A screenshot of a game

Description automatically generated

Here is my code block to accomplish Mission 1, the 3D cinema, and Mission 8, the soundtrack. I used one critical function in Lego Mindstorms, called “My Blocks” to separate these two missions, so these two code blocks for each mission can be created and tuned separately. If anyone of them would not be used, I can delete from the main block easily without impacting the other.

In this main block, the first step uses the “set yaw angle to 0”, and the wall of the pit to set up an absolute positive direction for the robot in the pit. Then the 3d-cinema mission is activated. We use the Motors B and F as the moving motor, and set the speed as 100% to move faster, the parameters are chosen based on the trial-and-error relative to the starting position.

When the robot is backward to the home area, it would pause for the preparation for the next mission of soundtrack. After the preparation is done, use the left button on the central unit to proceed to the next mission.

I reduced speed to 50% for better accuracy by avoiding slipping on the pit surface. Not that the -141 is the heading angle for the robot to rightly toward the soundtrack, we use Proportional control here to compare the deviation between the -141 degree with the current yaw angle. Ensuring the robot can move straightly without bias.

Using motor B as a reference to count how many rotations can allow the robot to push the soundtrack knobs to the very top and wait for 1 sec to secure this push-up. After that, the robot should be backward to the home area. Then I deliver the robot to my teammate for the next mission.