Name: Ayman Mohamed Elashry
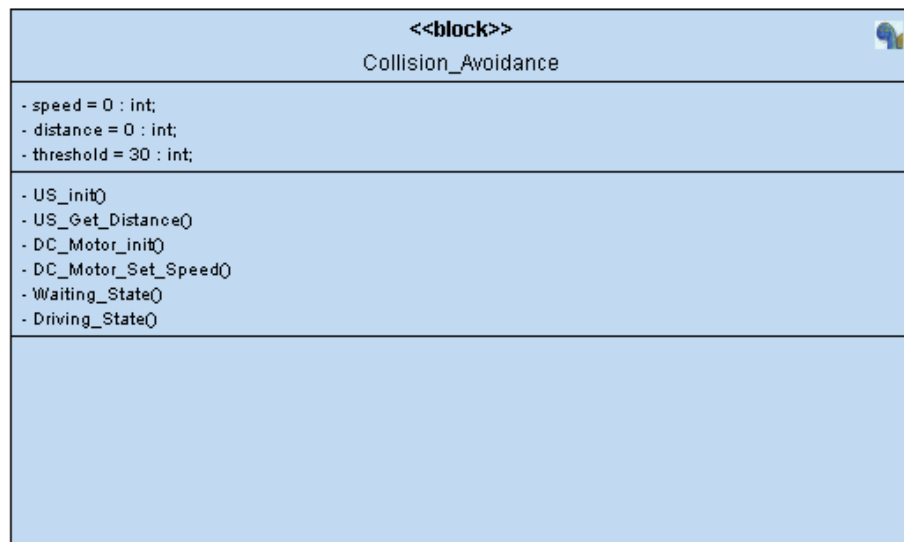
Learn-In-Depth Diploma
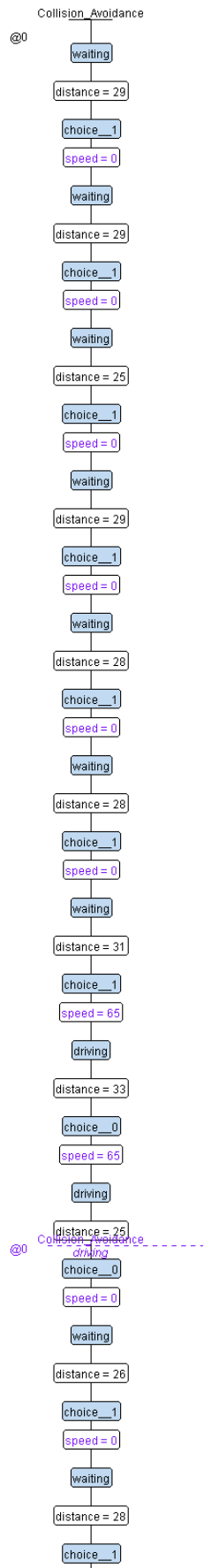
Unit 4 Lesson 2

Report About: Collision Avoidance

Here I did this report about collision avoidance system with two ways:
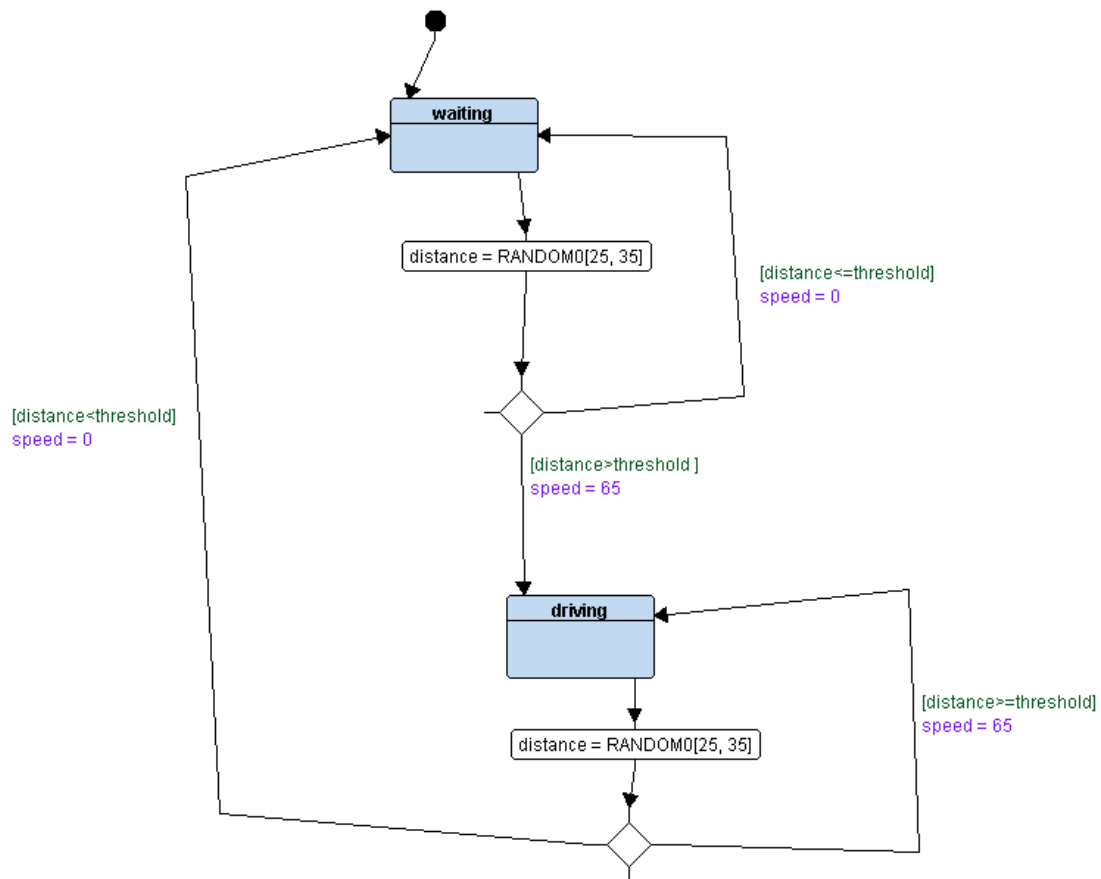
1- Collision Avoidance System with one block.

2- Collision Avoidance System with multiple blocks.

Collision Avoidance System with one block

My Photos about it:

<<block>>
Collision_Avoidance
- speed = 0 : int; - distance = 0 : int; - threshold = 30 : int;
- US_init() - US_Get_Distance() - DC_Motor_init() - DC_Motor_Set_Speed() - Waiting_State() - Driving_State()

Collision_Avoidance

@0

waiting

distance = 29

choice__1

speed = 0

waiting

distance = 29

choice__1

speed = 0

waiting

distance = 25

choice__1

speed = 0

waiting

distance = 29

choice__1

speed = 0

waiting

distance = 28

choice__1

speed = 0

waiting

distance = 28

choice__1

speed = 0

waiting

distance = 31

choice__1

speed = 65

driving

distance = 33

choice__0

speed = 65

driving

distance = 25

@0   Collision_Avoidance
         driving

choice__0

speed = 0

waiting

distance = 26

choice__1

speed = 0

waiting

distance = 28

choice__1

State Diagram

- **waiting** state
- **driving** state
- distance = RANDOM0[25, 35]
- [distance<=threshold] speed = 0
- [distance>threshold] speed = 65
- [distance<threshold] speed = 0
- [distance>=threshold] speed = 65

My Log:

UltraSonic_init

DC_Motor_init

Waiting State: distance = 33, Speed = 65

Driving State: distance = 34, Speed = 65

Driving State: distance = 34, Speed = 65

Driving State: distance = 26, Speed = 0

Waiting State: distance = 32, Speed = 65

Driving State: distance = 30, Speed = 0

Waiting State: distance = 30, Speed = 0

Waiting State: distance = 35, Speed = 65

Driving State: distance = 26, Speed = 0

Waiting State: distance = 25, Speed = 0

Waiting State: distance = 32, Speed = 65

Driving State: distance = 32, Speed = 65

Driving State: distance = 30, Speed = 0

Waiting State: distance = 33, Speed = 65

Driving State: distance = 31, Speed = 65

Driving State: distance = 32, Speed = 65

Driving State: distance = 28, Speed = 0

Waiting State: distance = 32, Speed = 65

Driving State: distance = 34, Speed = 65

Driving State: distance = 27, Speed = 0

Waiting State: distance = 32, Speed = 65

Driving State: distance = 32, Speed = 65

Driving State: distance = 33, Speed = 65

Driving State: distance = 35, Speed = 65

Driving State: distance = 31, Speed = 65

Driving State: distance = 32, Speed = 65

Driving State: distance = 33, Speed = 65

Driving State: distance = 30, Speed = 0

Waiting State: distance = 31, Speed = 65

Driving State: distance = 32, Speed = 65

Driving State: distance = 27, Speed = 0

Waiting State: distance = 26, Speed = 0

Waiting State: distance = 34, Speed = 65

Driving State: distance = 35, Speed = 65

Driving State: distance = 35, Speed = 65

Driving State: distance = 27, Speed = 0

Waiting State: distance = 29, Speed = 0

Waiting State: distance = 34, Speed = 65

Driving State: distance = 32, Speed = 65

Driving State: distance = 30, Speed = 0

Waiting State: distance = 29, Speed = 0

Waiting State: distance = 32, Speed = 65

Driving State: distance = 30, Speed = 0

Waiting State: distance = 31, Speed = 65

Driving State: distance = 32, Speed = 65

Driving State: distance = 25, Speed = 0

Waiting State: distance = 30, Speed = 0

Waiting State: distance = 25, Speed = 0

Waiting State: distance = 30, Speed = 0

Waiting State: distance = 29, Speed = 0

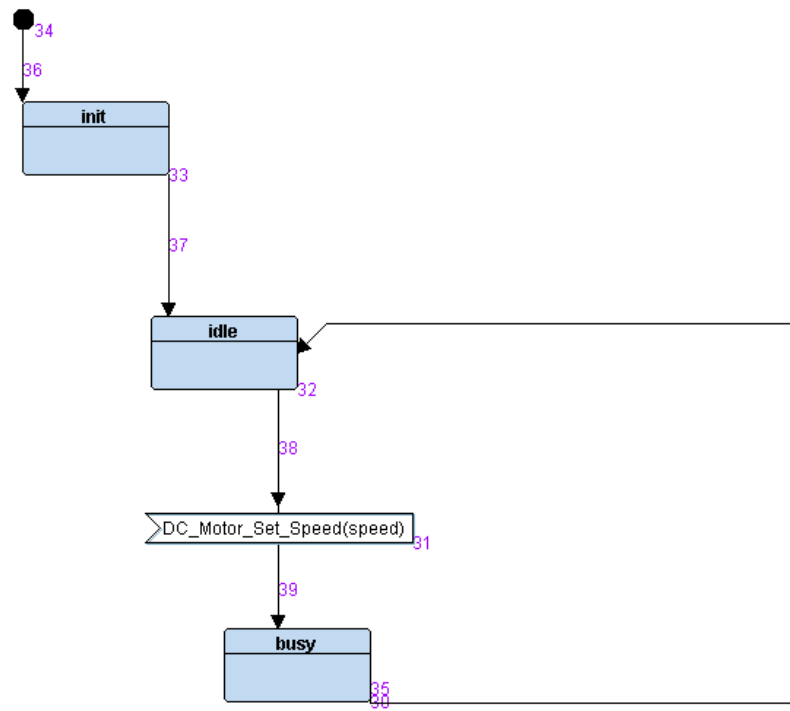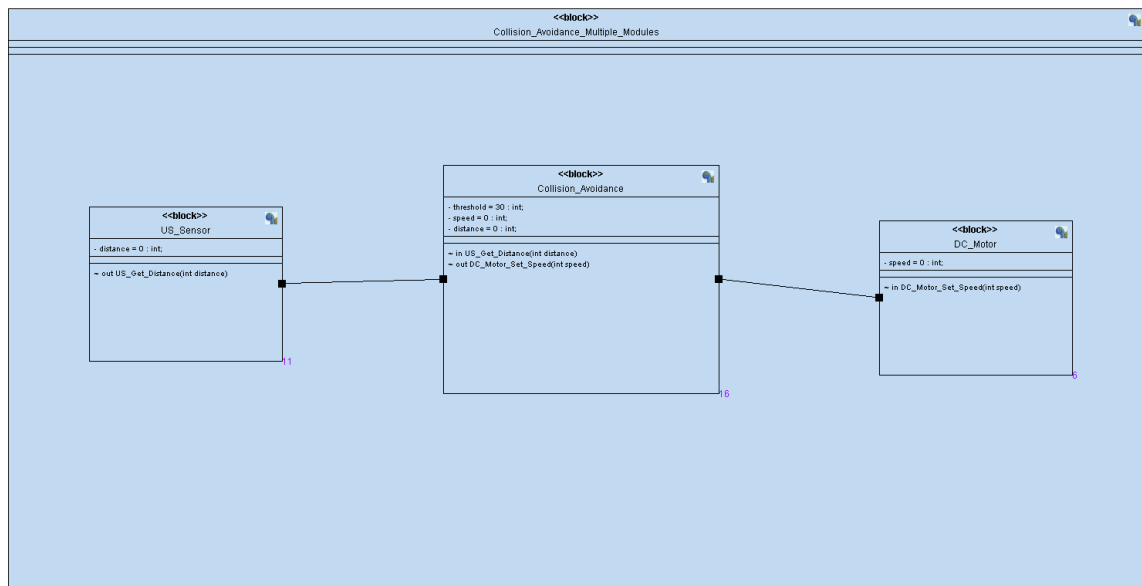# Collision Avoidance System with multiple blocks.
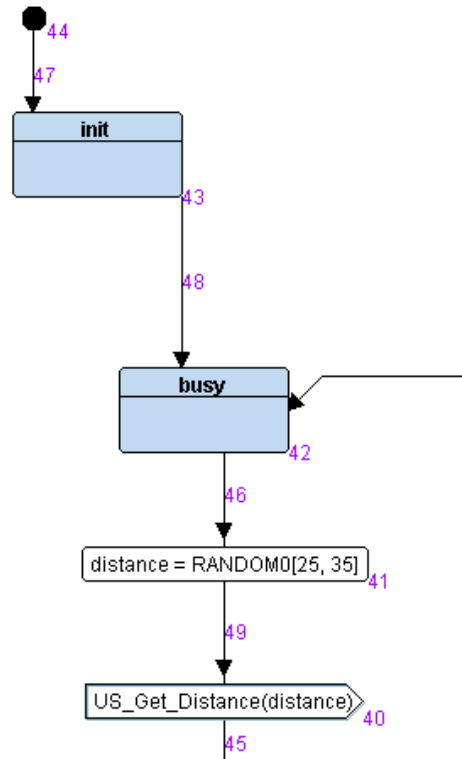
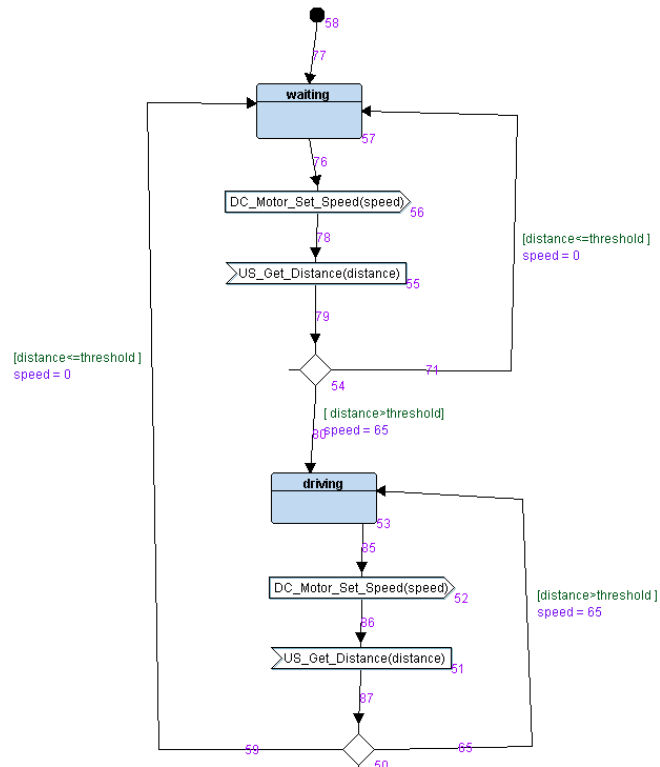## My Photos about it:

Figure 1DC_Motor

Figure 2UltraSonic.

Figure 3Collision_Avoidance_Mechanism
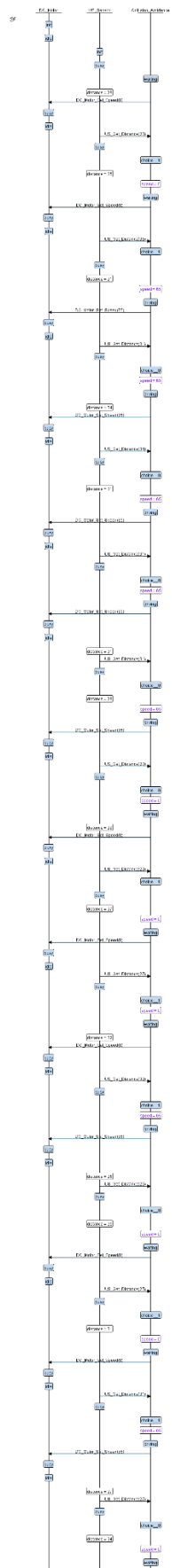
My Log:

US_init

DC_Motor_init (idle State)

US_Busy state : distance = 33

DC_Motor is Busy , Speed = 65

Waiting_State: distance = 33 , I switched to the driving state with speed = 65

US_Busy state : distance = 34

DC_Motor is Busy , Speed = 65

Driving_State: distance = 34 , I am still in the driving state with speed = 65

US_Busy state : distance = 34

DC_Motor is Busy , Speed = 65

Driving_State: distance = 34 , I am still in the driving state with speed = 65

US_Busy state : distance = 26

DC_Motor is Busy , Speed = 0

Driving_State: distance = 26 , I switched to the waiting state with speed = 0

US_Busy state : distance = 32

DC_Motor is Busy , Speed = 65

Waiting_State: distance = 32 , I switched to the driving state with speed = 65

US_Busy state : distance = 30

DC_Motor is Busy , Speed = 0

Driving_State: distance = 30 , I switched to the waiting state with speed = 0

US_Busy state : distance = 30

DC_Motor is Busy , Speed = 0

Waiting_State: distance = 30 , I am still in the waiting state with speed = 0

US_Busy state : distance = 35

DC_Motor is Busy , Speed = 65

Waiting_State: distance = 35 , I switched to the driving state with speed = 65

US_Busy state : distance = 26

DC_Motor is Busy , Speed = 0

Driving_State: distance = 26 , I switched to the waiting state with speed = 0

US_Busy state : distance = 25

DC_Motor is Busy , Speed = 0

Waiting_State: distance = 25 , I am still in the waiting state with speed = 0

Thank you for your time.

Ayman Mohamed Elashry

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