```
function [movedir, switch_dir, clean_map, need_charge] = nextdir(k, m,
roombaX, roombaY, movedir, switch_dir, floorplan, clean_map, need_charge)
    %if in desired position to clean mark as cleaned or reset charge
    if roombaX == m && roombaY == k
        movedir = 0;
        if need_charge == 1;
            need_charge = 0;
        else
            clean_map(roombaY, roombaX) = 5;
        end


    %-------------------------------------------------------RIGHT
MOVEMENT----------------------------------------------------
    %move right if no obstacle
    elseif roombaX < m && floorplan(roombaY, roombaX + 1) > 2
        movedir = 2;
        if switch_dir == 1
            switch_dir = 0;
        end
    %move up if no obstacle is up and right is obstacle
    elseif roombaX < m && switch_dir == 0
        if floorplan(roombaY - 1, roombaX) > 2
            movedir = 1;
        else
            switch_dir = 1;
            movedir = 0;
        end
    %move down if obstacle up and right (switch directions)
    elseif roombaX < m && floorplan(roombaY + 1, roombaX) > 2 &&
switch_dir == 1
        movedir = 3;
    %move left if up, down, and right have obstacles
    elseif roombaX < m && roombaY >= k && floorplan(roombaY - 1,
roombaX) < 3 && floorplan(roombaY, roombaX - 1) > 2
        movedir = 4;


    %-------------------------------------------------------LEFT
MOVEMENT----------------------------------------------------
    %move left if no obstacle
    elseif roombaX > m && floorplan(roombaY, roombaX - 1) > 2 &&
movedir ~= 2
        movedir = 4;
        if switch_dir == 2
            switch_dir = 0;
        end
    %move up if no obstacle is up and left is obstacle
    elseif roombaX > m && switch_dir == 0
        if floorplan(roombaY - 1, roombaX) > 2
            movedir = 1;
        else
            switch_dir = 2;
            movedir = 0;
        end
    %move down if obstacle up and left (switch directions)
```

```matlab
        elseif roombaX > m && floorplan(roombaY + 1, roombaX) > 2 &&
switch_dir == 2
            movedir = 3;
        %move right if up, down, and left have obstacles
        elseif roombaX > m && roombaY > k && floorplan(roombaY - 1,
roombaX) < 3 && floorplan(roombaY, roombaX + 1) > 2
            movedir = 2;

        %--------------------------------------------------------UP
MOVEMENT------------------------------------------------------
        %move up if no obstacle
        elseif roombaY > k && floorplan(roombaY - 1, roombaX) > 2
            movedir = 1;
            if switch_dir == 3
                switch_dir = 0;
            end
        %move right if no obstacle is right and up is obstacle
        elseif roombaY > k && switch_dir == 0
            if floorplan(roombaY, roombaX + 1) > 2
                movedir = 2;
            else
                switch_dir = 3;
                movedir = 0;
            end
        %move left if obstacle up and right (switch directions)
        elseif roombaY > k && floorplan(roombaY, roombaX - 1) > 2 &&
switch_dir == 3
            movedir = 4;
        %move down if up, right, and left have obstacles
        elseif roombaY > k && roombaX > m && floorplan(roombaY, roombaX -
1) < 3 && floorplan(roombaY + 1, roombaX) > 2
            movedir = 3;

        %--------------------------------------------------------DOWN
MOVEMENT-----------------------------------------------------
        %move down if no obstacle
        elseif roombaY < k && floorplan(roombaY + 1, roombaX) > 2
            movedir = 3;
            if switch_dir == 4
                switch_dir = 0;
            end
        %move right if no obstacle is right and down is obstacle
        elseif roombaY < k && switch_dir == 0
            if floorplan(roombaY, roombaX + 1) > 2
                movedir = 2;
            else
                switch_dir = 4;
                movedir = 0;
            end
        %move left if obstacle down and right (switch directions)
        elseif roombaY < k && floorplan(roombaY, roombaX - 1) > 2 &&
switch_dir == 4
            movedir = 4;
        %move up if down, right, and left have obstacles
```

```
        elseif roombaY < k && roombaX > m && floorplan(roombaY, roombaX -
1) < 3 && floorplan(roombaY - 1, roombaX) > 2
            movedir = 1;


        end
end
```