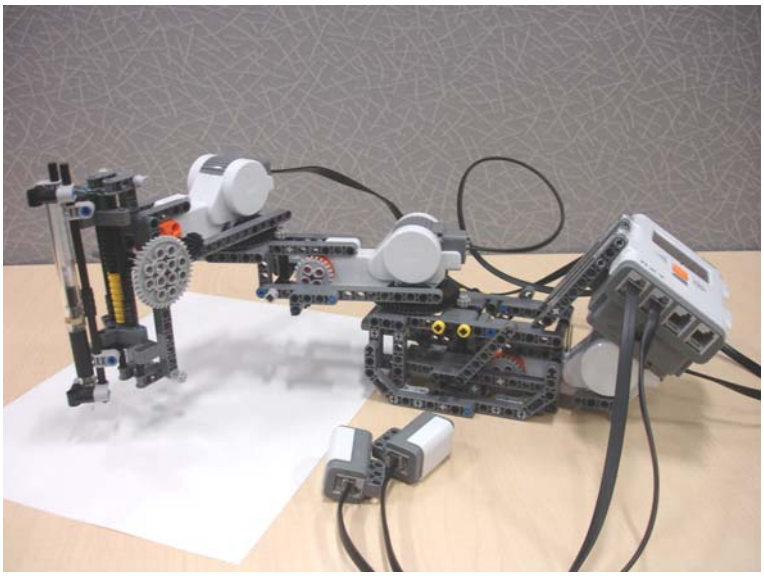
NXT SCARA Building Instruction



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■ Revision History

Revision	Date	Description	Author / Editor
1.0	Oct 29, 2008	First edition	Yorihisa Yamamoto y_yama@cybernet.co.jp

The contents and URL described in this document can be changed with no previous notice.

Introduction

NXT SCARA is a two-link planar robot arm built with LEGO Mindstorms NXT. SCARA stands for Selective Compliant Assembly Robot Arm. Please refer the following URL to know more detailed information about SCARA.

http://en.wikipedia.org/wiki/SCARA

This document describes the required products for NXT SCARA and how to build it.

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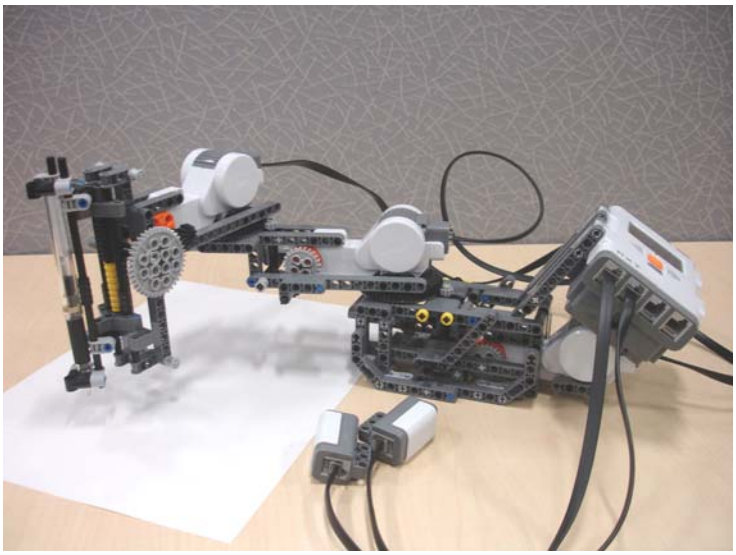
1 What is NXT SCARA?

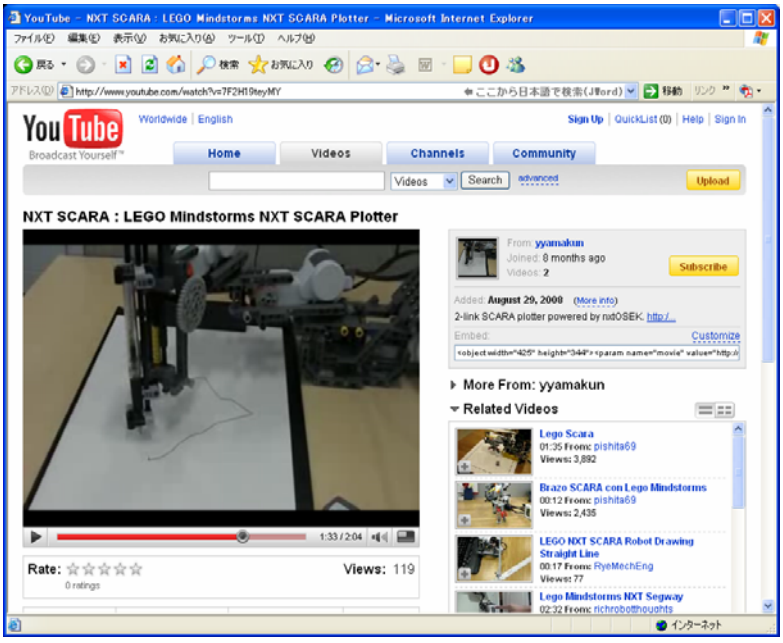
NXT SCARA is a two-link planar robot arm built with LEGO Mindstorms NXT. The figure below is its externals.



NXT SCARA has the following features.

- Trajectory tracking control with DC motors and link mechanism.
- Drawing a picture with a pen attached on the edge of the robot arm.

You can watch the NXT SCARA movie at the URL http://www.youtube.com/watch?v=7F2H19teyMY.



2 Required Products

This chapter describes the required products to build NXT SCARA. Contact LEGO Mindstorms Education distributor in your country for consultation and estimation about the products. The following information is described at the North America LEGO Education site http://www.legoeducation.com/store/.

LEGO Products

- LEGO Mindstorms Education NXT Base Set
  Product ID : W979797
  This is a LEGO Mindstorms NXT base set.

- Education Resource Set
  Product ID : W979648
  This is a LEGO Mindstorms NXT expansion set.

- Turntable
  Product ID : W991330
  NXT SCARA requires two turntables.
  You have to add one more turntable because NXT Base Set includes one turntable only.

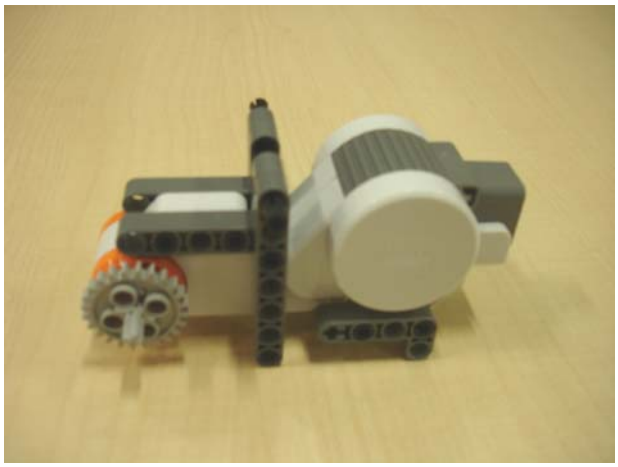
- AC Adaptor
  Product ID : W979833
  This is required for NXT Rechargeable Battery.

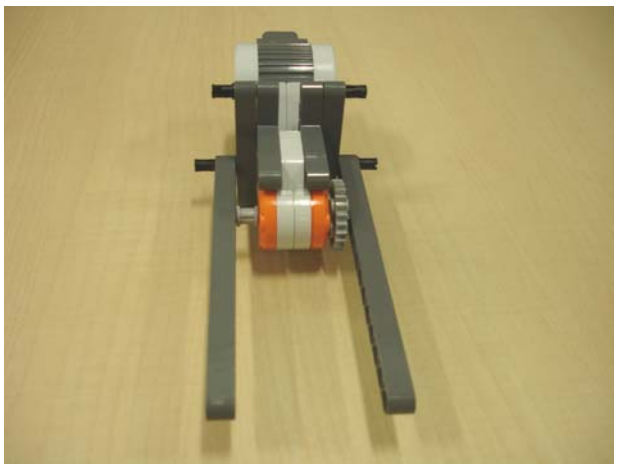
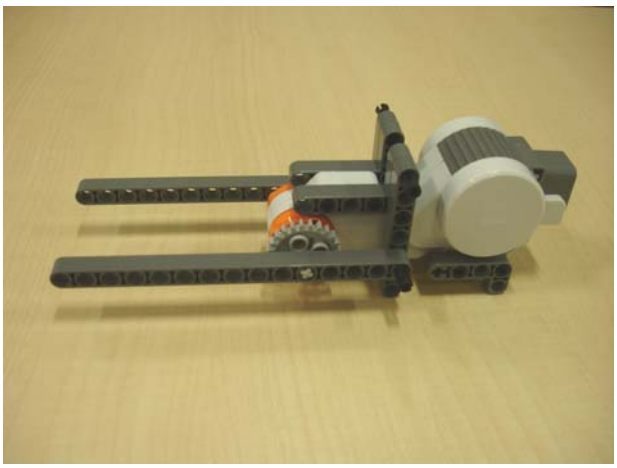
- NXT Bluetooth Dongle
  Product ID : W979847
  This is a USB dongle for Bluetooth communication.
  It is required for NXT GamePad utility.

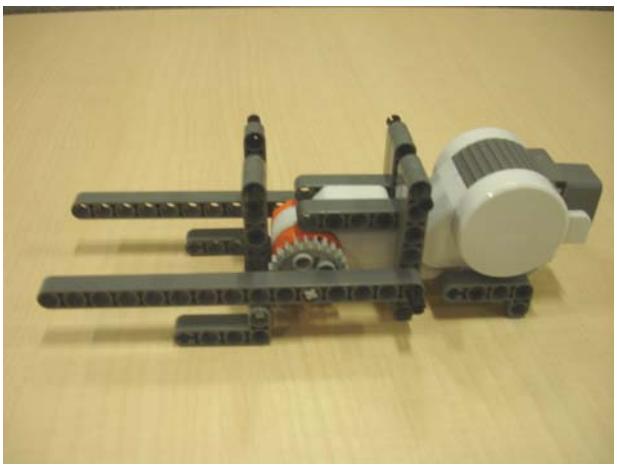
3 Building Procedure

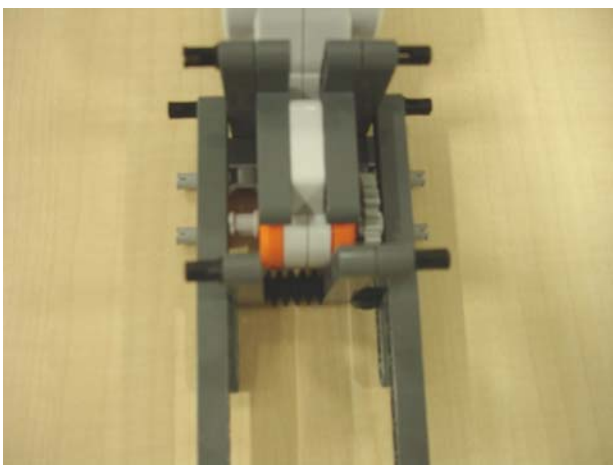
This chapter describes the building procedure of NXT SCARA.

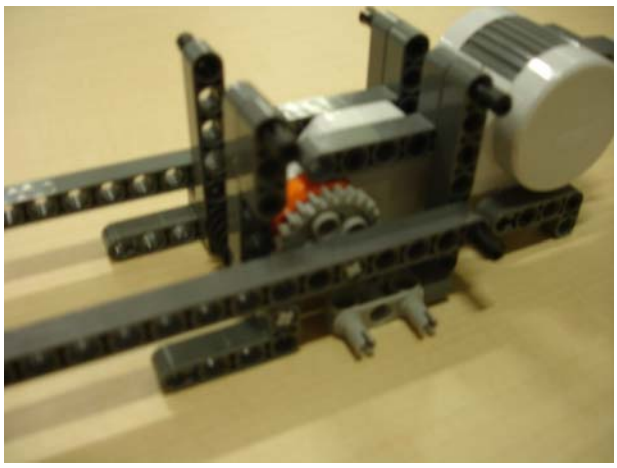
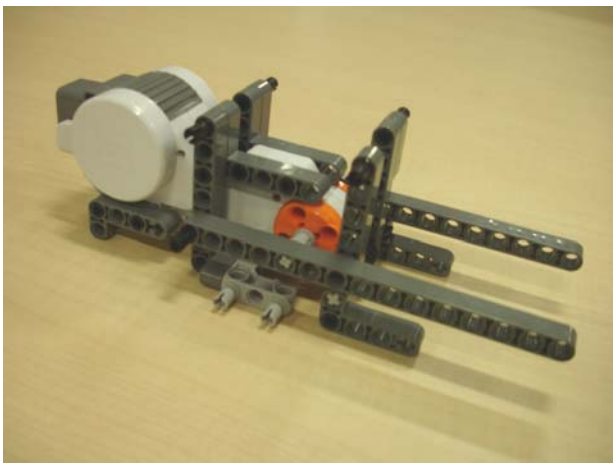
Step.1 Make a base assembly.

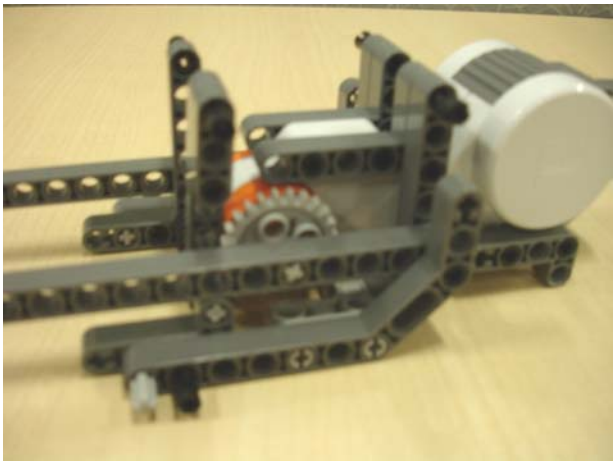
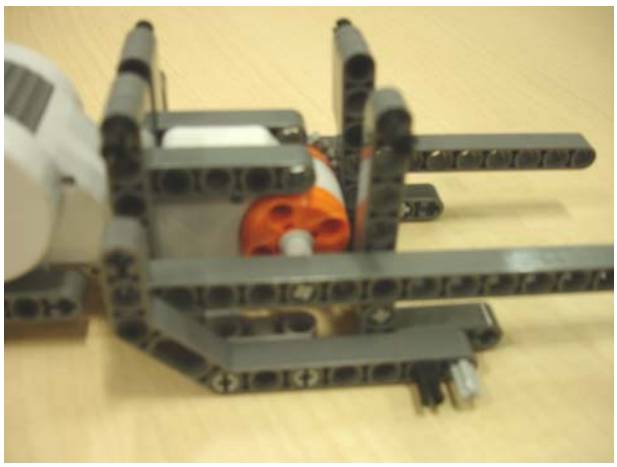
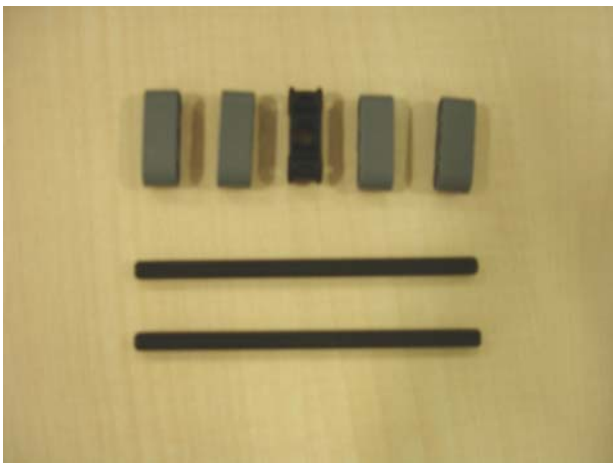


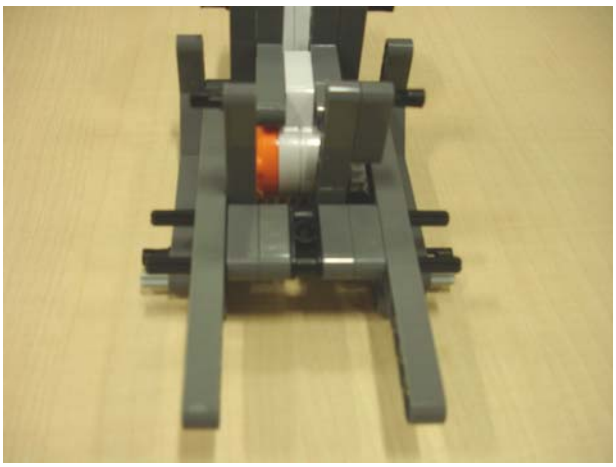
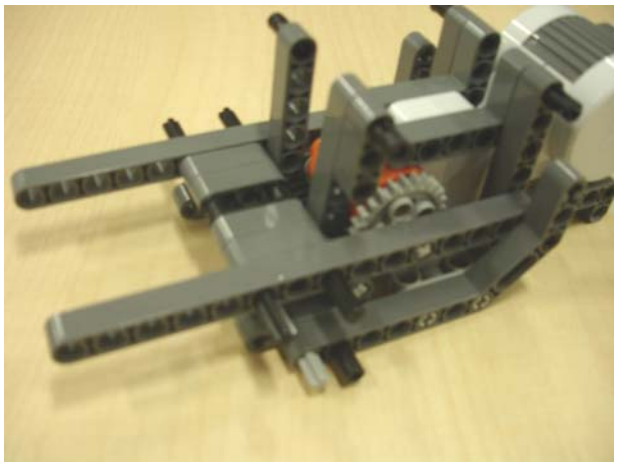



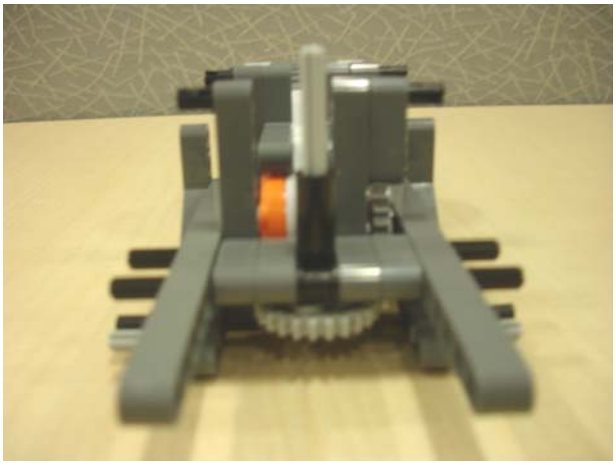
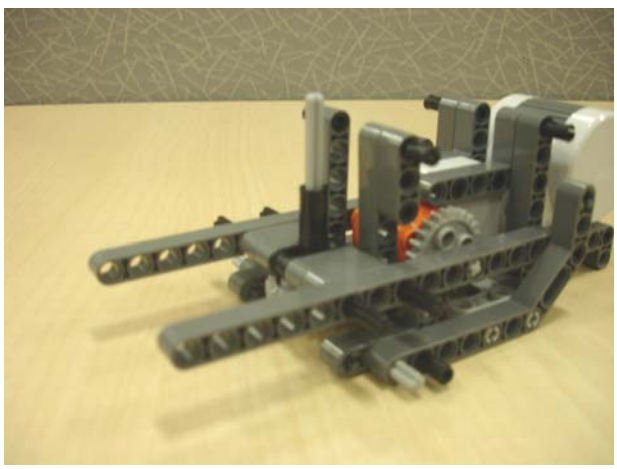
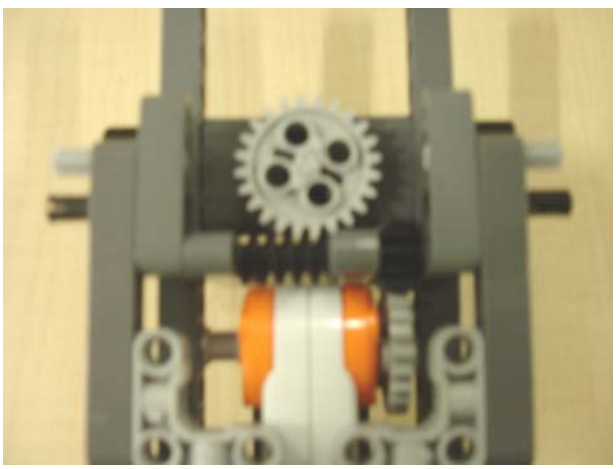


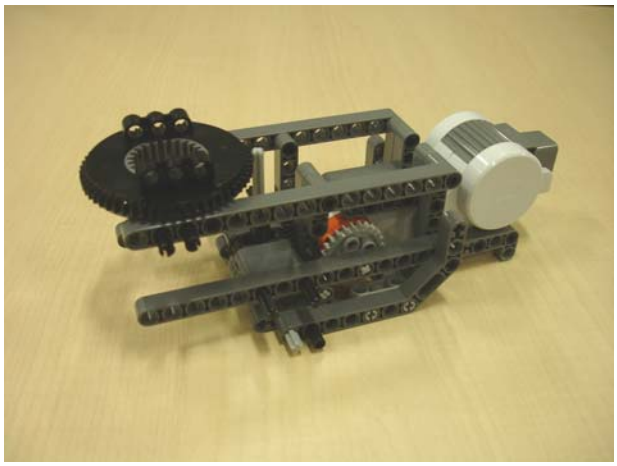
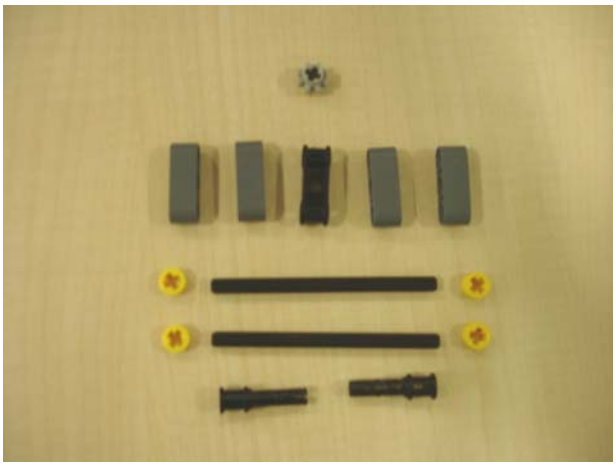


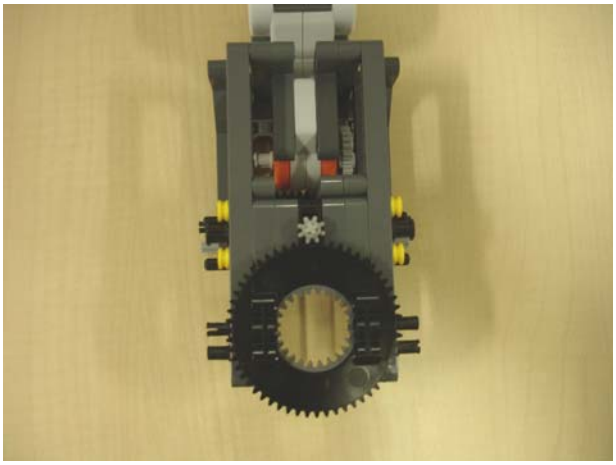
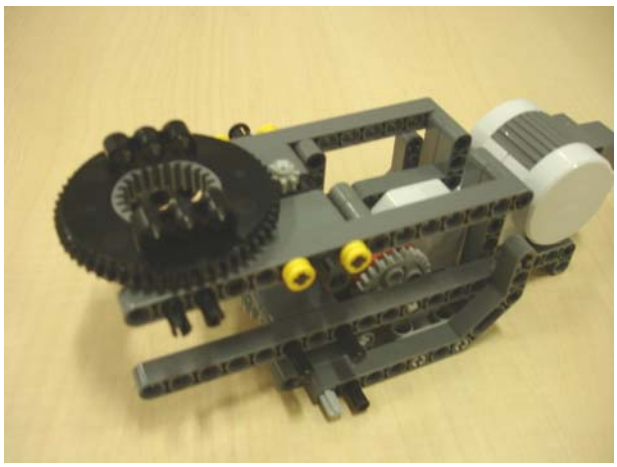
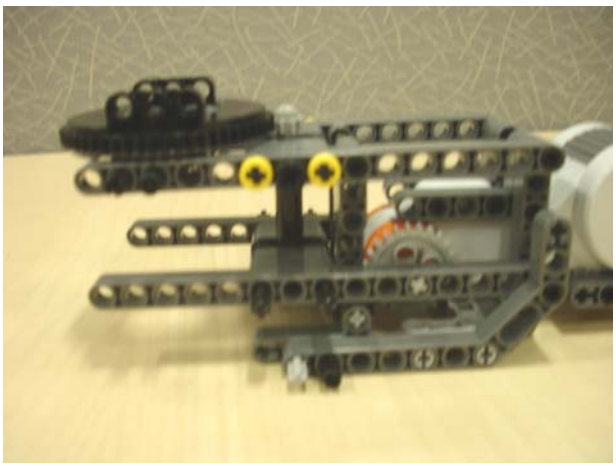



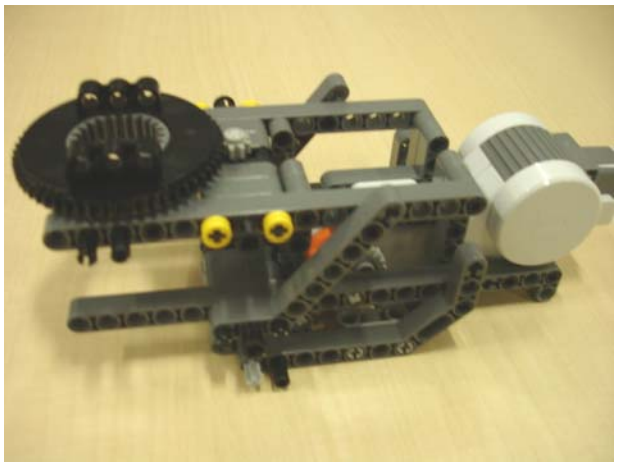
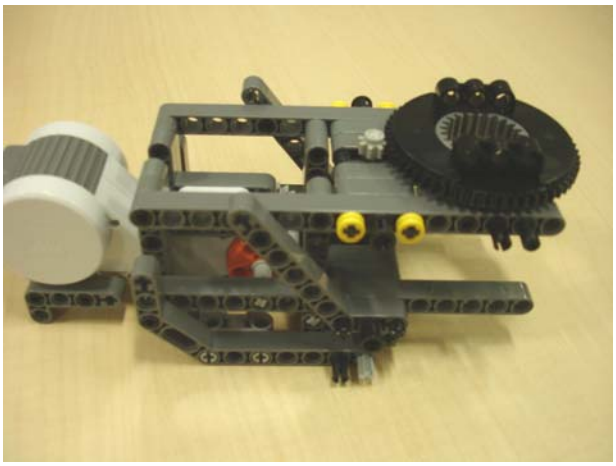




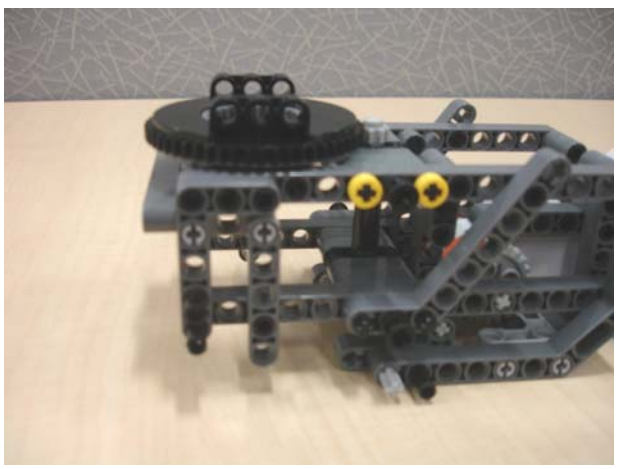
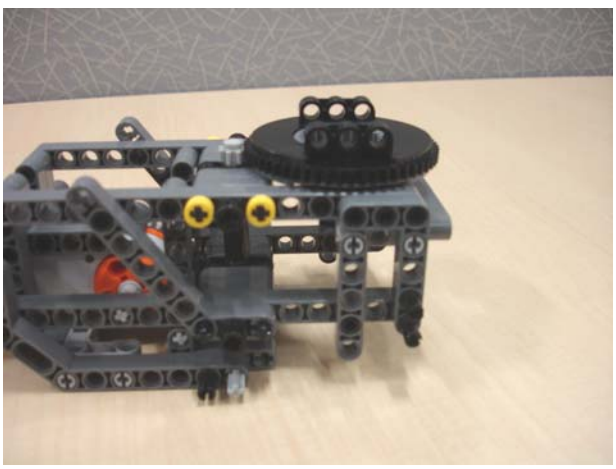



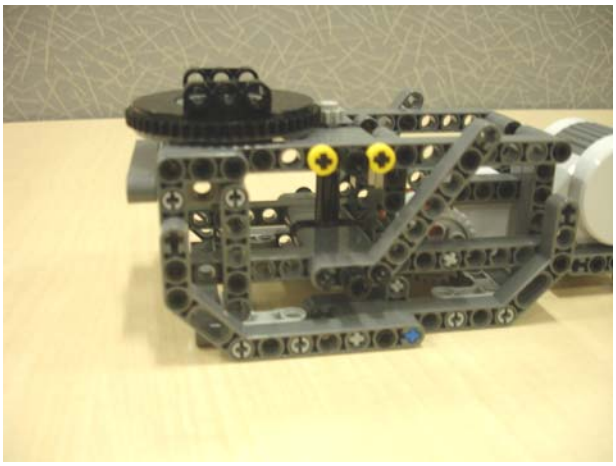
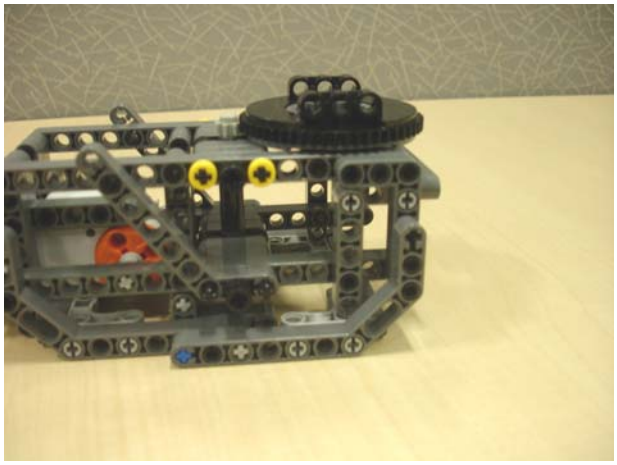
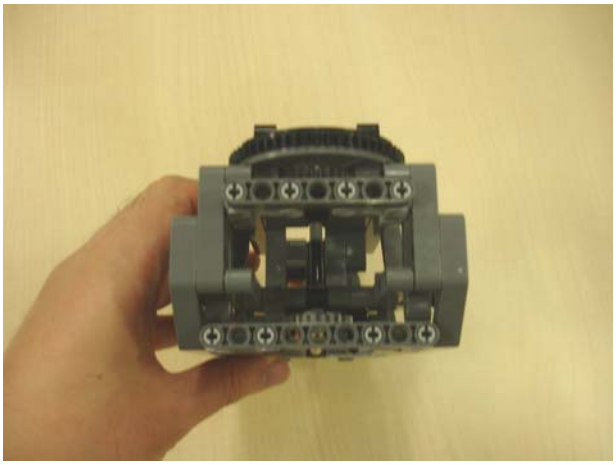
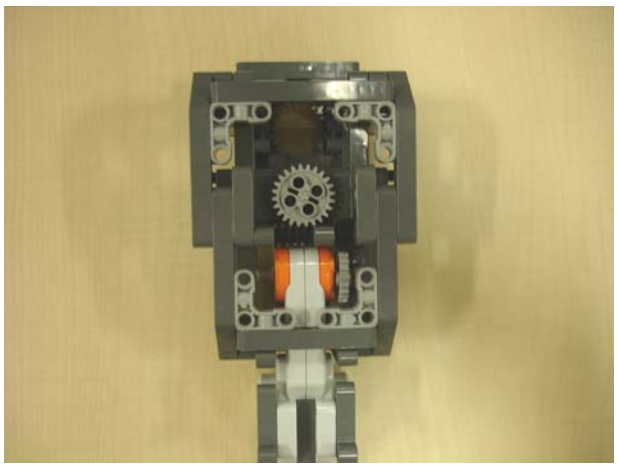
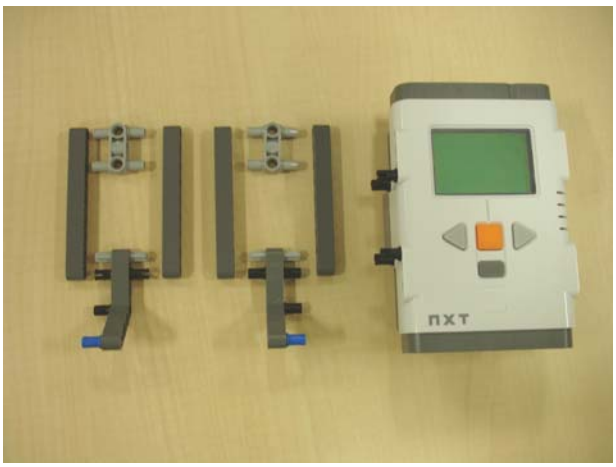


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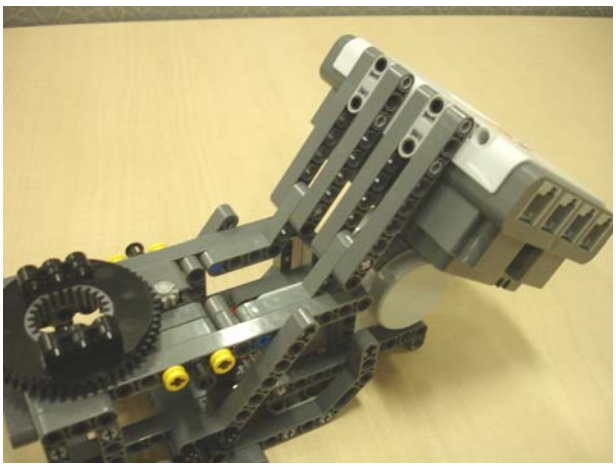
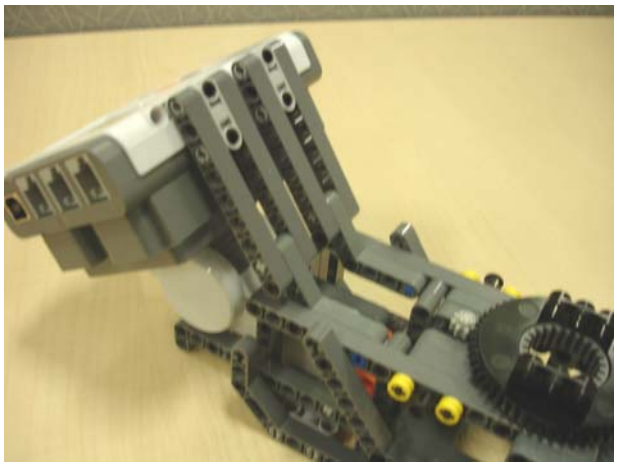

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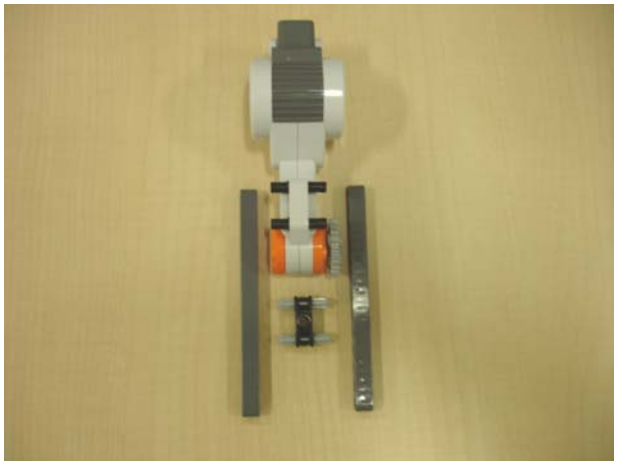
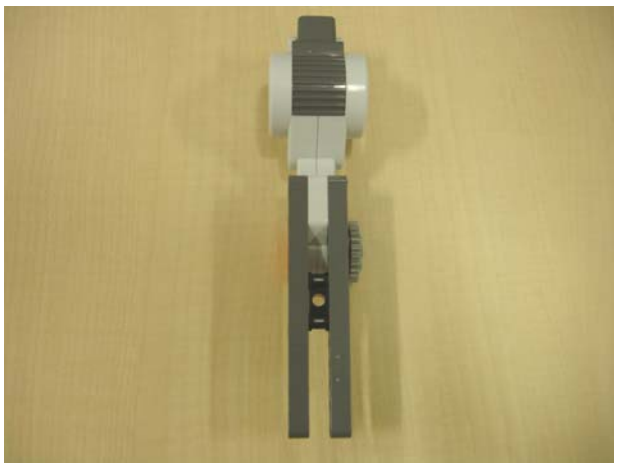
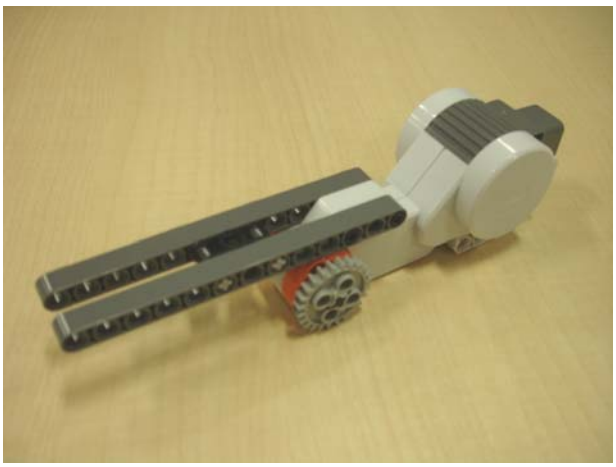
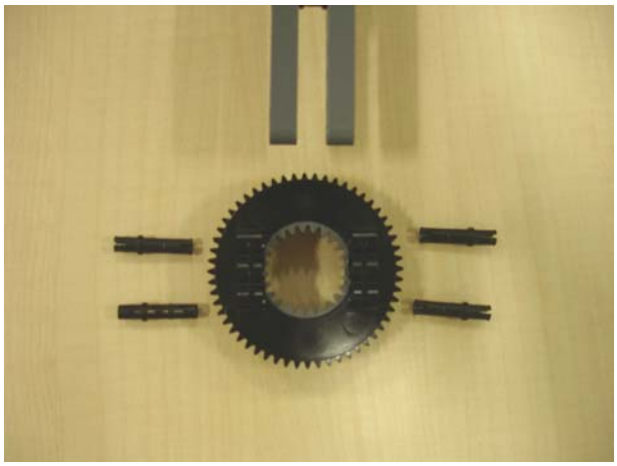
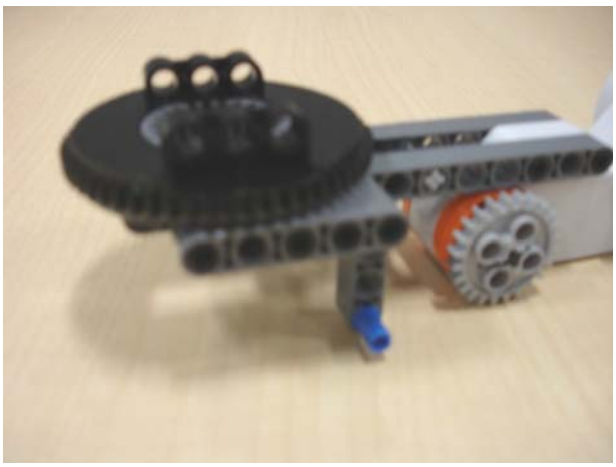
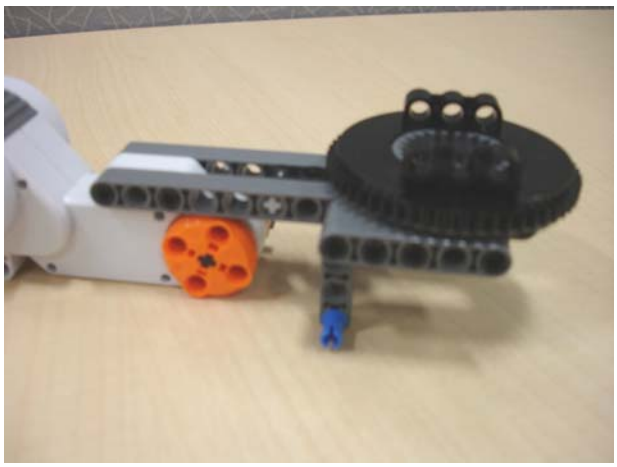
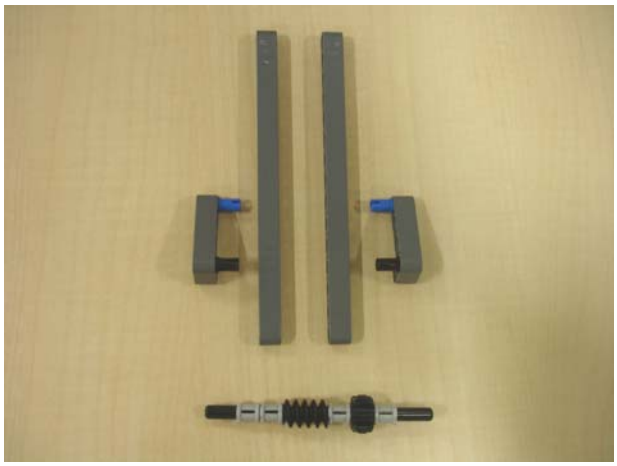
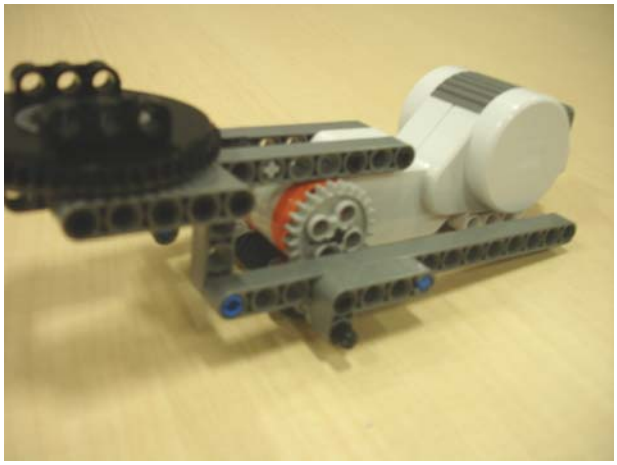
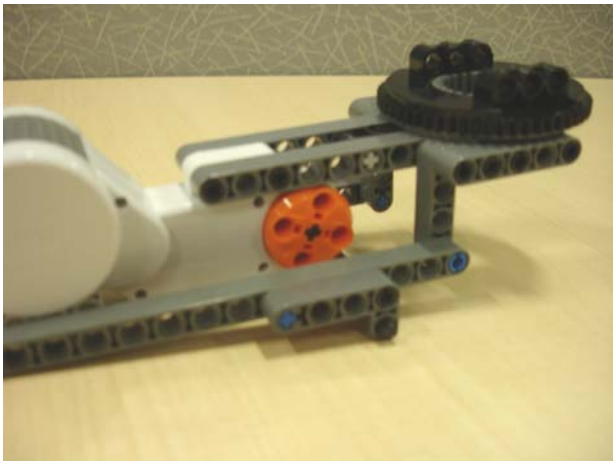
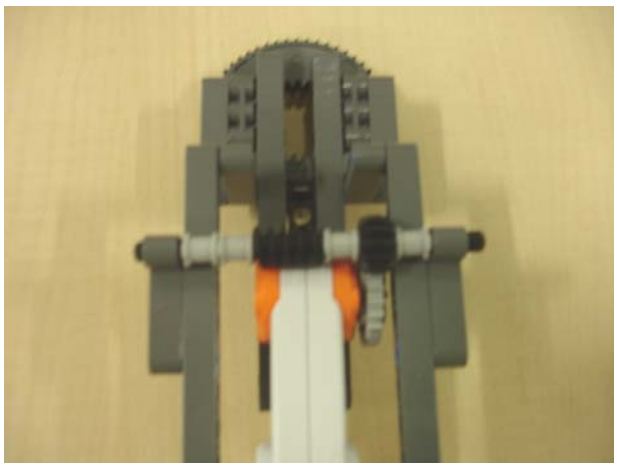
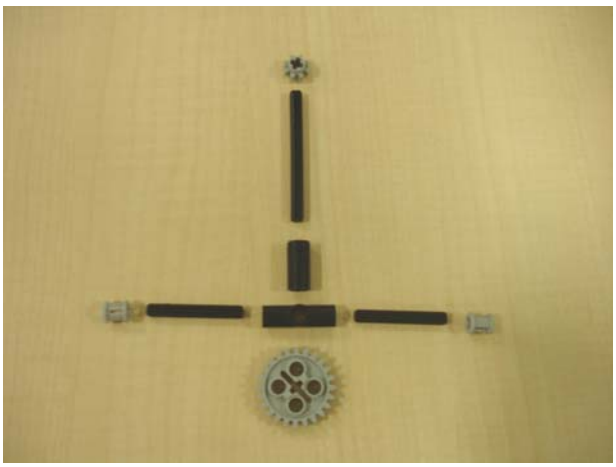


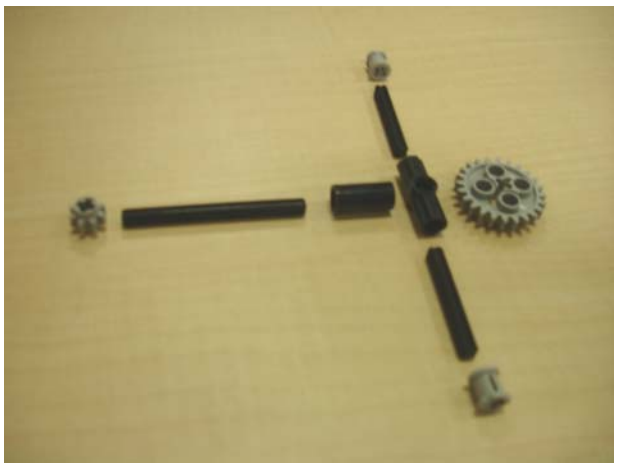
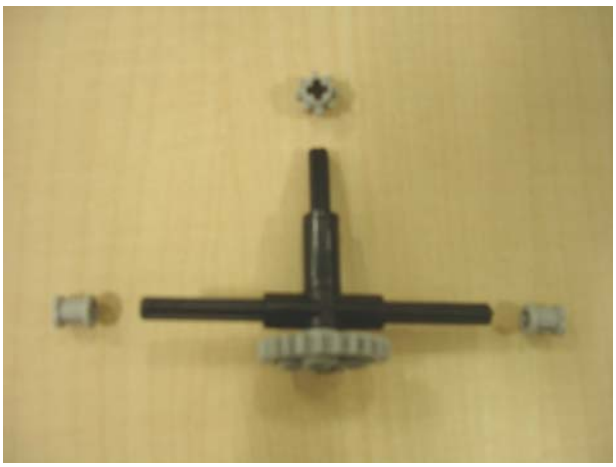
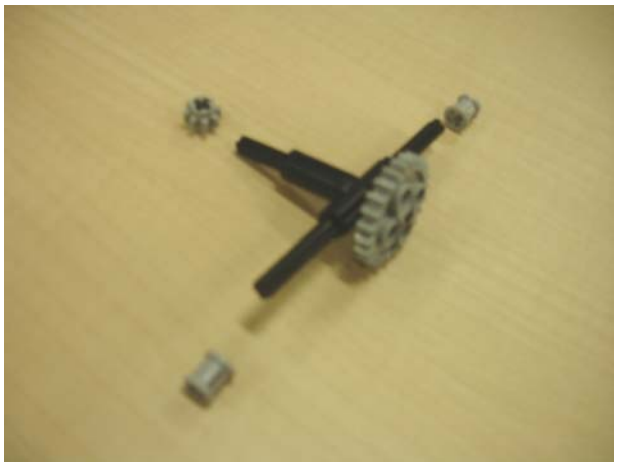
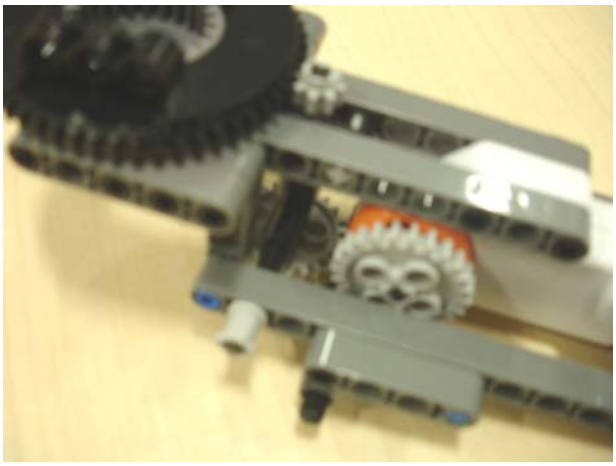




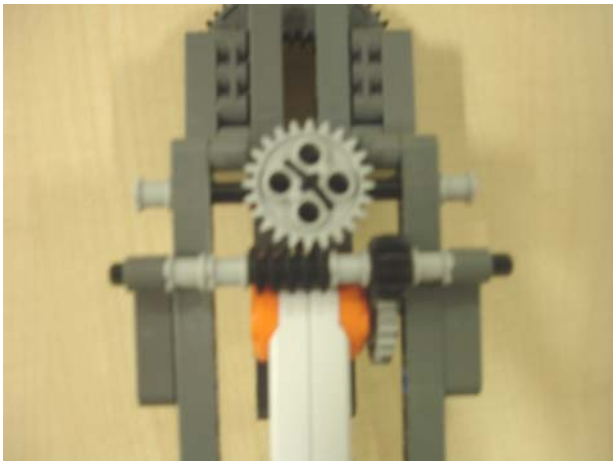
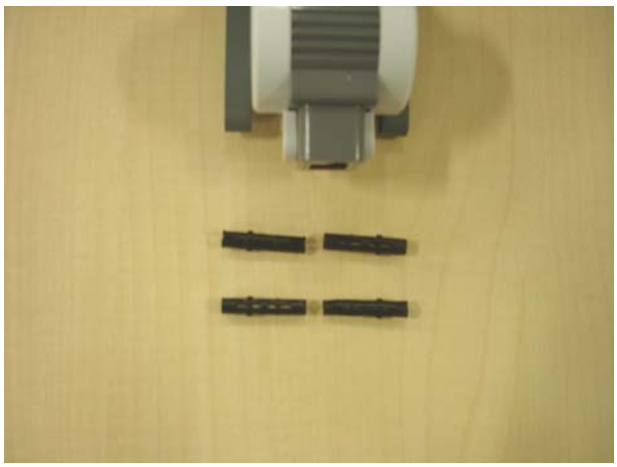
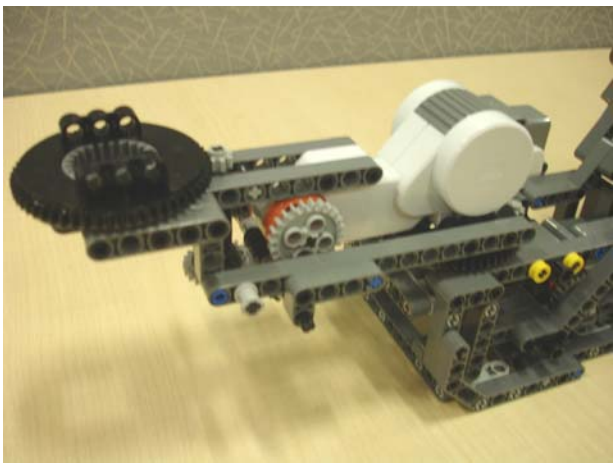


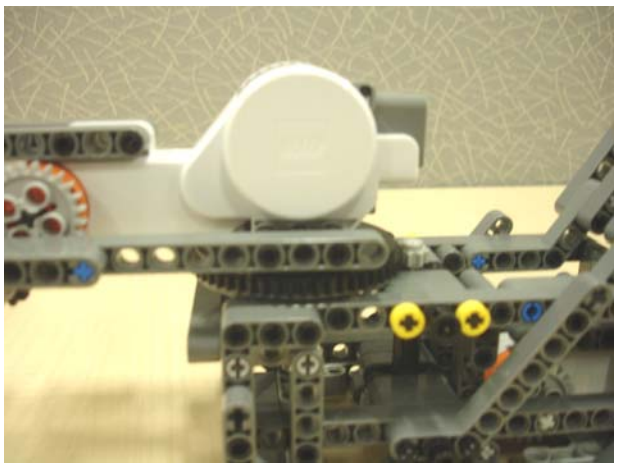
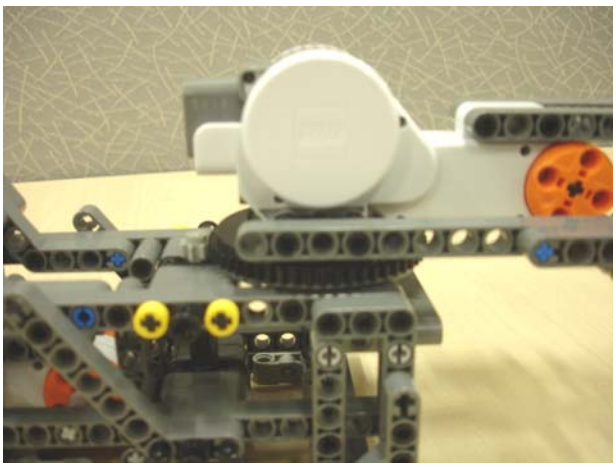




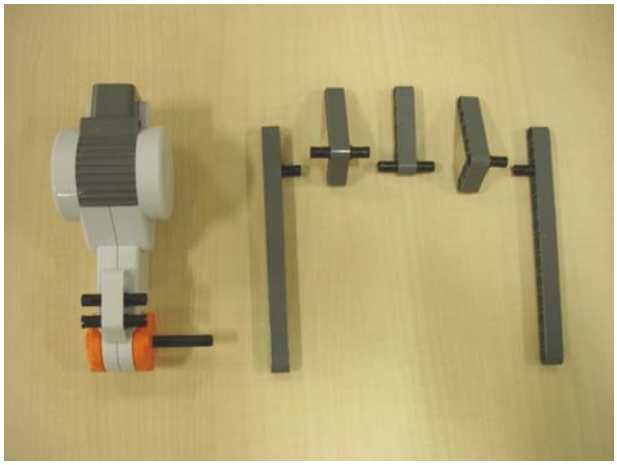





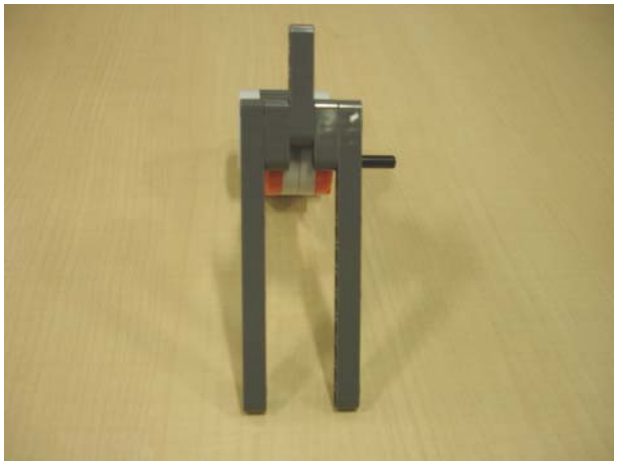





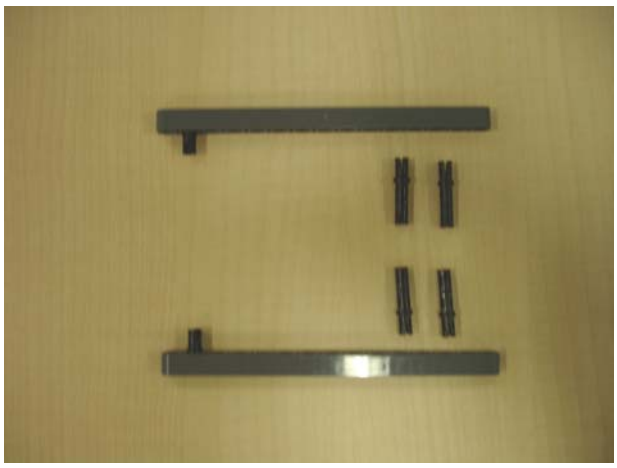




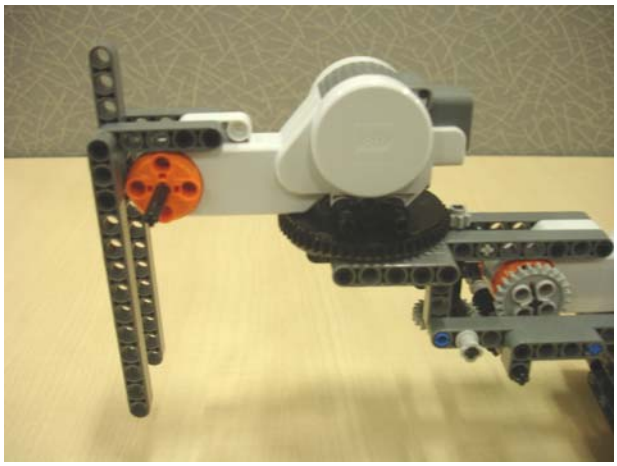
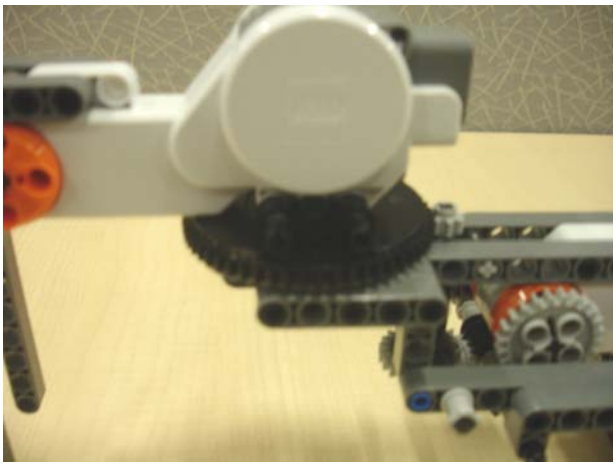
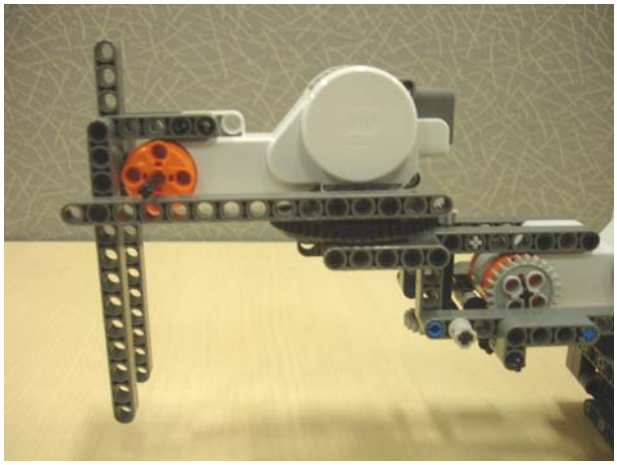
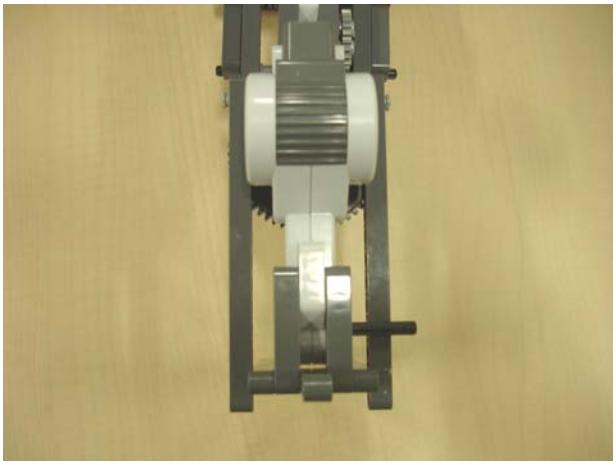
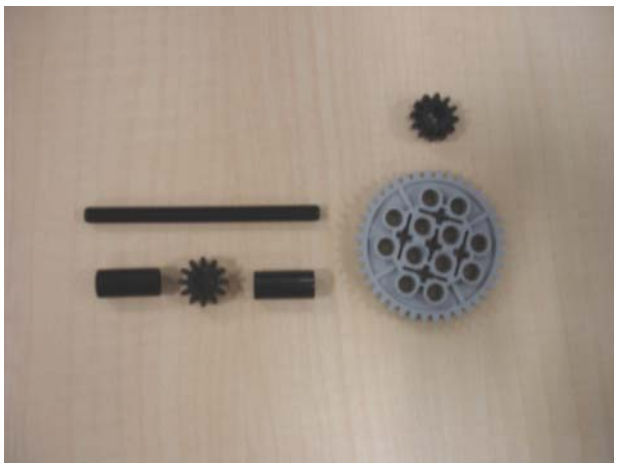
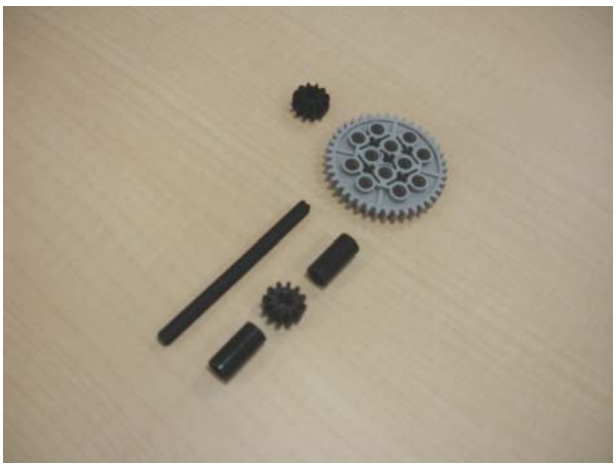



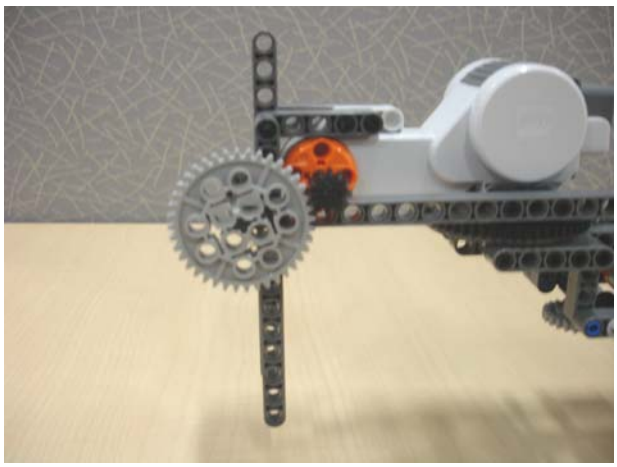
Step.3 Make link 2 assembly.

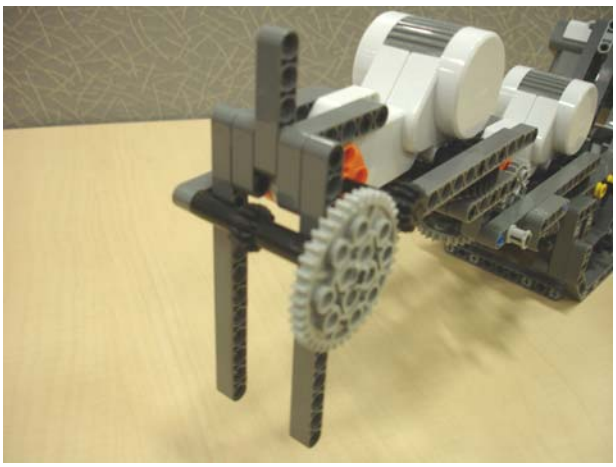


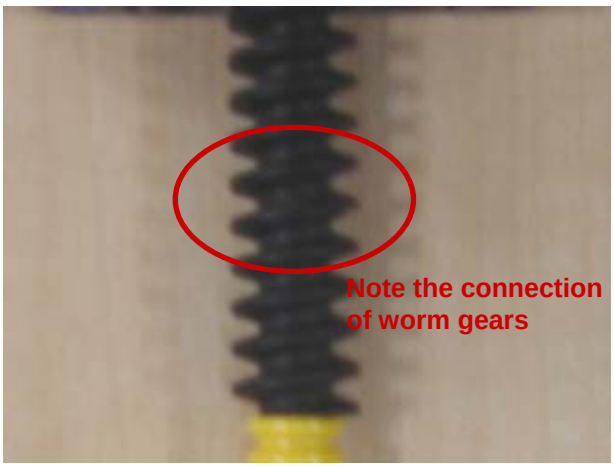


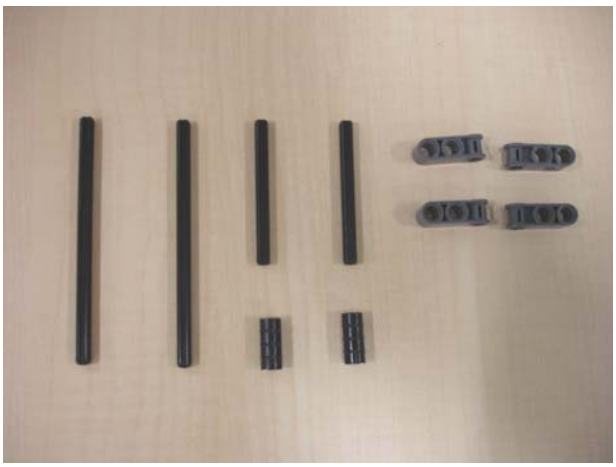


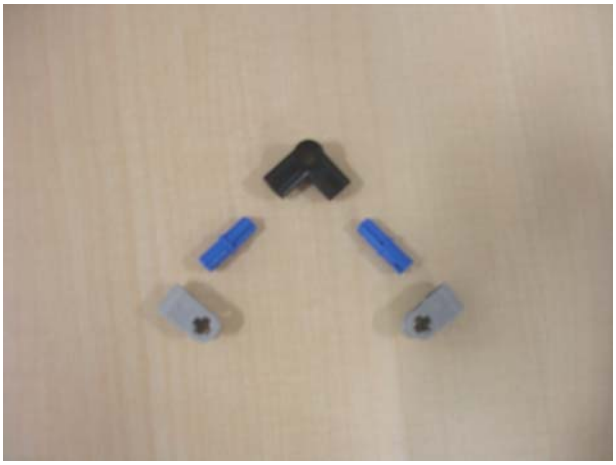







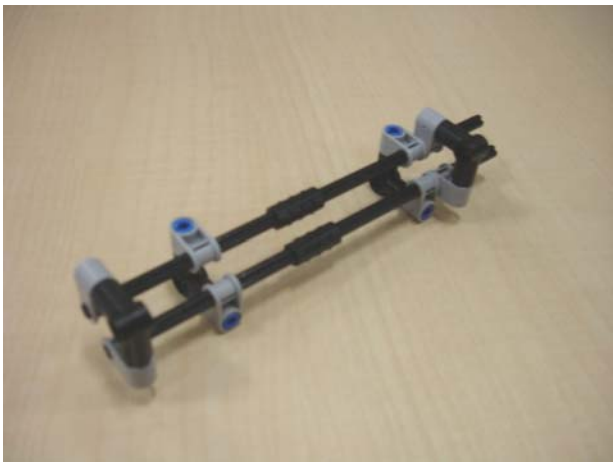


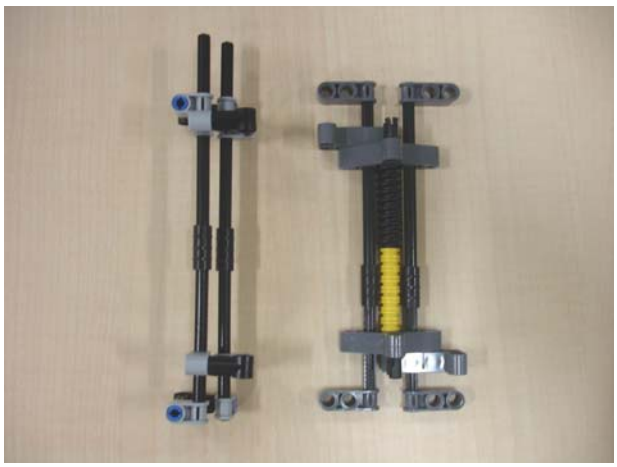


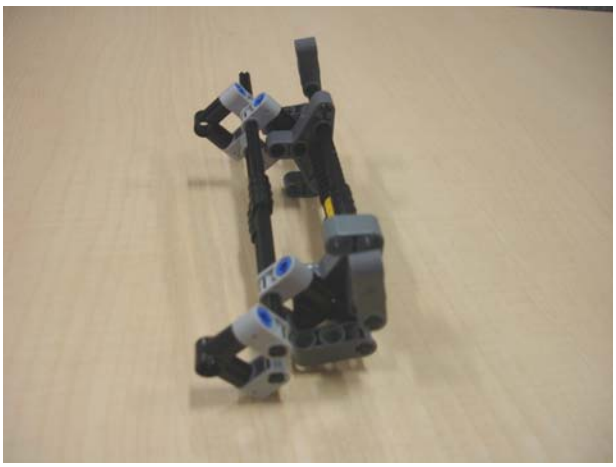

Note the connection
of worm gears

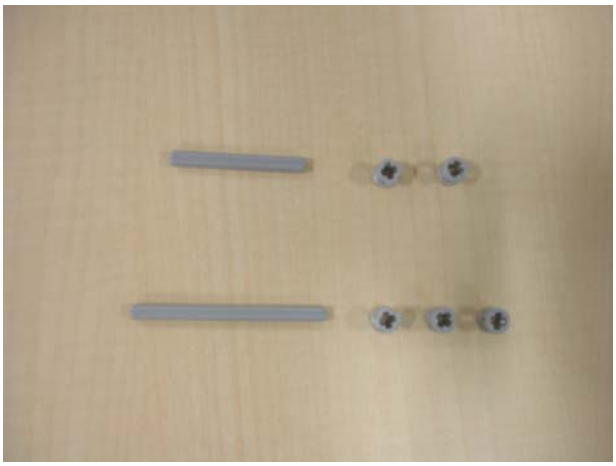


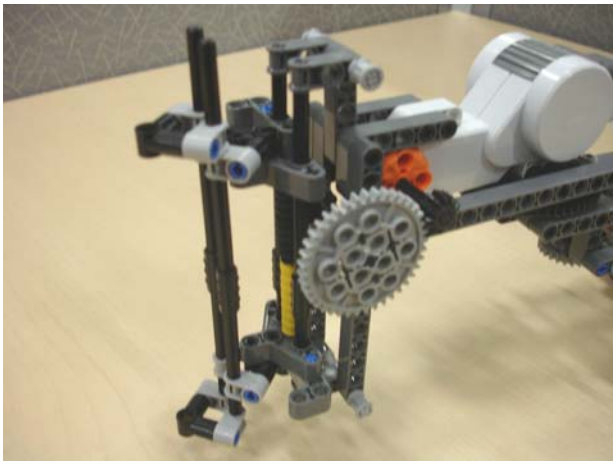
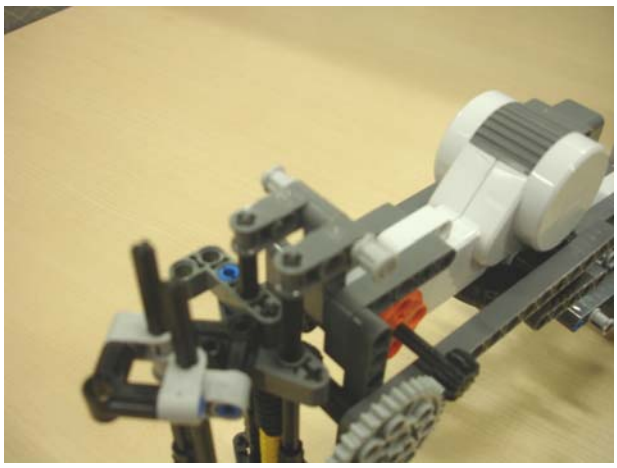
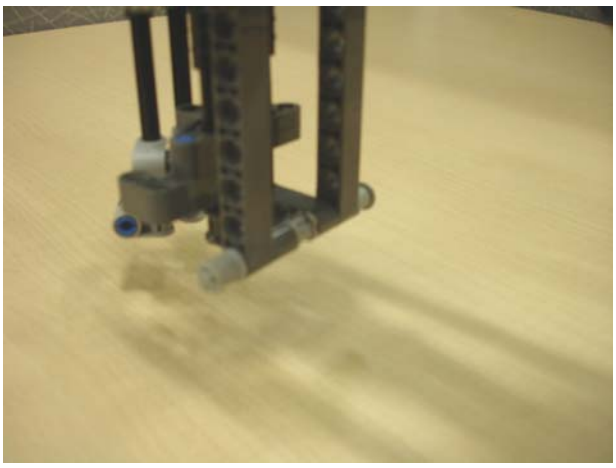




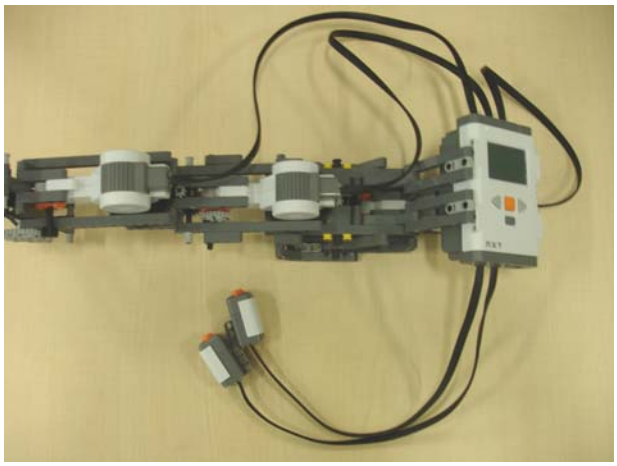


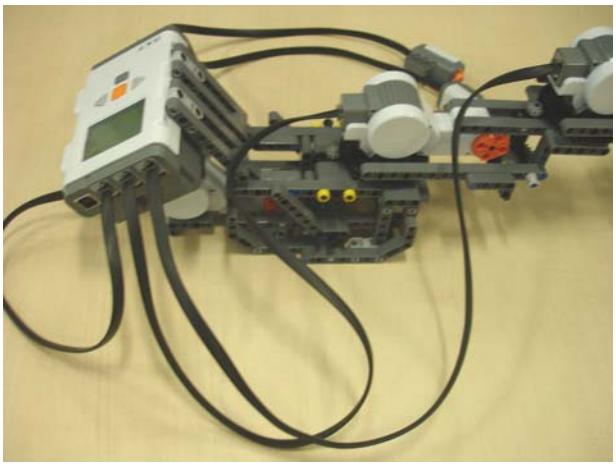


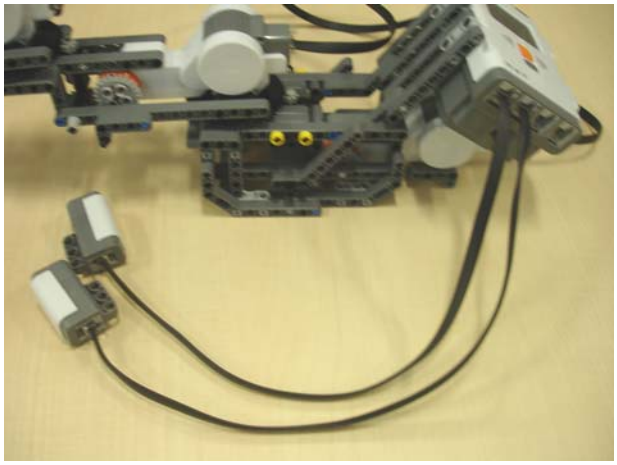


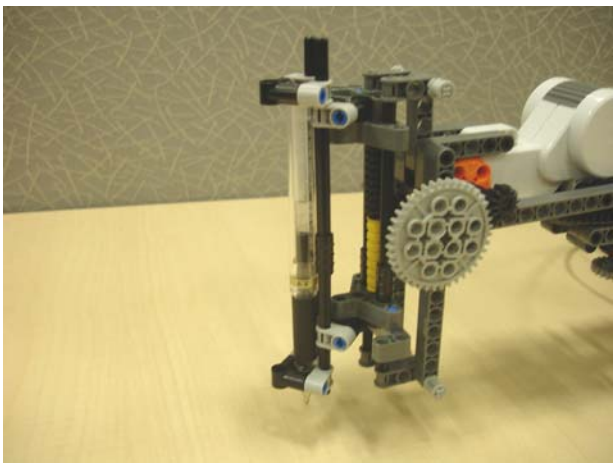
Step.4 Connect the base motor to port C, link 1 motor to port B, and link 2 motor to port A.
Connect the touch sensors to port 1 and port 2.

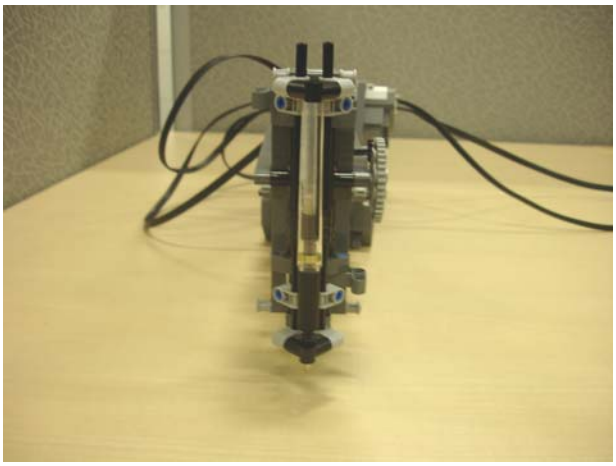






Step.5 Attach a pen on the edge of the link 2. You have to adjust the pen height to draw a desired result.





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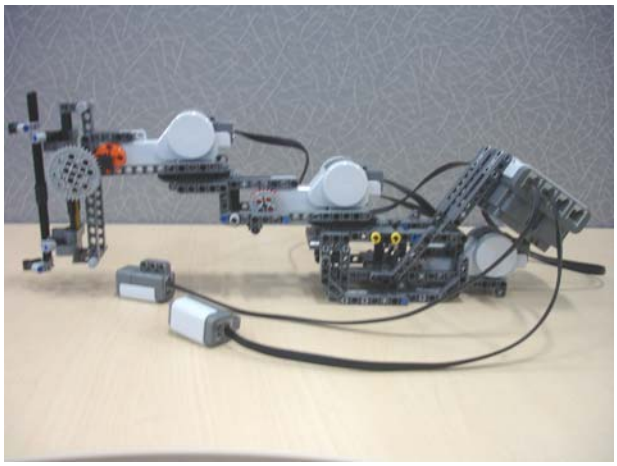
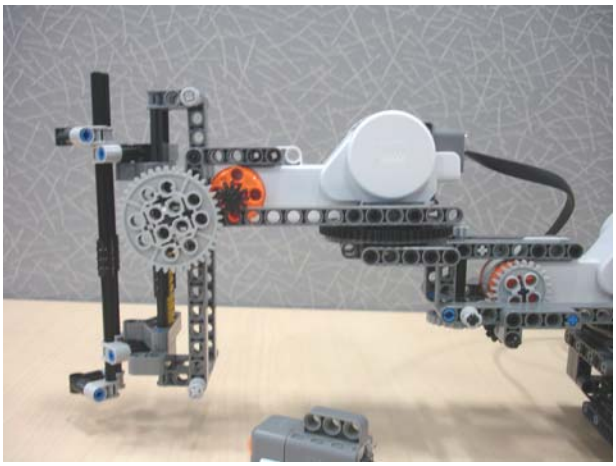
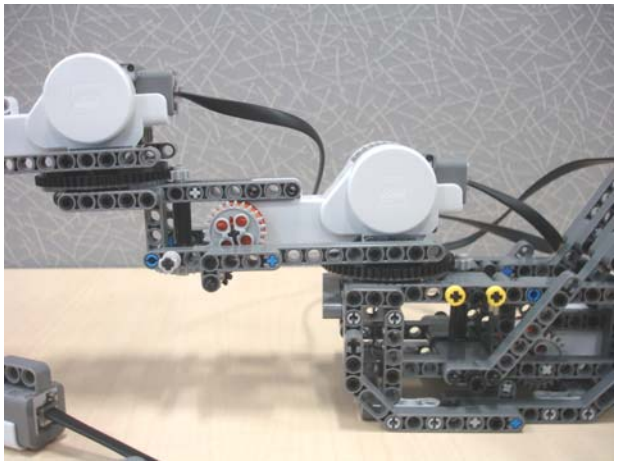
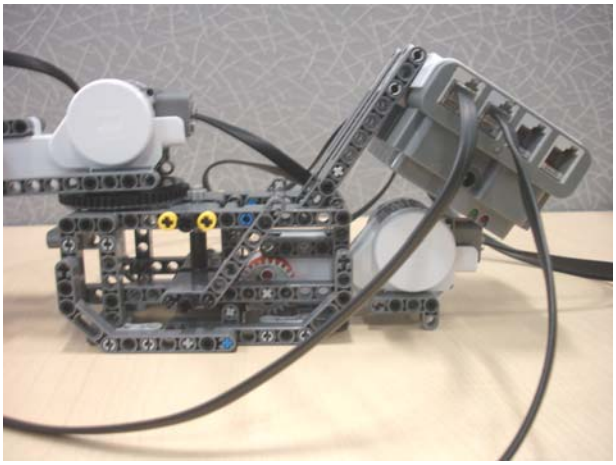
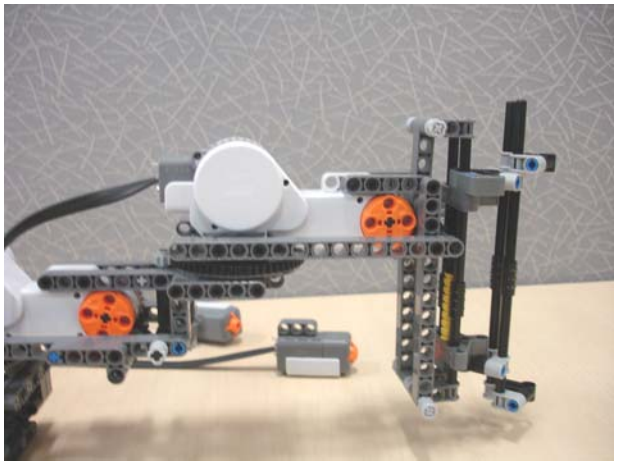
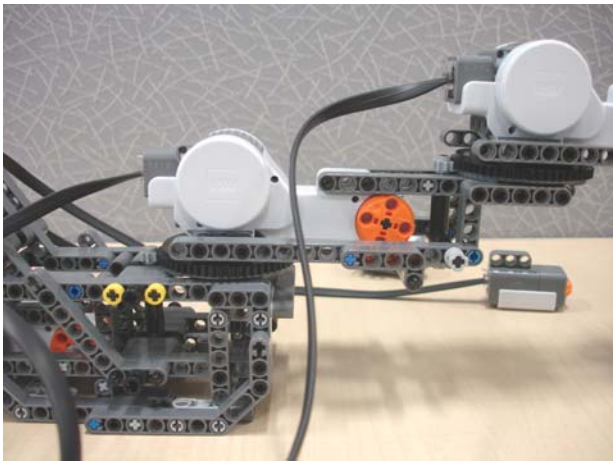

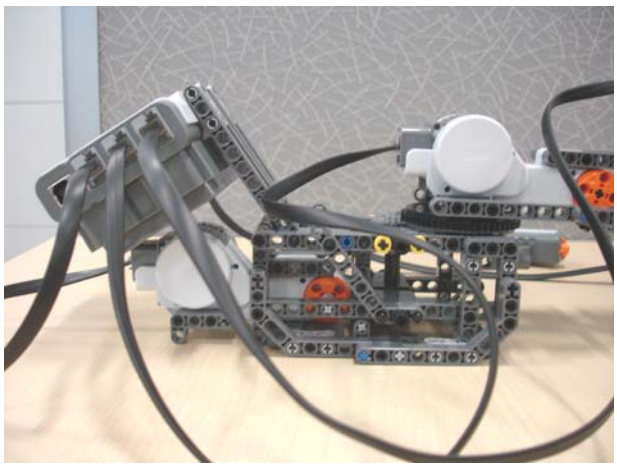
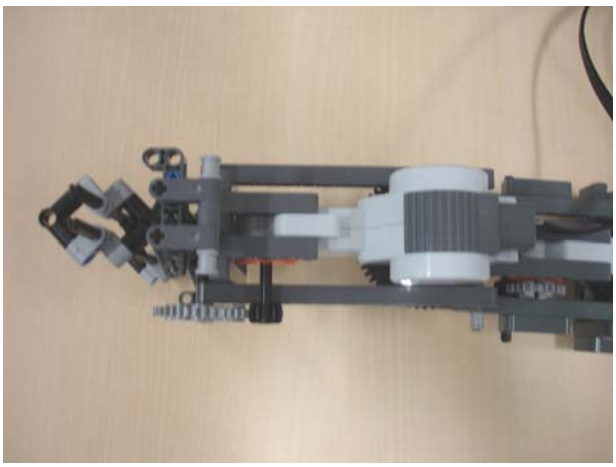
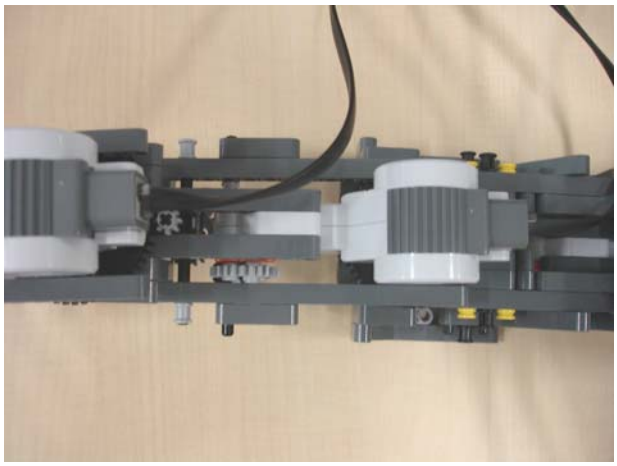
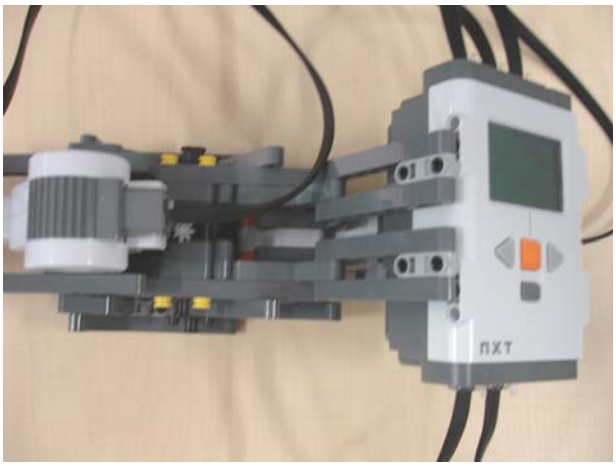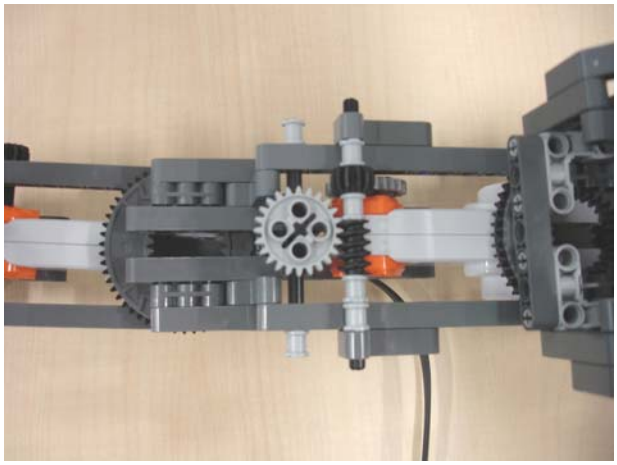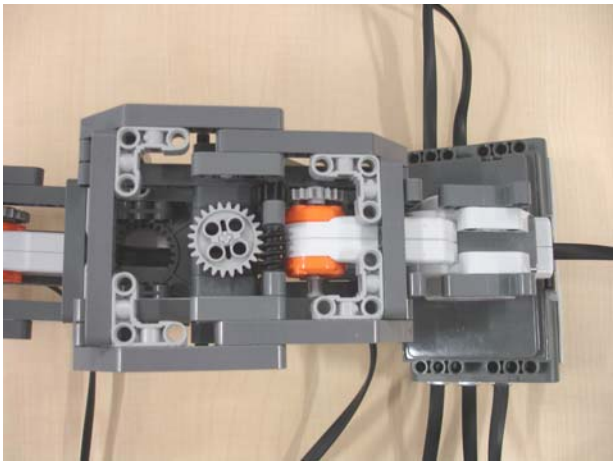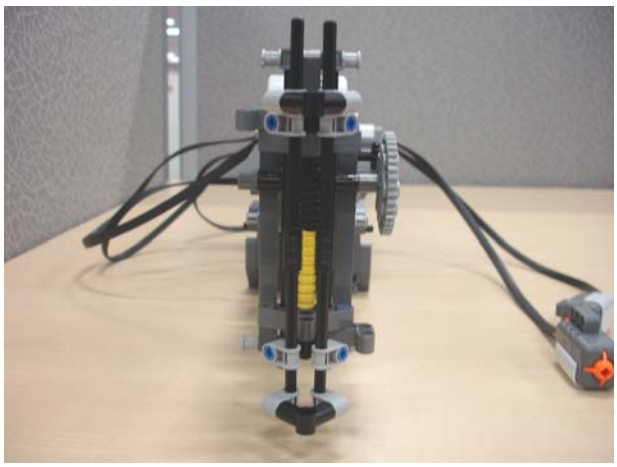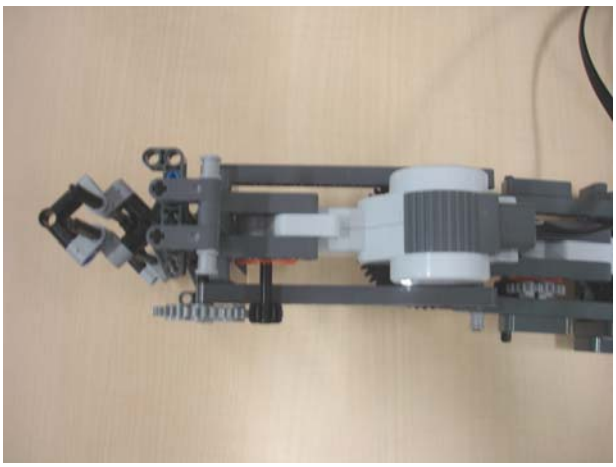
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