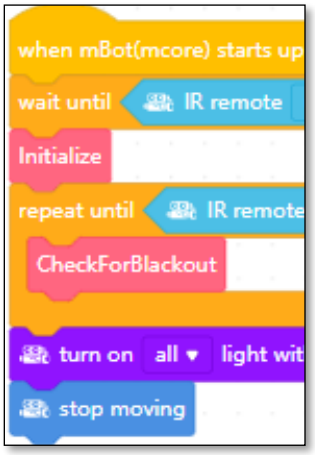
- The program will run when you power on the robot.
- When the lights are off, the robot does a dance.
- When the lights are on, the robot is quiet.

Tutorial Assignment

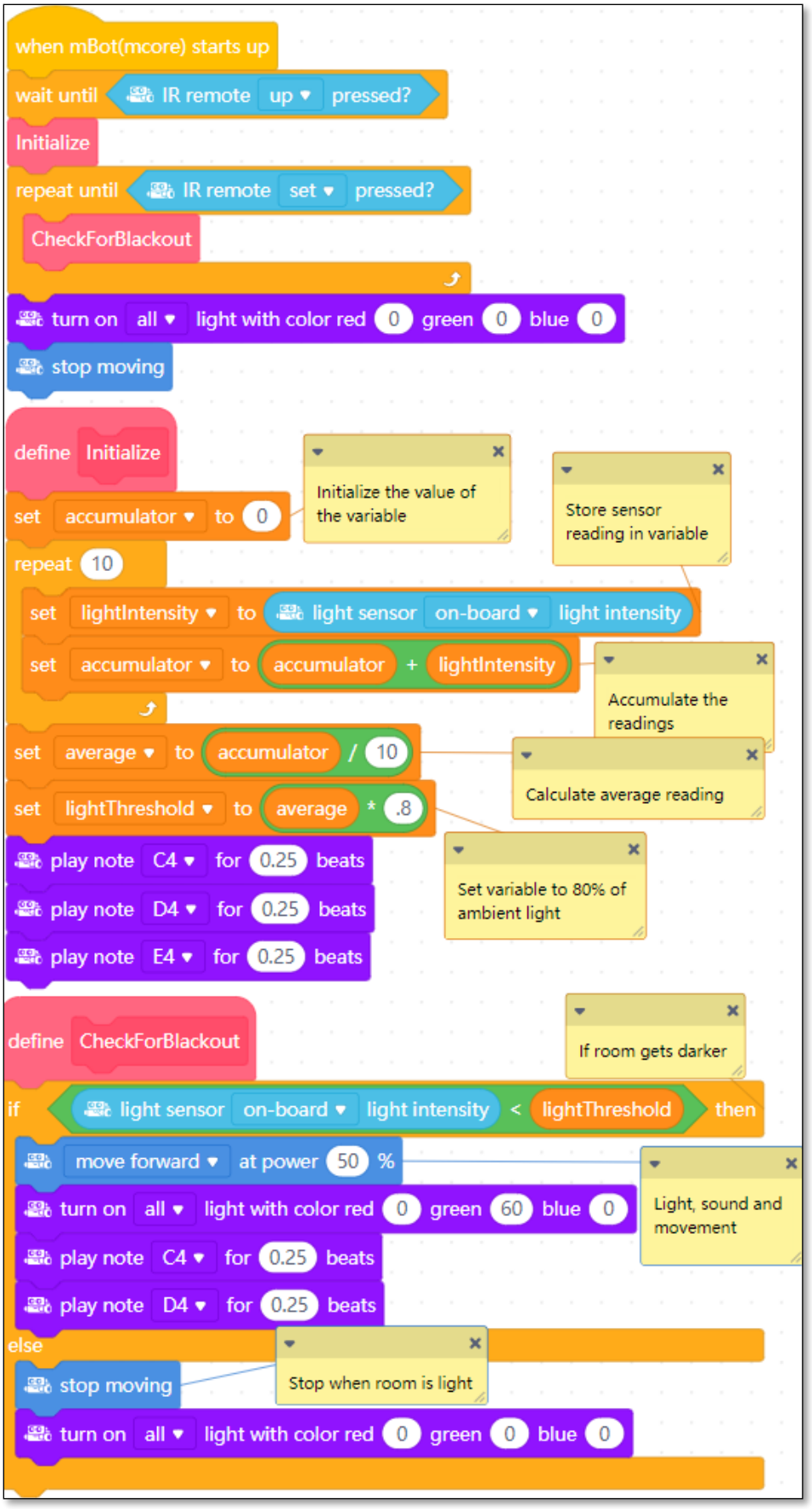
1. Start mBlock. open **Nighttime Dance Party**, save the program as Nighttime **Dance Party 2**.
2. To make a code block, go to **My Blocks**, Click **Make a Block**.
3. Name the Block **Initialize**. Click **OK**.
4. This places **define Initialize** on the programming area.
5. Go to **My Blocks**, **drag Initialize** where you want to run it.

6. See the 3rd example.

7. Add and integrate the program pictured to the Bedtime Dance Party program.
   a. Create the new code.
   b. Break apart your dance party, and put it into the new blocks.
   c. The idea is to break the code into blocks, rather than one long string of code.



8. Test the program.


when mBot(mcore) starts up
wait until IR remote up pressed?
Initialize
repeat until IR remote set pressed?
CheckForBlackout
turn on all light with color red 0 green 0 blue 0
stop moving
define Initialize
set accumulator to 0
Initialize the value of the variable
repeat 10
set lightIntensity to light sensor on-board light intensity
Store sensor reading in variable
set accumulator to accumulator + lightIntensity
Accumulate the readings
set average to accumulator / 10
Calculate average reading
set lightThreshold to average * .8
Set variable to 80% of ambient light
play note C4 for 0.25 beats
play note D4 for 0.25 beats
play note E4 for 0.25 beats
define CheckForBlackout
If room gets darker
if light sensor on-board light intensity < lightThreshold then
move forward at power 50 %
turn on all light with color red 0 green 60 blue 0
play note C4 for 0.25 beats
play note D4 for 0.25 beats
Light, sound and movement
else
stop moving
Stop when room is light
turn on all light with color red 0 green 0 blue 0

Assignment

Start with your tutorial project and add the following.

- Change the notes, movement, etc.

Assignment Submission

- **All students** → Attach finished programs to the assignment in Blackboard.
- **In class assignment submission** → Demonstrate in person.
- **Online submission** → A link to a YouTube video recording showing the assignment placed in the submission area in BlackBoard.