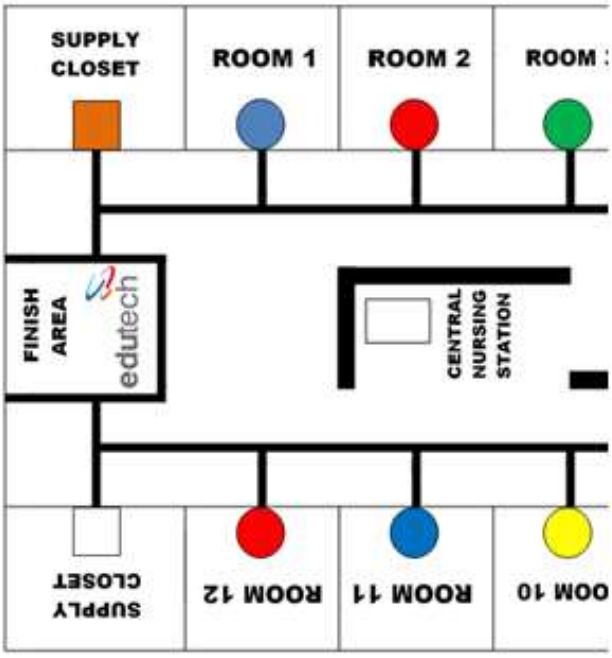
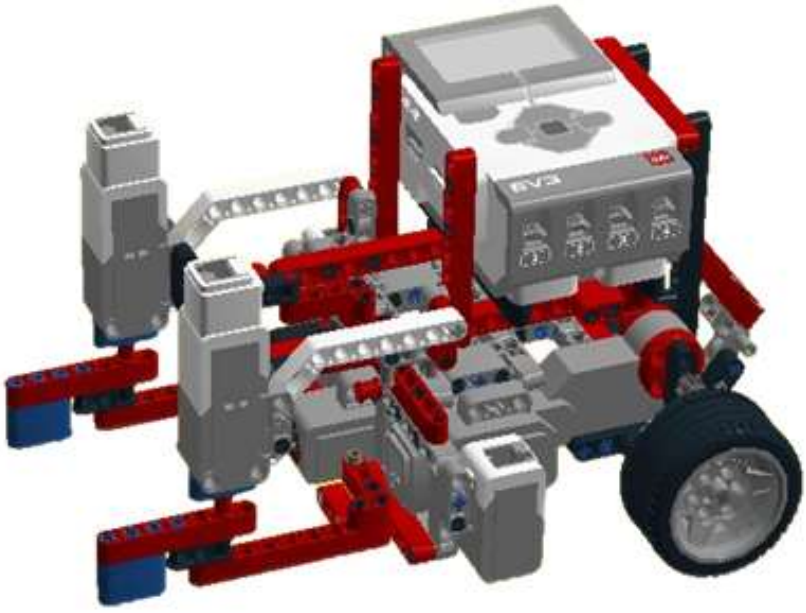
edutech

Covid-19 Hospital challenge

Health companion against COVID-19

Advanced Challenge





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1. Introduction

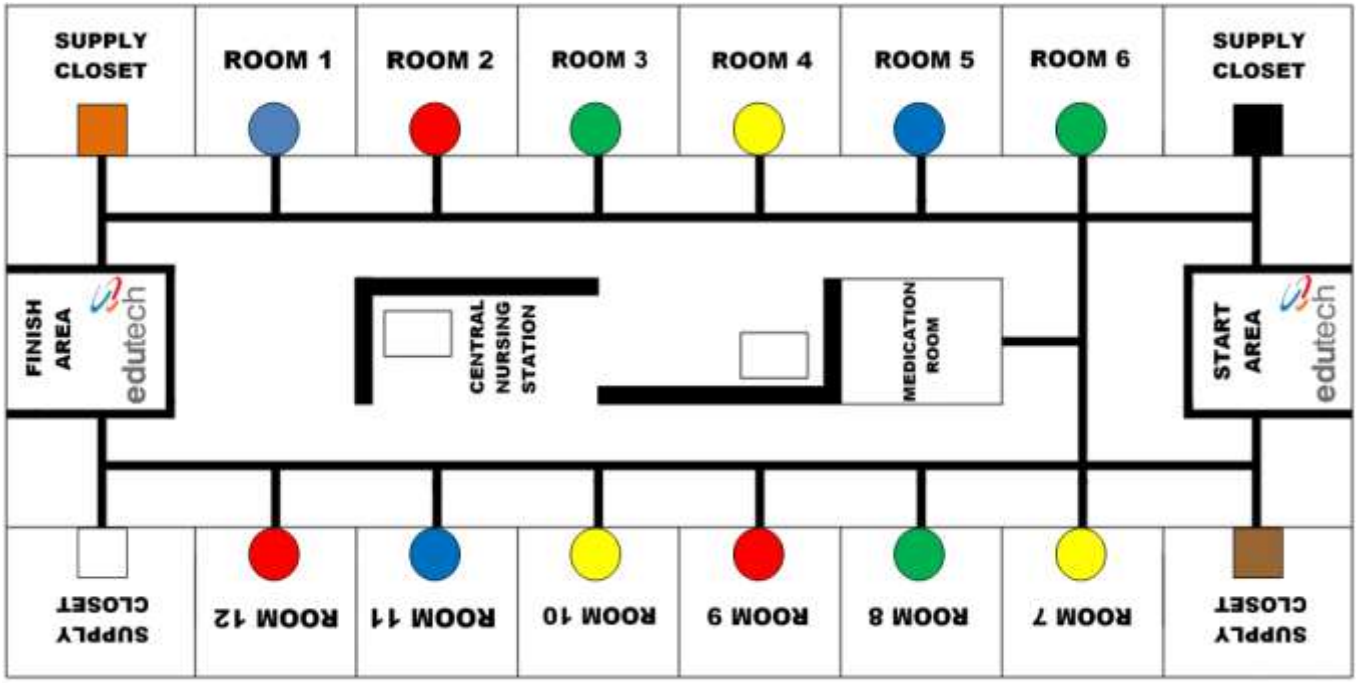
Hospitals and other health organizations are increasingly turning to robots to help with the surge in need of assistance for COVID-19 Response.

All the spaces in a hospital have been filled up to capacity with patients. Your help is needed in order to prevent the further spread of disease and to help ensure the proper recovery of patients.

The mission is to program the robot to help patients in the hospital; recover from illness by providing them with food/ prescribed medicines, ensure PPE compliance, and perform timed sterilization of rooms all while enforcing social distancing.

2. Game Field

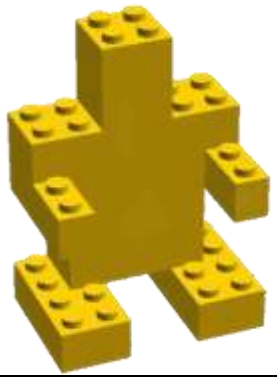
The following graphic shows the game field with different areas.



3. Game Objects, positioning , Randomization

- **Patients**

  There are 4 different colored patients, 3 each; **3 RED** (critically ill patients), **3 BLUE** (patient in stable condition), **3 YELLOW** (recovering patients), and **3 GREEN** (healthy patients).

patient  **3X RED**	**patient**  **3X YELLOW**

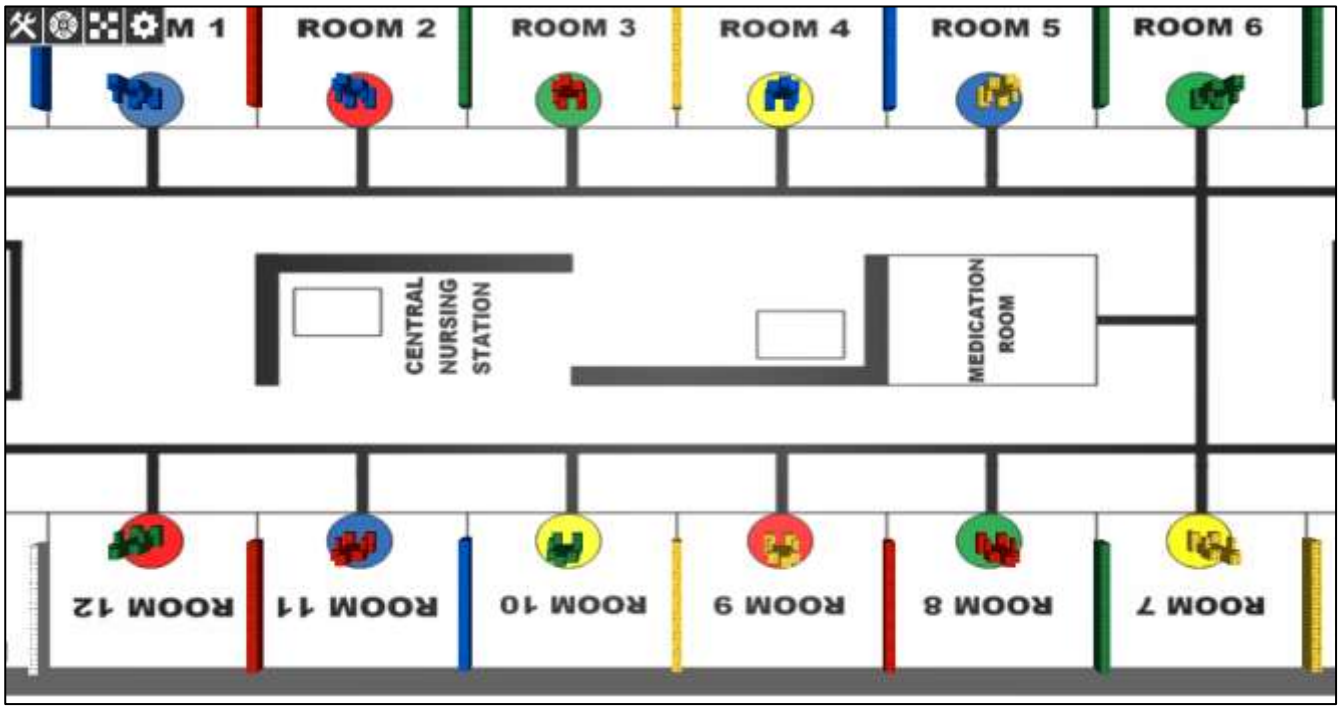
 **3X BLUE patient**	 **3X GREEN patient**

Randomization / positioning of patients

The positioning of the patients is done in two steps:

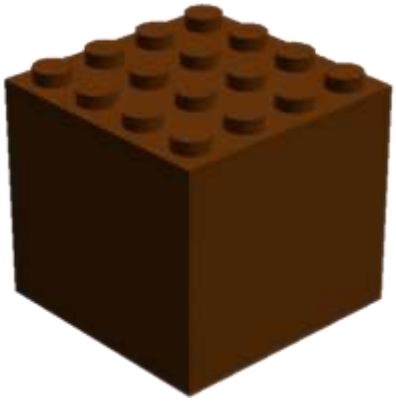
1. **RED patients**: install the 3 RED patients randomly on any of 3 different colored rooms.
2. **Other patients**: install any 3 colored patients out of the 9 remaining patients in the 3 red colored rooms.

An example of possible randomizations is shown in the picture below:

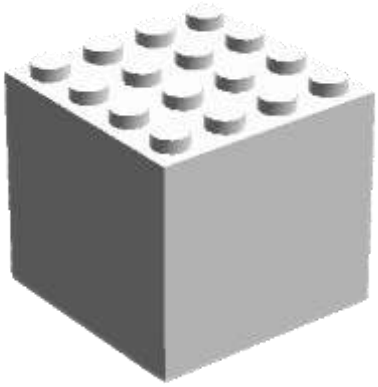


- **Supplies**

There are 6 vials of medicine (white cubes) and 6 meals (brown cubes). The medicine cubes are to be installed in the supply closet with white tab. The foods are to be installed in the supply closet with a brown tab.



6X FOOD

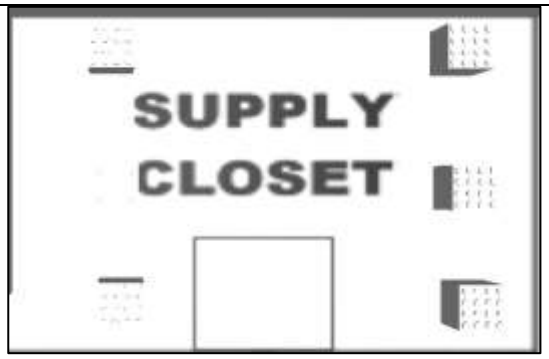


6X

MEDICINE

An example of the positioning is shown below:

Positioning of Food



Positioning of medicine

Start and finish area

Before the start of the run, the robot must start completely in the start area.

4. Robot Missions

For a better understanding, the missions will be explained in multiple sections.

The team can decide in which order they will do the missions.

4.1. Visit the Supply Closet (Black tab)

The robot must drive completely inside the supply closet which has a black tab, for a protective device. Full point is awarded when the robot is completely inside the area.

4.2. Move the patients inside the correct rooms

The robot must move each of the patients to their correct colored room.

- RED patients > Red colored rooms
- BLUE patients > Blue colored rooms
- YELLOW patients > Yellow colored rooms
- GREEN patients > Green colored rooms

To earn maximum points, the robot needs to bring each patient completely into the correct room.

4.3. Deliver the Supplies (Food or Medicine) in the correct rooms

The robot must deliver the supplies; either food or medicine in the correct colored rooms.

- MEDICINE > RED colored rooms
- MEDICINE > BLUE colored rooms
- FOOD > YELLOW colored rooms
- FOOD > GREEN Colored rooms

To earn maximum points, the robot needs to bring each supply completely inside the correct room.

4.4. Visit the Supply Closet (Orange tab)

The robot must drive completely inside the supply closet which has an orange tab, for sterilization. Full point is awarded when the robot is completely inside the area.

4.5. Park the robot

The mission is complete when the robot returns to the finish area, stops, and the chassis of the robot is entirely (top-view) within the start area.

5. Scoring

Definitions for the scoring

- **"Completely"** means that the game object is only touching the corresponding area
- **"Partly"** means that the game object is at least touching the area with one part
- **Please remember**: only one supply per room counts.

Tasks	**Each**	**Total**
Move the patient inside the room		
Patient moved inside the correct room	5	**60**
Deliver the supplies (food or medicine) in the correct rooms		
Supplies delivered inside the correct rooms	4	**48**
Visit the supply closets		
Visit the supply closet (black tab) for a protective device	3	3
Visit the supply closet (orange tab) for sterilization	3	3
Park the robot		
Robot completely stops within the Finish Area **(***only if other points are assigned***)**		**10**
Maximum Score		**118**