

```
clear all; close all; clc;

xDot = [1 1 1 1 1 -.2 .2 .2 -.2];

tEnd = 1;
tStep = 100;
dt = tEnd/tStep;
xMax = 2;

x = zeros(tStep, 13);
for i = 2:tStep
    x(i, 1:12) = nextState(x(i-1, 1:12), xDot, dt, xMax);
end

csvwrite("nextStateTestData.csv", x);
```

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```
function x1 = nextState(x0, xDot, dt, xMax)
    xDot = floorVal(xDot, xMax);

    x1 = x0;
    r = 0.0475;
    l = 0.47 / 2;
    w = 0.3 / 2;

    for i = 4:8
        x1(i) = x0(i) + xDot(i)*dt;
    end

    for i = 9:12
        x1(i) = x0(i) + xDot(i-3)*dt;
    end

    u = xDot(6:end)';
    q = odometry(u, w, l, r);

    for i = 1:3
        x1(i) = x0(i) + q(i);
    end
end
```

Not enough input arguments.

Error in nextState (line 2)
xDot = floorVal(xDot, xMax);

```

function q_k1 = odometry(u, w, l, r)
    F = [-1/(1 + w) 1/(1 + w) 1/(1 + w) -1/(1 + w);
         1 1 1 1;
         -1 1 -1 1];

    v = (r/4) .* (F * u);
    omg = v(1);
    v_x = v(2);
    v_y = v(3);

    if omg == 0
        q_b = [0, v_x, v_y]';
    else
        q_b = [omg, (v_x*sin(omg) + v_y*(cos(omg) - 1))/omg, (v_y*sin(omg) + v_x*(1 - cos(omg)))/omg]';
    end
    rot = [1 0 0;
           0 cos(omg) -sin(omg);
           0 sin(omg) cos(omg)];
    q_k1 = rot * q_b;
end

```

Not enough input arguments.

Error in odometry (line 2)

F = [-1/(1 + w) 1/(1 + w) 1/(1 + w) -1/(1 + w);

```
function x = floorVal(x, max)

    n = length(x);
    for i = 1:n
        if x(i) > max
            x(i) = max;
        elseif x(i) < -max
            x(i) = -max;
        end
    end
end
```

Not enough input arguments.

Error in floorVal (line 3)
n = length(x);

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