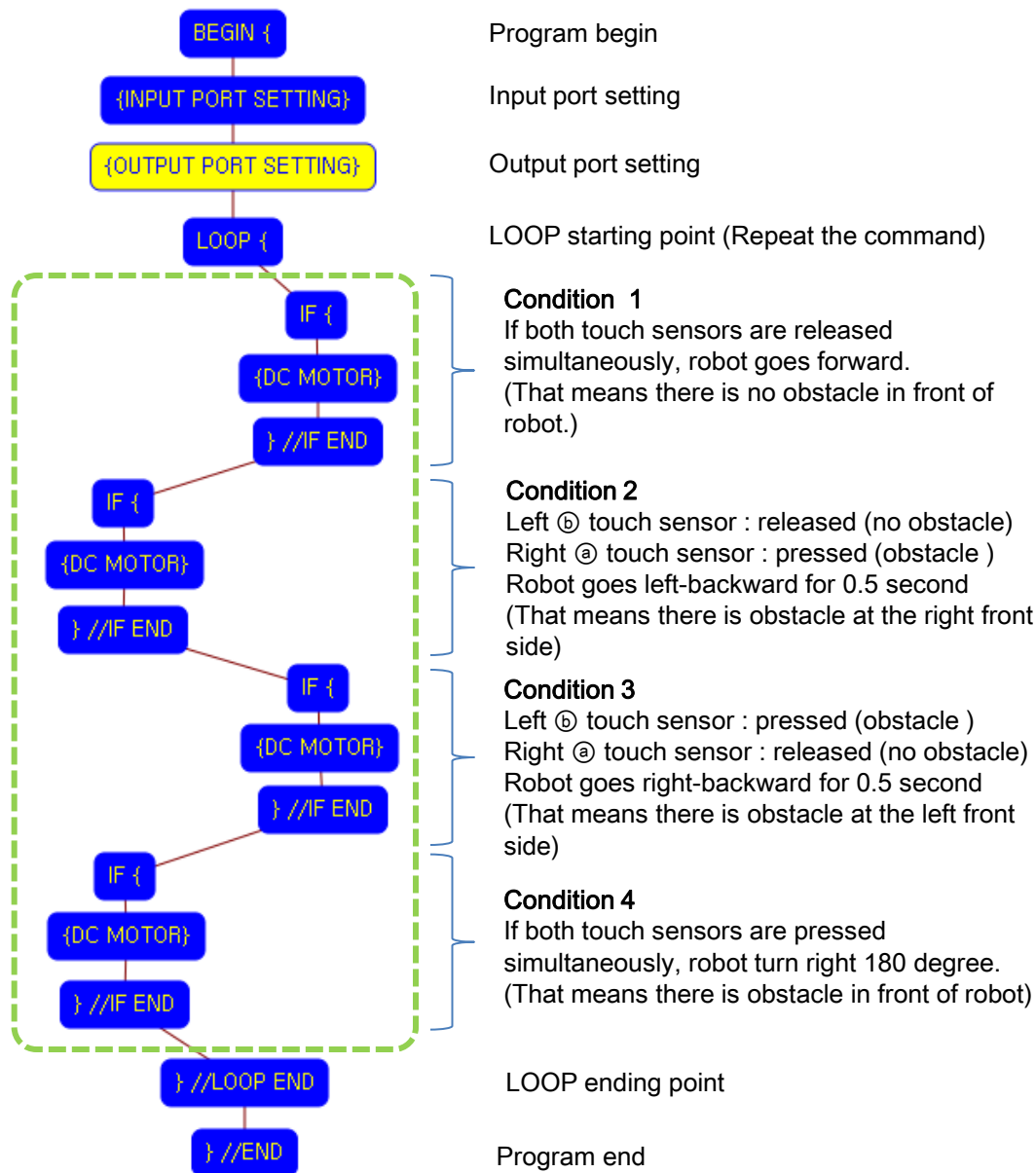
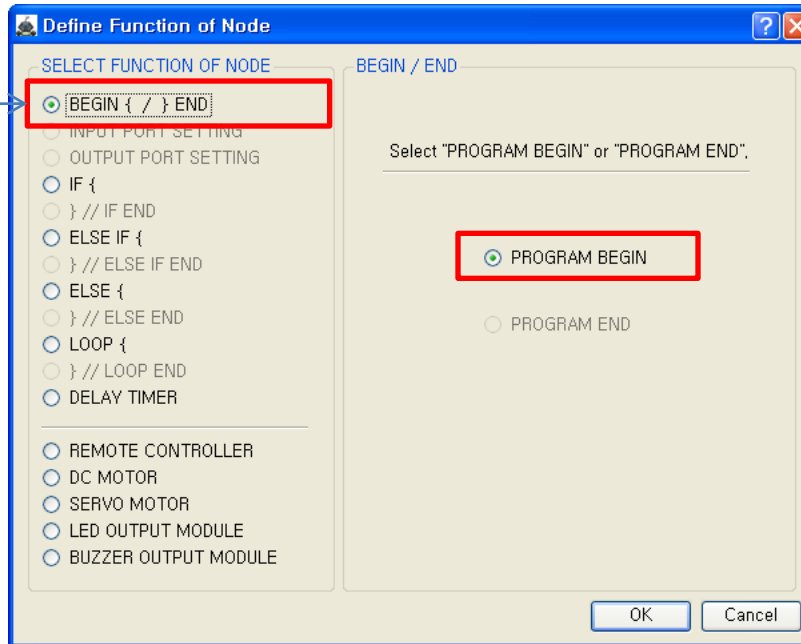
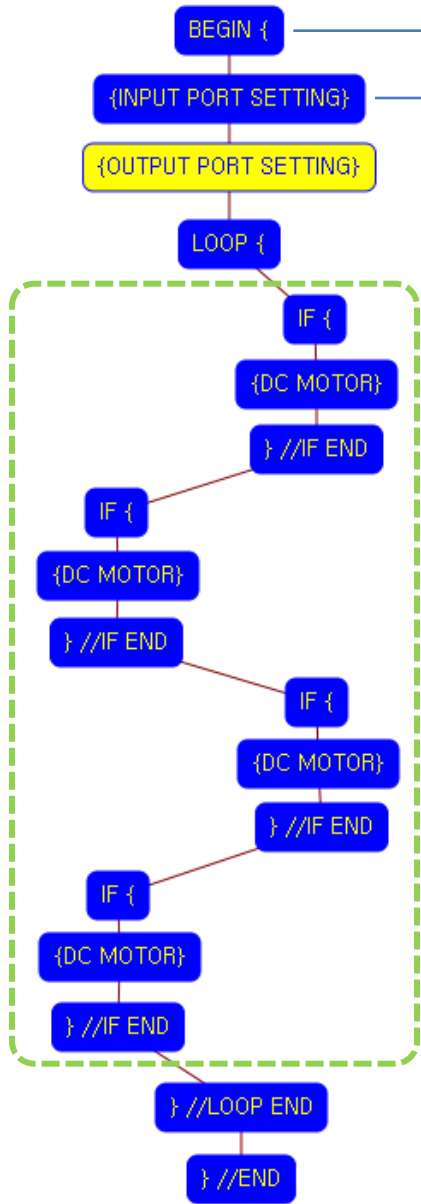


Robot goes forward if there is no obstacle in front of robot. If the robot detect the obstacle in front side of robot, it avoid the obstacle . You can change the method(direction and time) of avoiding obstacle using program.

You can learn the usage of multi "IF" commands about multi conditions of robot.

Program name : eq2-2-p19\_LadybirdRobot.ufc

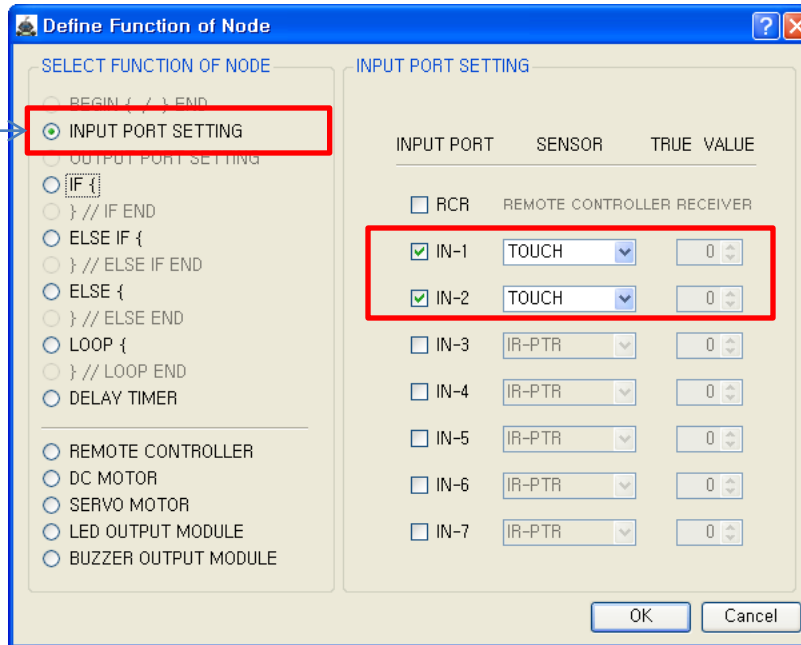




This means that program begins from here.

You have to place this node at the first of program.

“PROGRAM END” is not active because you did not define “PROGRAM BEGIN” yet.

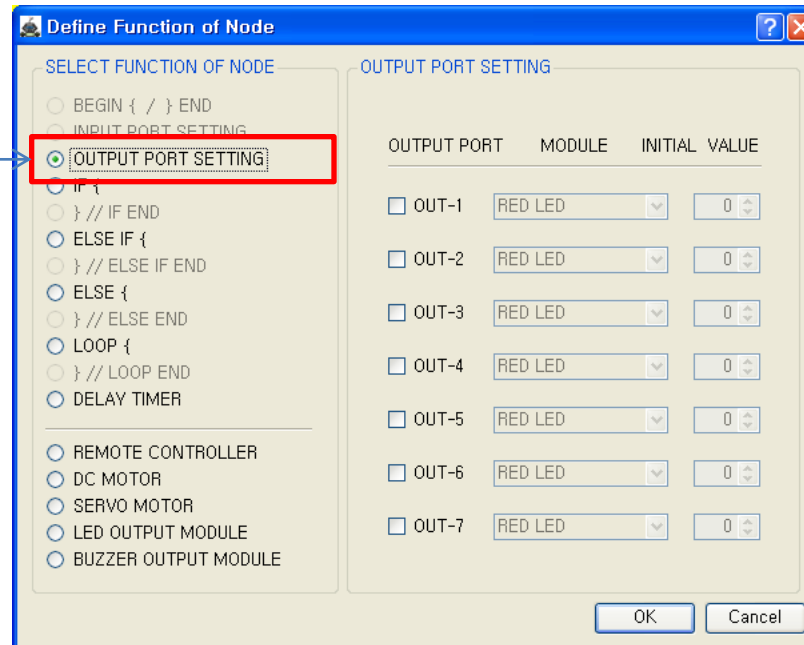
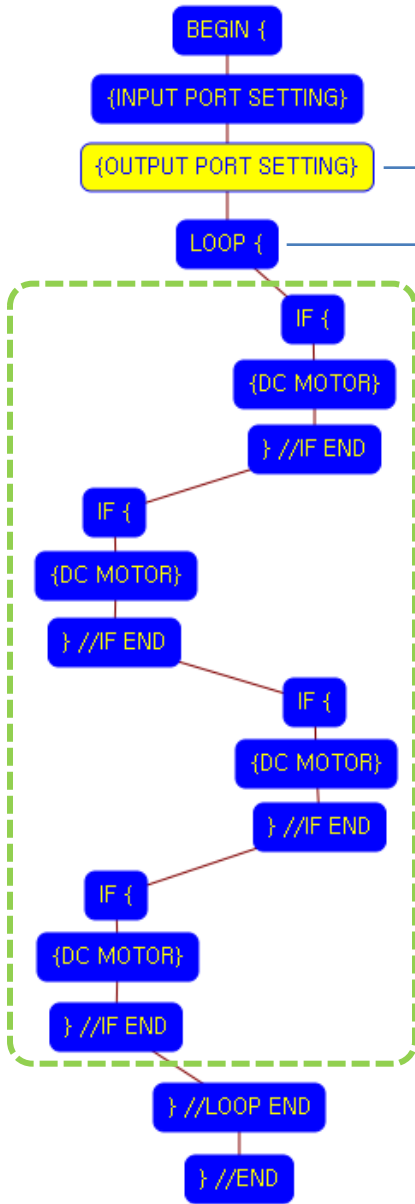


This model use 2 touch sensors as input device.

You have to connect the right touch sensor to the IN-1 input port and left touch sensor to the IN-2 input port of main board.

And check the IN-1 and IN-2 with “TOUCH” in software.

If the real connection of sensors are different to the setting on software, it will make robot to wrong operation.

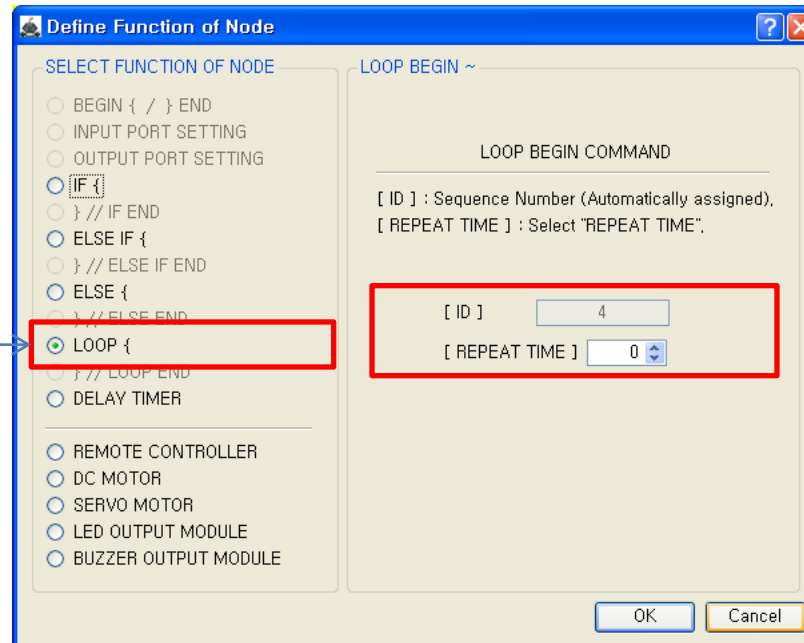


You can define the output port for robot in hear, "OUTPUT PORT SETTING".

In carrier robot, we use only DC motors, so we let the robot we don't use any other.

Click "OK" to finish the setting. The node color is yellow because we did not setting any one.

After setting the Input / Output, the real program code is writing after this node.

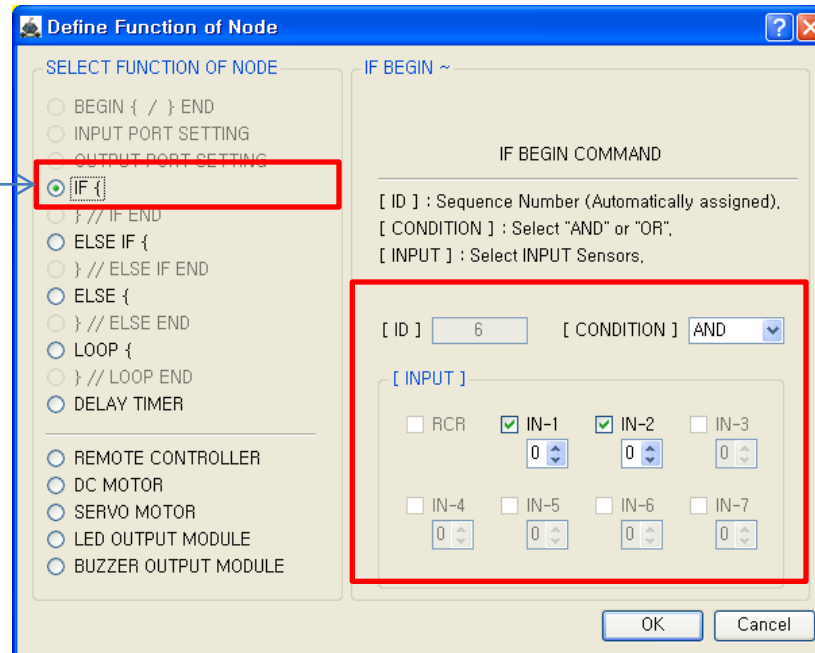
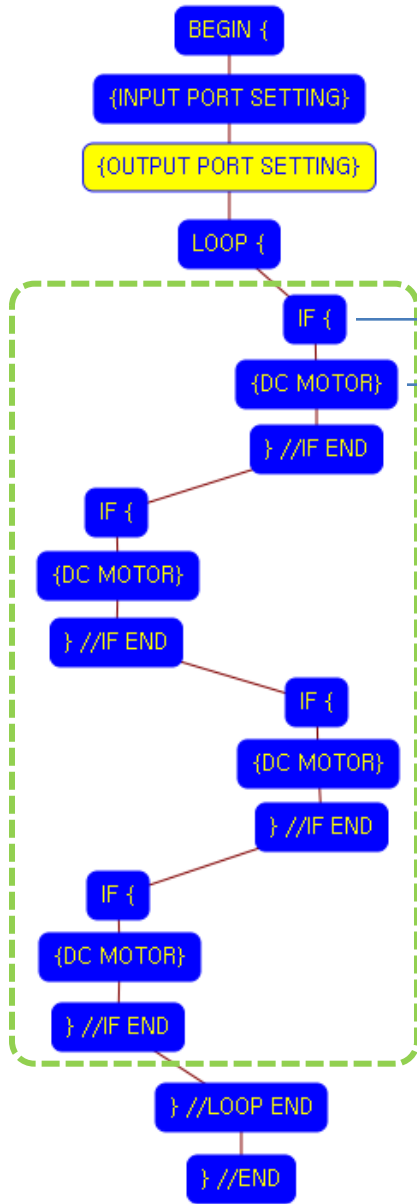


LOOP command is used to repeat the commands.

"REPEAT TIME" is the repeat number you want. If you want permanent repetition, you have to set "0".

ID is automatically assigned. You have to set the same ID at "LOOP END".

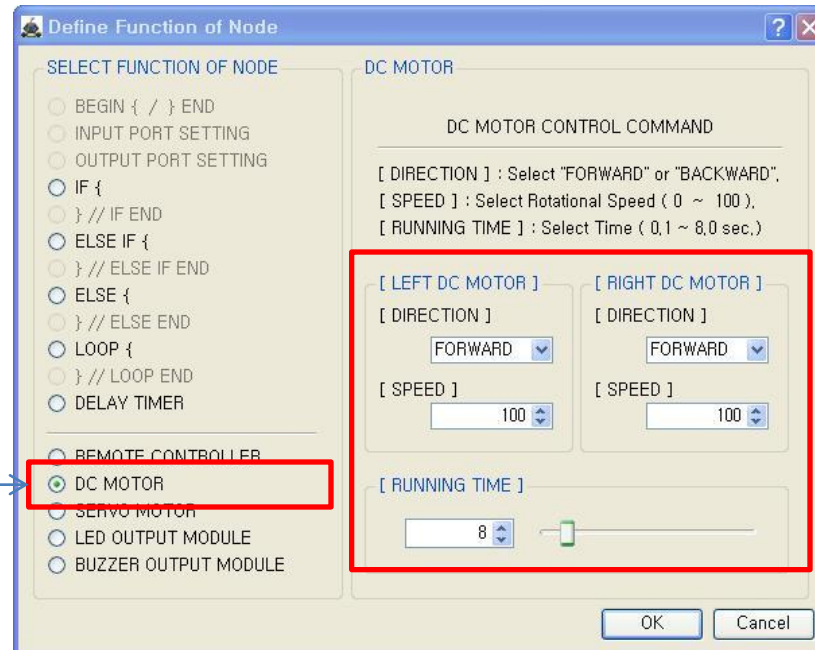
Automatically assigned ID is different according to the sequence of making nodes.



1<sup>st</sup> condition

True condition is  
 Ⓐ touch sensor of IN-1 : released  
 AND  
 Ⓑ touch sensor of IN-2 : released

If the condition is true, the next "{DC MOTOR}" command is executed, else robot check the 2<sup>nd</sup> "IF {" condition.



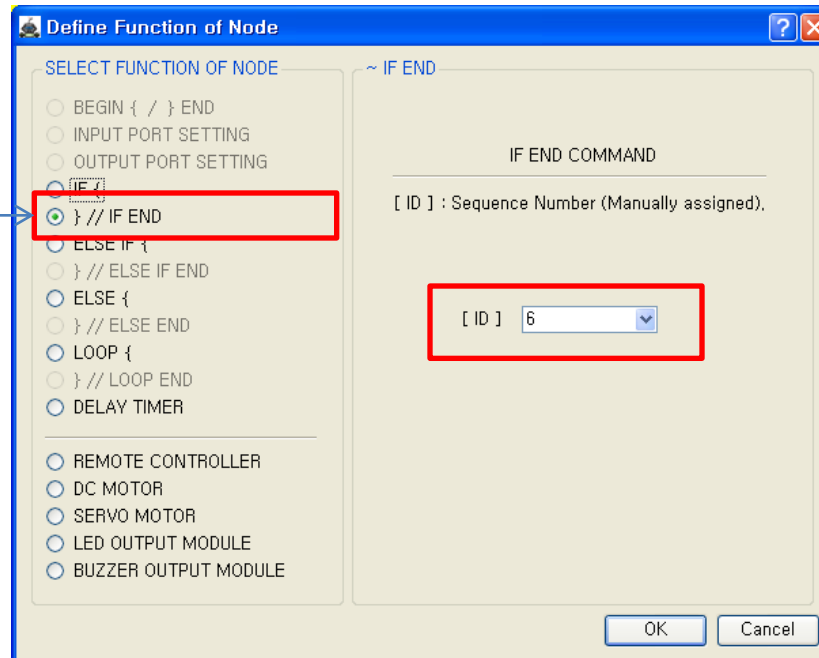
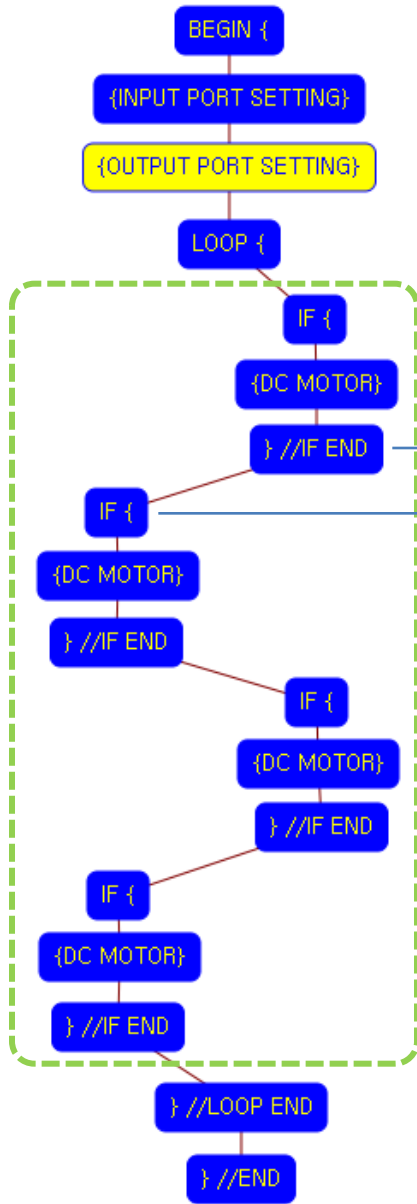
If the 1<sup>st</sup> "IF {" condition is true, both of DC motor run like as followings.

Both DC Motor

- Direction : Forward
- Speed : 100
- Running Time : 8

➔ Robot goes forward during 0.8 second

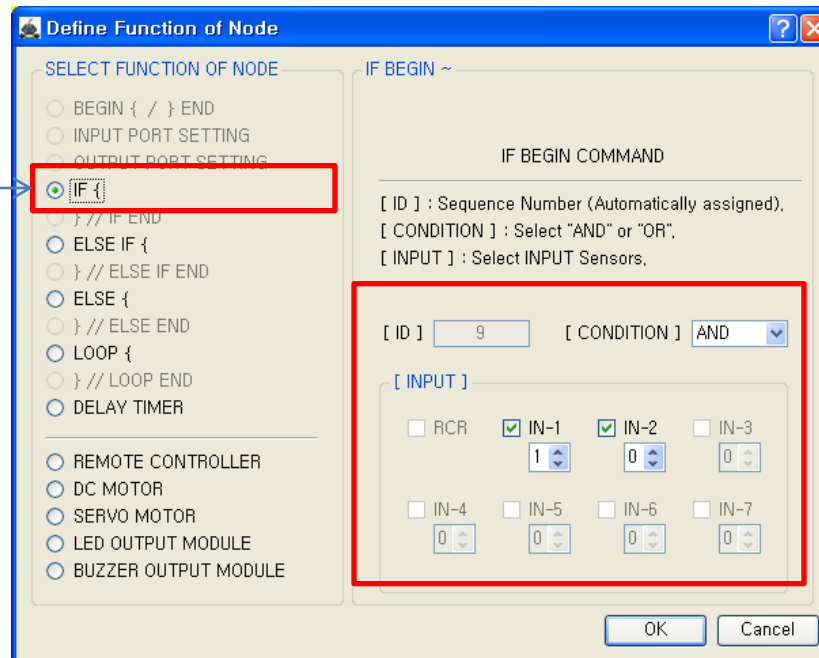
Motor speed is from 0 to 100 and running time is based on 0.1 second. (8 is 0.8 second)



The end point of 1<sup>st</sup> "IF {" condition.

You have to assigned the ID of paired "IF {" condition.

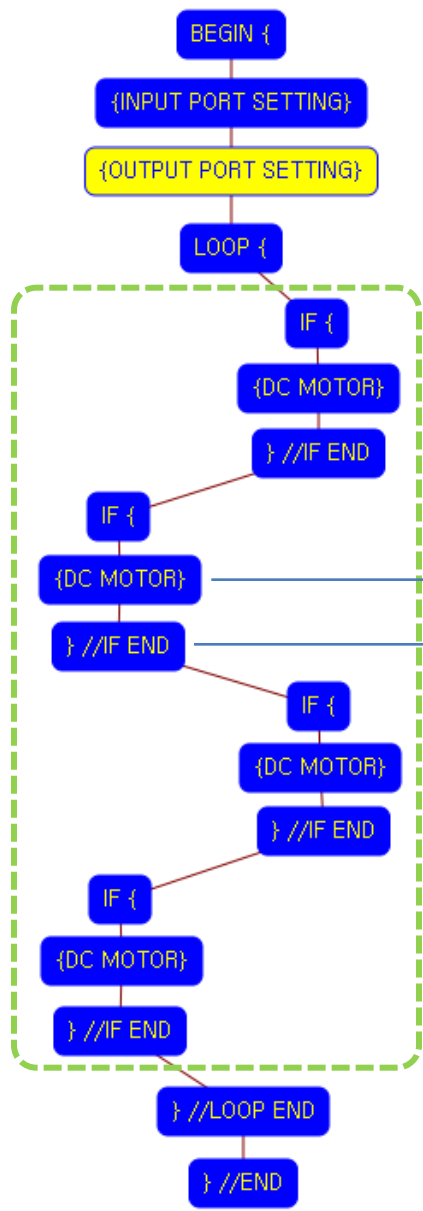
(It is necessary to know that which "IF {" among the many "IF {" conditions in program.



2<sup>nd</sup> condition

True condition is  
 Ⓐ touch sensor of IN-1 : pressed  
 AND  
 Ⓑ touch sensor of IN-2 : released

If the condition is true, the next "{DC MOTOR}" command is executed, else robot check the 3<sup>rd</sup> "IF {" condition.



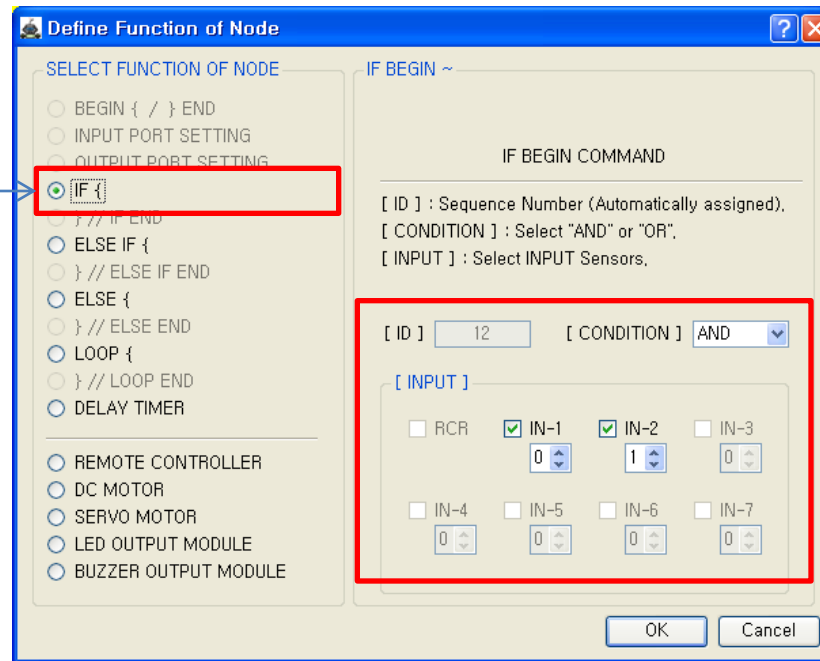
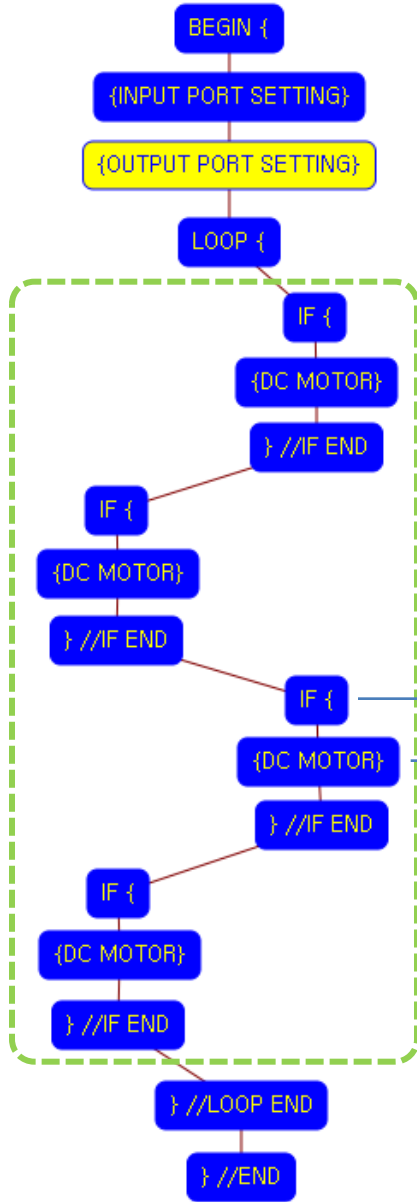
If the 2<sup>nd</sup> "IF {" condition is true, DC motors run like as followings.

- Left DC Motor
- Direction : Backward
  - Speed : 100
  - Running Time : 5
- Right DC Motor
- Direction : Backward
  - Speed : 0
  - Running Time : 5
- Robot turns right during 0.5 second

The end point of 2<sup>nd</sup> "IF {" condition.

You have to assigned the ID of paired "IF {" condition.

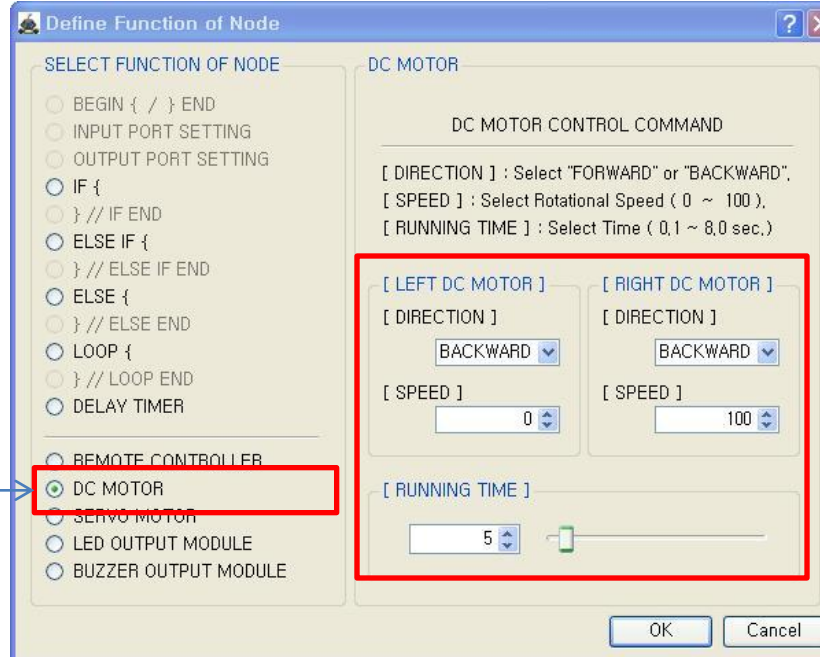
(It is necessary to know that which "IF {" among the many "IF {" conditions in program.



3<sup>rd</sup> condition

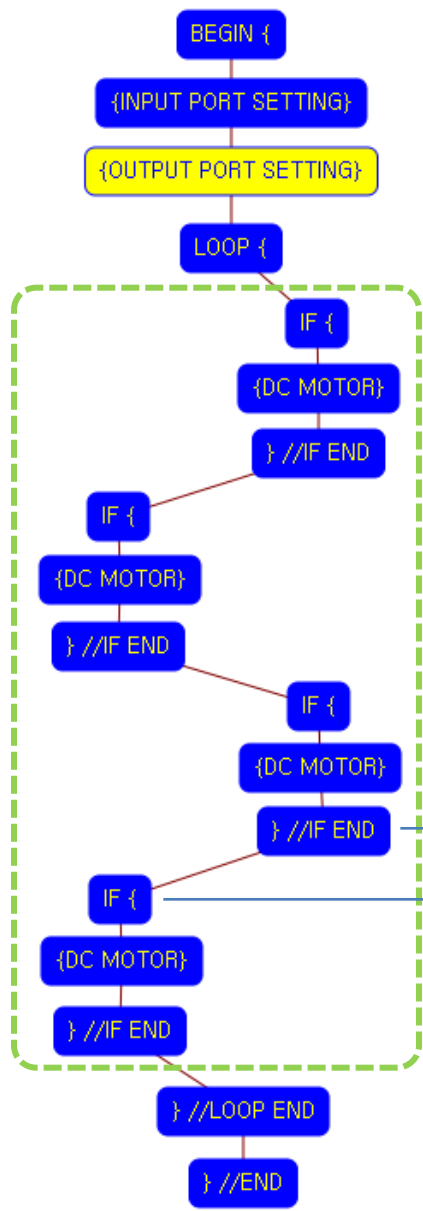
True condition is  
 Ⓐ touch sensor of IN-1 : released  
 AND  
 Ⓑ touch sensor of IN-2 : pressed

If the condition is true, the next "{DC MOTOR}" command is executed, else robot check the 4<sup>th</sup> "IF {" condition.



If the 3<sup>rd</sup> "IF {" condition is true, DC motors run like as followings.

Left DC Motor  
 - Direction : Backward  
 - Speed : 0  
 - Running Time : 5  
 Right DC Motor  
 - Direction : Backward  
 - Speed : 100  
 - Running Time : 5  
 → Robot turns left during 0.5 second



**Define Function of Node**

SELECT FUNCTION OF NODE

- BEGIN { / } END
- INPUT PORT SETTING
- OUTPUT PORT SETTING
- IF { }
- } //IF END
- ELSE IF {
- } // ELSE IF END
- ELSE {
- } // ELSE END
- LOOP {
- } // LOOP END
- DELAY TIMER

---

~ IF END

IF END COMMAND

[ ID ] : Sequence Number (Manually assigned),

[ ID ] 12

OK Cancel

The end point of 3<sup>rd</sup> "IF {" condition.

You have to assigned the ID of paired "IF {" condition.

(It is necessary to know that which "IF {" among the many "IF {" conditions in program.

**Define Function of Node**

SELECT FUNCTION OF NODE

- BEGIN { / } END
- INPUT PORT SETTING
- OUTPUT PORT SETTING
- IF { }
- } //IF END
- ELSE IF {
- } // ELSE IF END
- ELSE {
- } // ELSE END
- LOOP {
- } // LOOP END
- DELAY TIMER

---

IF BEGIN ~

IF BEGIN COMMAND

[ ID ] : Sequence Number (Automatically assigned),

[ CONDITION ] : Select "AND" or "OR",

[ INPUT ] : Select INPUT Sensors,

[ ID ] 15 [ CONDITION ] AND

[ INPUT ]

<input type="checkbox"/> RCR	<input checked="" type="checkbox"/> IN-1	<input checked="" type="checkbox"/> IN-2	<input type="checkbox"/> IN-3
	1	1	0
<input type="checkbox"/> IN-4	<input type="checkbox"/> IN-5	<input type="checkbox"/> IN-6	<input type="checkbox"/> IN-7
0	0	0	0

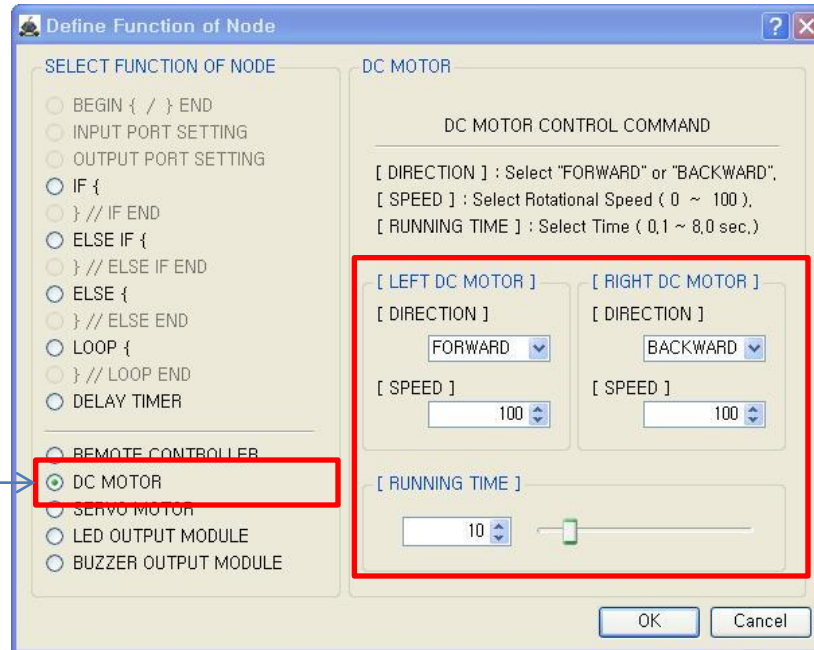
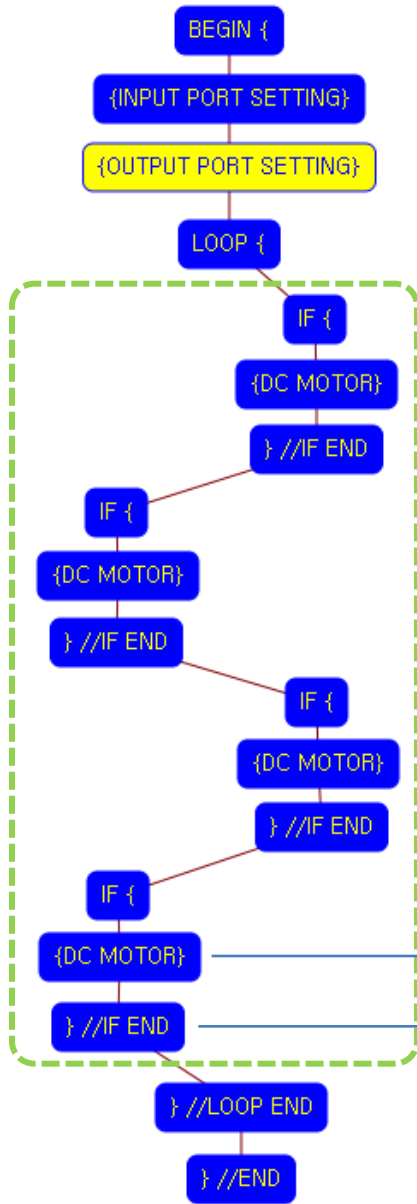
OK Cancel

4<sup>th</sup> condition

True condition is  
 Ⓐ touch sensor of IN-1 : pressed  
 AND  
 Ⓑ touch sensor of IN-2 : pressed

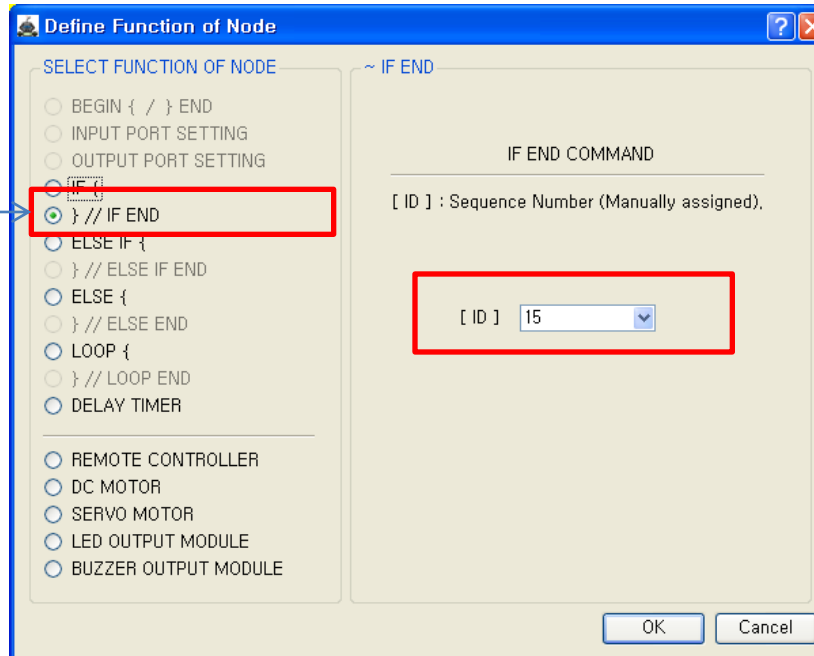
If the condition is true, the next "{DC MOTOR}" command is executed, else the "} //LOOP END" command is executed.





If the 4<sup>th</sup> "IF {" condition is true, DC motors run like as followings.

- Left DC Motor**
- Direction : Forward
  - Speed : 100
  - Running Time : 10
- Right DC Motor**
- Direction : Backward
  - Speed : 100
  - Running Time : 10



The end point of 4<sup>th</sup> "IF {" condition.

You have to assigned the ID of paired "IF {" condition.

(It is necessary to know that which "IF {" among the many "IF {" conditions in program.

