21.Chimpanzees

1.Introduction

The Origin of Species was written by British biologist Charles Darwin.

The origin of species says that humans evolved slowly from apes.

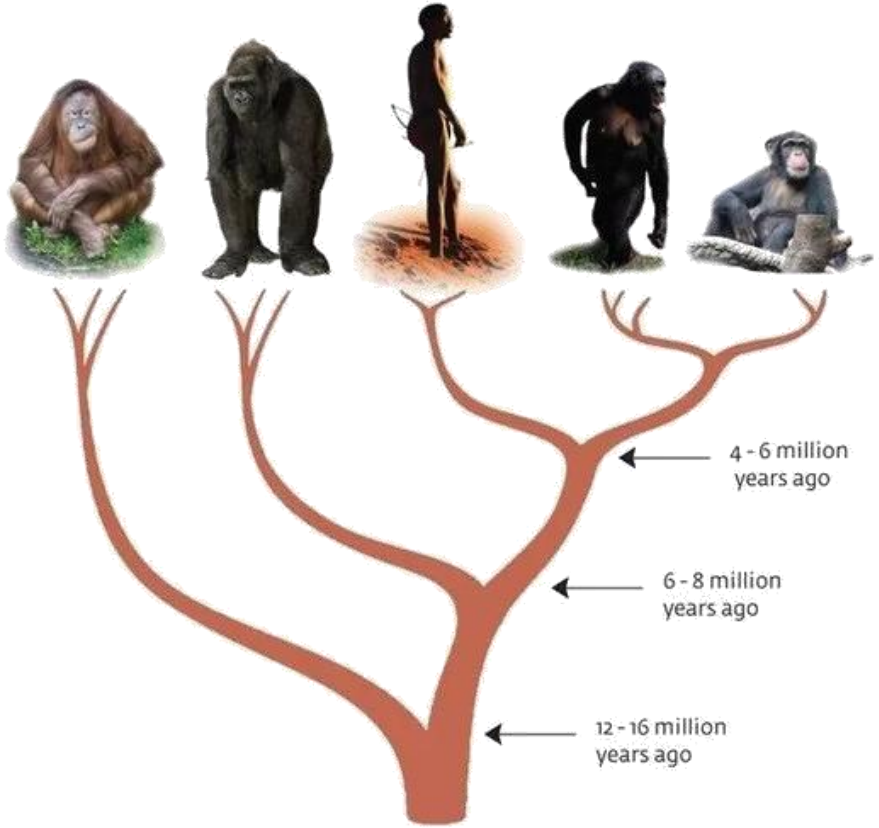
It overthrew the hypothesis that God created creatures and has important implications for biological research.



1.Introduction

Many biologists believe that humans and chimpanzees both evolved from the same ancestor.

About 6 million years ago, human ancestors began to branch out, one branch evolved in the direction of apes, and the other branch evolved in the direction of chimpanzees.



2.Exploration



Today, we're all going to be biologists.

Let's study chimpanzees together.

Unlike humans, chimpanzees walk on all fours.

2.Exploration



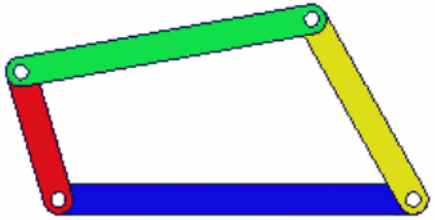
We all know that to make a structure move, a motor is necessary.

The motor moves in a rotational motion.

How to achieve the appearance of a chimpanzee walking on all fours?

3.Construction

The crank-rocker mechanism can convert circular motion into up and down or side-to-side motion, simulating the limbs of a chimpanzee.





Of course, today it is also necessary to review the transmission structure of the bevel gears which we learned before.

3.Construction



3.Construction



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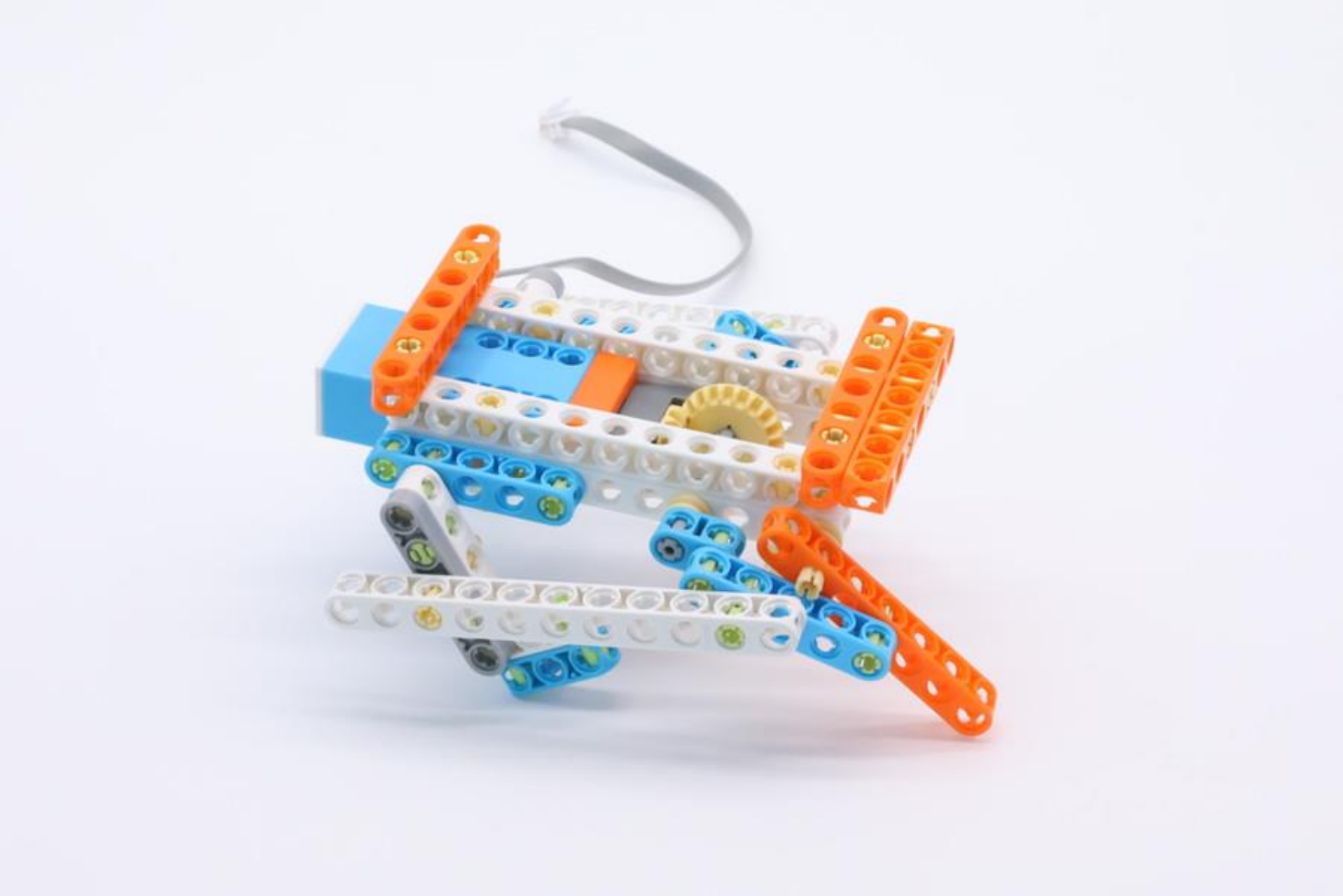
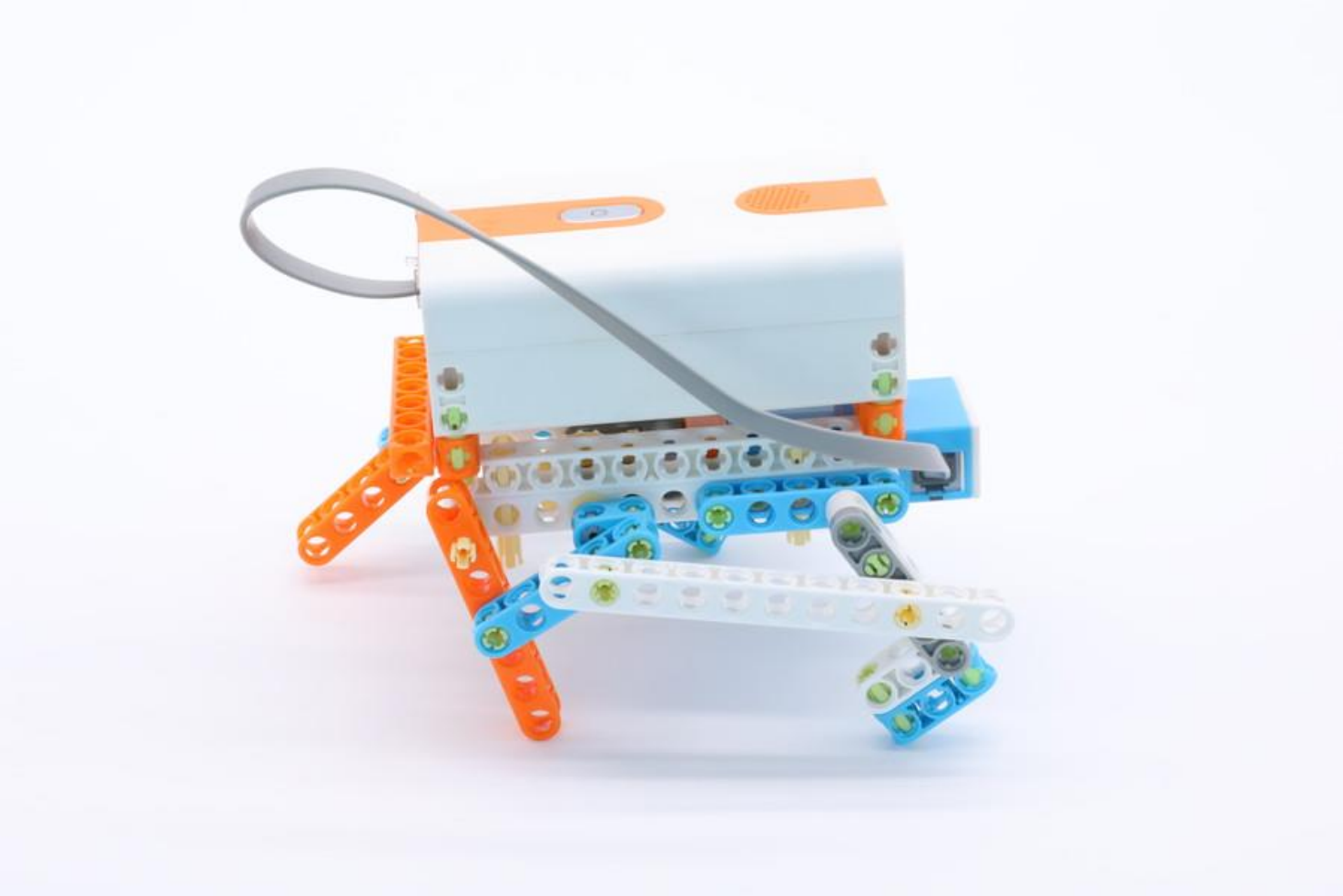
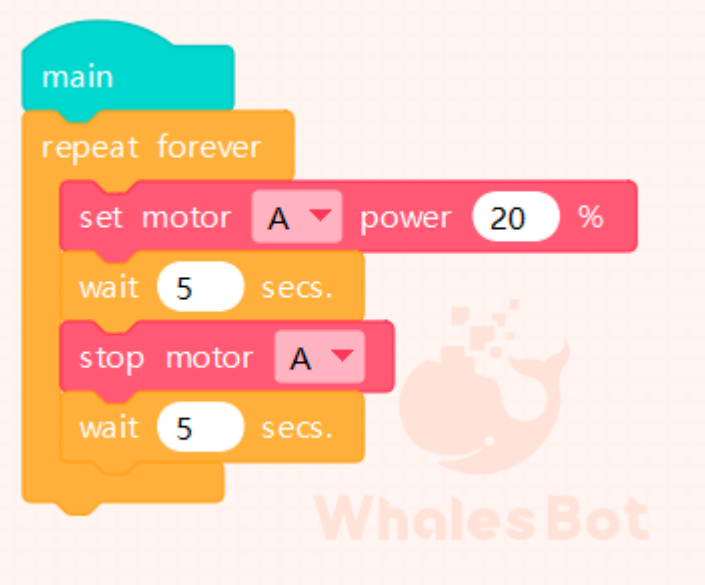


3.Construction



4.Coding

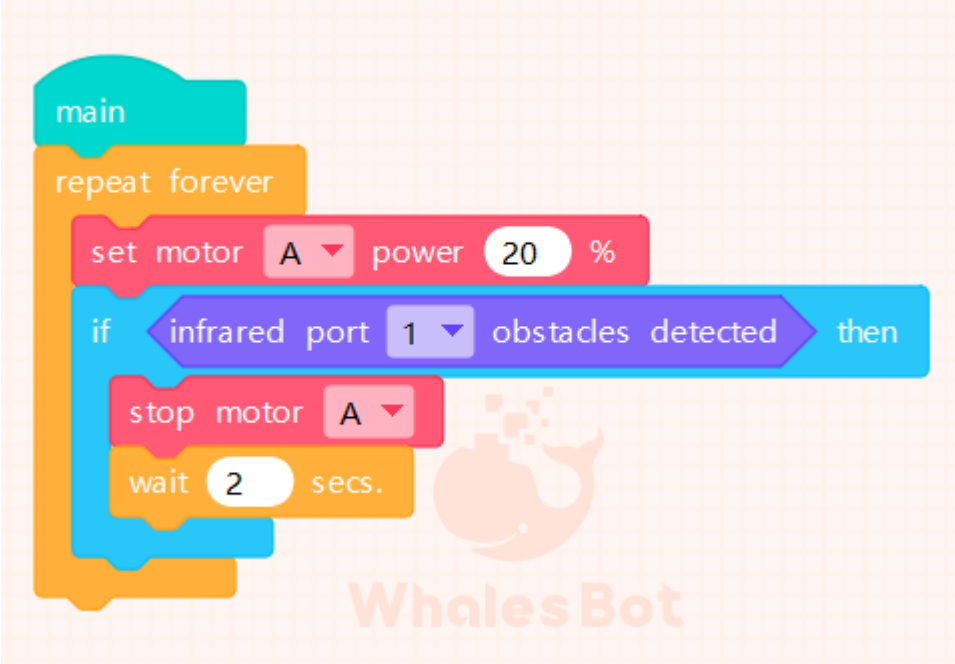


Task 1:

Let's edit a program that lets the chimp go for a few seconds, rest for a few seconds, and repeat the action.



4.Coding



Task 2:

Install an Infrared Sensor on the chimpanzee and program the chimpanzee to keep moving.

If chimpanzee see an obstacle ahead while moving forward, stop walking.



5.Evaluation

(Multiple choice) What mechanical structure is used in the chimpanzee model?

A. bevel gear transmission

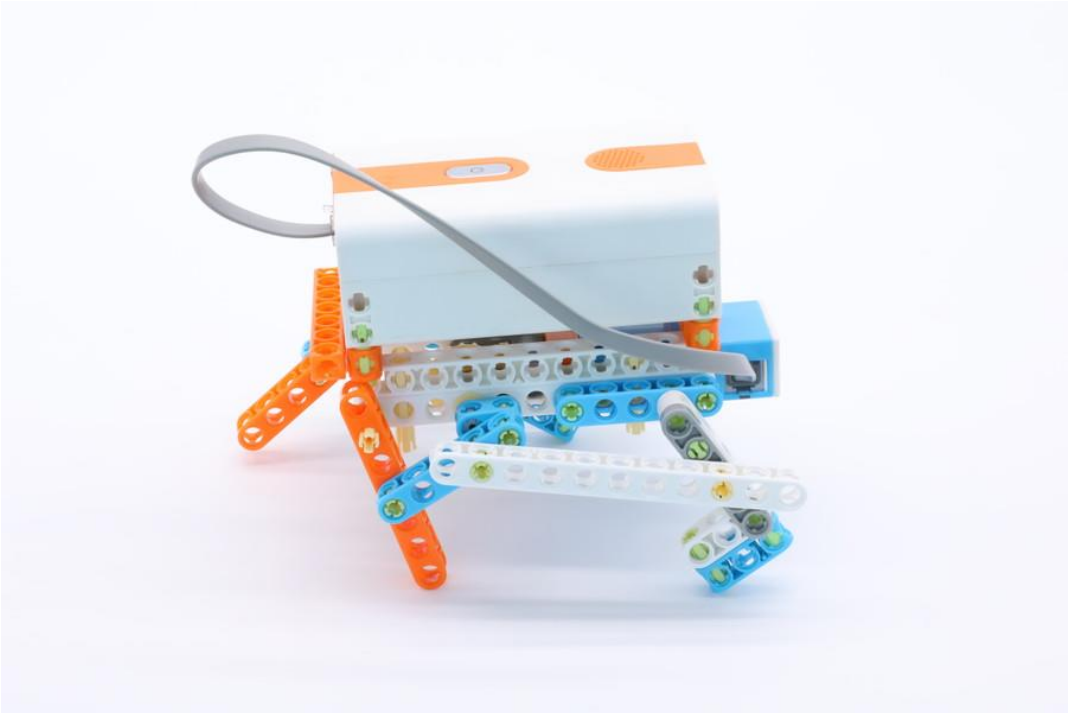
B. crank rocker

C. crank slider

D. parallelogram



6.Challenge



Do you notice the motor might be jammed after a short while?
Are you able to find out the root cause and make it walk much more smoothly?

You can also program the chimpanzees to move forward and backward.