



ARTIFICIAL INTELLIGENCE AND PROGRAMMING ROBOT

PRACTICAL NO 1

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Practical No. 1.A

Aim:

Write a program to create a robot to move, forward, turn left and right without gears.

Theory:

Turtles are a class of educational robots designed originally in the late 1940s (largely under the auspices of researcher William Grey Walter)[citation needed] and used in computer science and mechanical engineering training. These devices are traditionally built low to the ground with a roughly hemispheric (sometimes transparent) shell and a power train capable of a very small turning radius. The robots are often equipped with sensor devices which aid in avoiding obstacles and, if the robot is sufficiently sophisticated, allow it some perception of its environment. Turtle robots are commercially available and are common projects for robotics hobbyists.

Code:

```
package robotwithoutgear;

import ch.aplu.robotsim.*;

public class RobotWithoutGear {

    public RobotWithoutGear(){

        TurtleRobot robot=new TurtleRobot();
        robot.forward(100);
        robot.left(45);
        robot.forward(100);
        robot.right(90);
        robot.backward(100);
        robot.exit();
    }

    public static void main(String[] args) {
        // TODO code application logic here
        new RobotWithoutGear();
    }
}
```

Output:

**Conclusion:**

We successfully used the turtle robot to move the robot without the use of a gear.

Practical No. 1.B

Aim:

Write a program to create a robot to move, forward, turn left and right with gears.

Theory:

A gear is a wheel with evenly sized and spaced teeth machined or formed around its perimeter. Gears are used in rotating machinery not only to transmit motion from one point to another, but also for the mechanical advantage they offer. Two or more gears transmitting motion from one shaft to another is called a gear train, and gearing is a system of wheels or cylinders with meshing teeth. Gearing is chiefly used to transmit rotating motion but can also be adapted to translate reciprocating motion into rotating motion and vice versa.

Gears are versatile mechanical components capable of performing many different kinds of power transmission or motion control.

Examples of these are:

- Changing Rotational Speed
- Changing Rotational Direction
- Changing the angular orientation of rotational motion
- Multiplication or division of torque or magnitude of rotation
- Converting rotational to linear motion, and its reverse
- Offsetting or changing the location of rotating motion

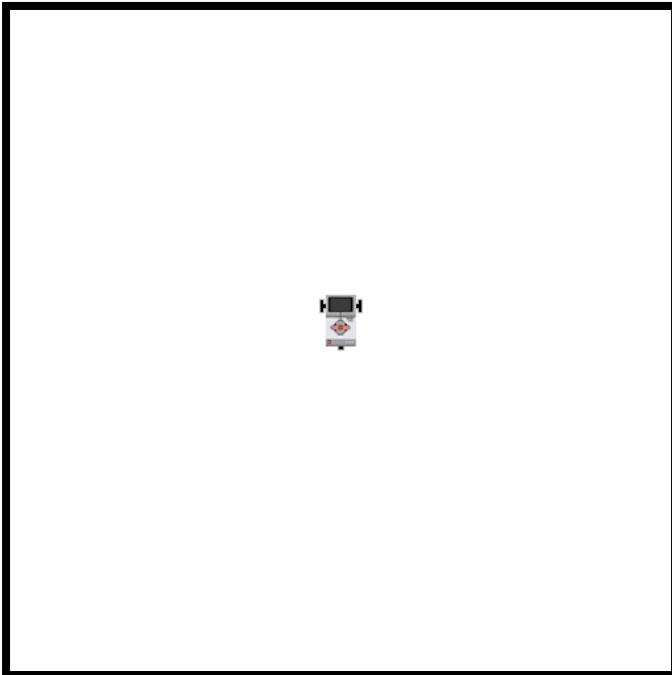


Code:

```

package robotwithgear;
import ch.aplu.robotsim.*;
public class RobotWithGear {
    public RobotWithGear(){
        LegoRobot robot = new LegoRobot();
        Gear gear = new Gear();
        robot.addPart(gear);
        gear.forward(2000);
        gear.setSpeed(30);
        gear.left(200);
        gear.forward(2000);
        gear.right(200);
        gear.forward();
        Tools.delay(20);
        robot.exit();
    }
    public static void main(String[] args) {
        // TODO code application logic here
        new RobotWithGear();
    }
}

```

Output:

Conclusion: We successfully used lego robot and gear to allow movement in our robot.