Arduino Single Stepper Motor

Context

The following Arduino tutorial code is an instructible to guide your way through setting a desired stepper motor rotation speed for a single motor. This will be useful during the timeline of our project since the single-stepper motor will be capable of actuating a gear for motion with one degree of freedom at its desired speed.

Hardware Required

- Arduino Uno microcontroller (x1)
- Stepper motor (x1)
- Stepper motor driver (x1)
- USB cable (x1)
- Wires (x6)

Set-up Instructions

1. Using the USB, plug the Arduino Uno microcontroller into a computer
2. Opening the Arduino coding software, insert the program explained below
3. Using two wires, connect the positive 5V terminal and ground terminal on the Arduino Uno to the stepper motor driver
4. Using 4 wires, insert those to the 1-4 inputs on the stepper motor driver and connect the other wire ends to pins 3-6 to the Arduino Uno microcontroller
5. Run the program on the Arduino coding software

Program Code

```
#include "AccelStepper.h"    //grabs from library

#define HALFSTEP 8          //defines halfstep for motor

#define motorPin1 3           // IN1   defines digital pins to driver pins

#define motorPin2 4           // IN2

#define motorPin3 5           // IN3

#define motorPin4 6           // IN4

AccelStepper stepper1(HALFSTEP, motorPin1,motorPin3, motorPin2, motorPin4);   //defines stepper motor pins, step type

long Rot1;                    //how many rotations from user

long Distance1;               //how many steps to take

int finish_check = 1;         //shit to get the loop to work

int Revolution_Steps = 4096;  //defines how many steps in a rotaion

void setup() {

Serial.begin(9600);                 // Start the Serial monitor with speed of 9600 Bauds

stepper1.setMaxSpeed(500.0);        //max speed variable for motor

stepper1.setAcceleration(500.0);    //acceleration variable for motor
```

```
Serial.println("Enter how many rotations you want the stepper motor to take?");    //initial question
}
void loop() {
 while (Serial.available()>0) {                    //when there is something written in serial...
finish_check=0;                                    //finish check to 0 for checks later
Rot1= Serial.parseInt();                           // sets Rot1 as serial input
Distance1 = Rot1 * Revolution_Steps;       //multiplies user input and steps per rev for total steps
stepper1.setCurrentPosition(0);                // sets current position to 0 every loop to ensure it doesnt save step positions
stepper1.moveTo(Distance1);                        //got to how many steps defined by Distance1
}
if ((stepper1.distanceToGo() != 0))   {           //if the distance to go is not zero...
stepper1.run();                                    //run the motor
}
if ((finish_check == 0) && (stepper1.distanceToGo() == 0)) {      //if the finish check is still zero AND distance to go is finished
finish_check=1;                                     //return check to 1
delay(1000);                                       //wait a second
Serial.println("Enter how many rotations you want the stepper motor to take?");     //ask again
}
}
```