%% Final test

% New York Institute of Technology

% NYIT Academy Summer Camp 2018

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% RWTH - Mindstorms NXT Toolbox: http://www.mindstorms.rwth-aachen.de

%% Verify that the RWTH - Mindstorms NXT toolbox is installed.

if verLessThan('RWTHMindstormsNXT', '3.00');

error('This program requires the RWTH - Mindstorms NXT Toolbox version 3.00 or greater. Go to http://www.mindstorms.rwth-aachen.de and follow the installation instructions!');

end%if

%% Make sure all connections are closed before new connection

COM\_CloseNXT all

clear all

close all

%% Connection with the brick via USB

h = COM\_OpenNXT();

COM\_SetDefaultNXT(h);

%%---You must submit the all the code below this line for each exercise question---%%

%% Constants

Distance1 = 2300;

Distance2 = 1000;

Distance3 = 400;

Distance5 = 400;

Ports = [MOTOR\_B; MOTOR\_C;]; % motors

Speed = 60;

TurnTicks1 = 190;

TurnTicks2 = 380;

TurnSpeed1 = 60;

TurnSpeed2 = 240;

Distance4 = 1000;

PortsA = [MOTOR\_A]; % motors

SpeedA = 100;

%% action mStraight1

mStraight1 = NXTMotor(Ports);

mStraight1.Power = Speed;

mStraight1.TachoLimit = Distance1;

%% action mTurn1

mTurn1 = NXTMotor(Ports(2)); % turn motor C first...

mTurn1.Power = TurnSpeed1;

mTurn1.TachoLimit = TurnTicks1;

%% action mStraight2

mStraight2 = NXTMotor(Ports);

mStraight2.Power = Speed;

mStraight2.TachoLimit = Distance2;

%% action mTurn2

mTurn2 = NXTMotor(Ports(2)); % turn motor C first...

mTurn2.Power = TurnSpeed1;

mTurn2.TachoLimit = TurnTicks2;

%% action mBack

mBack = mStraight2; %same speed and distance...

mBack.Power = -mStraight2.Power; %but different direction

mBack.TachoLimit = Distance2;

%% action mStraight3

mStraight3 = NXTMotor(Ports);

mStraight3.Power = Speed;

mStraight3.TachoLimit = Distance3;

%% action mStraight4

mStraight4 = NXTMotor(Ports);

mStraight4.Power = Speed;

mStraight4.TachoLimit = Distance5;

%% action mTurn3

mTurn3 = NXTMotor(PortsA); % turn motor A first...

mTurn3.Power = - SpeedA;

mTurn3.TachoLimit = Distance4;

%% Need to ensure all motors are stopped initially

mStraight1.Stop('off');

mStraight2.Stop('off');

mStraight3.Stop('off');

%% Sequence of actions

%% Move forward and stop 1

mStraight1.SendToNXT();

mStraight1.WaitFor();

%% Turn1

mTurn1.SendToNXT();

mTurn1.WaitFor();

%% Move forward and stop 2

mStraight2.SendToNXT();

mStraight2.WaitFor();

%% Move back bean bag

mBack.SendToNXT();

mBack.WaitFor();

%% Move forward and stop 3 bean bag

mStraight3.SendToNXT();

mStraight3.WaitFor();

%% Turn2

mTurn2.SendToNXT();

mTurn2.WaitFor();

%% Move forward cube

mStraight4.SendToNXT();

mStraight4.WaitFor();

%% Turn3 arm

mTurn3.SendToNXT();

mTurn3.WaitFor();

%% Shut down all motors again

mStraight1.Stop('off');

mStraight2.Stop('off');

mStraight3.Stop('off');

mStraight4.Stop('off');

%% Close connection

COM\_CloseNXT(h);