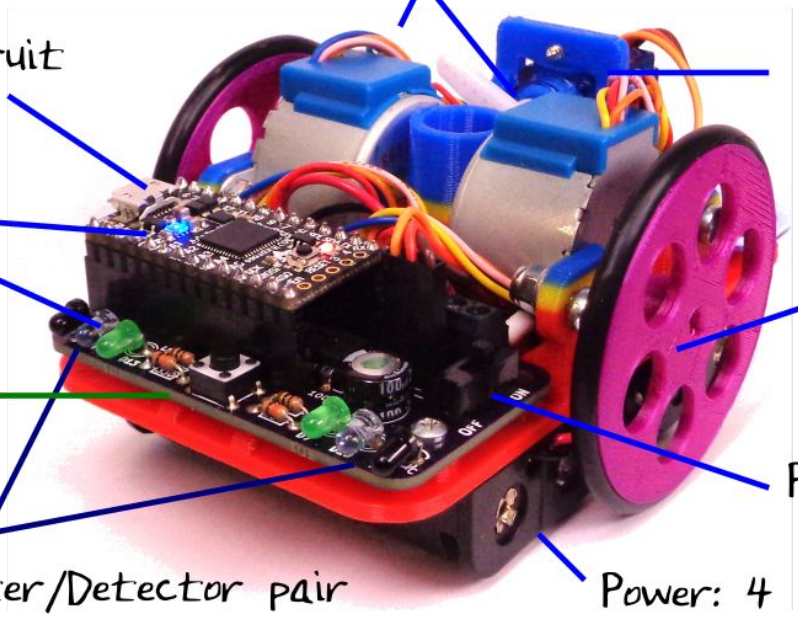
ChickTECH Turtle Robot Datasheet

Robot Name: _____

Builder's Name: _____



Programming (via USB):

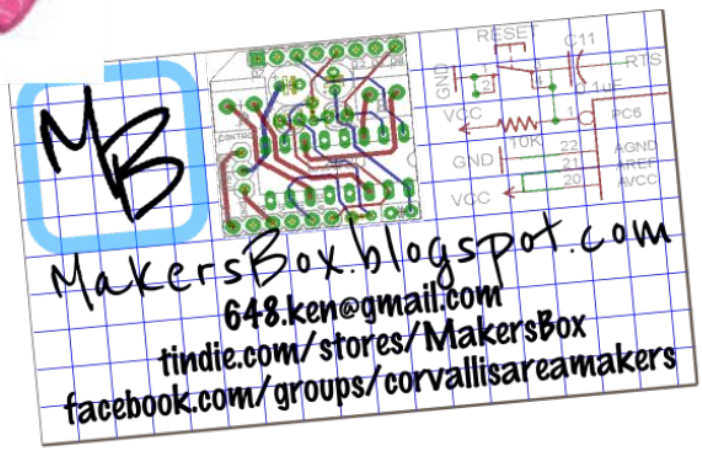
- Python
- Arduino C

Calibration Parameters:

```
wheel_dia (mm): _______
wheel_base (mm): _______
PEN_UP (angle): _______
PEN_DOwn (angle): _____
```

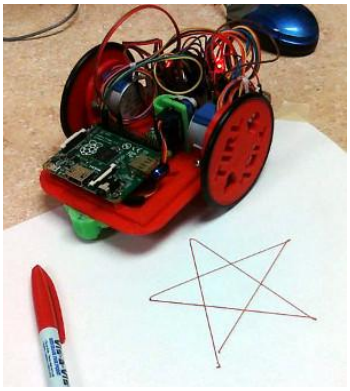
Turtle Commands:

```
left(degrees)
right(degrees)
forward(distance) mm
backwards(distance) mm
penup()
pendown()
goto(x, y)
```



Full details at http://bit.ly/OSTurtle

Open Source Turtle Robot



- *Robotics* is the exciting intersection of a number of engineering fields including mechanical engineering, electrical engineering, and computer science. This project was designed to make learning about these fields accessible and exciting.
- *Open Source* means every aspect of its design from its 3D parts, electronics, and software are available for study and modification, making it easy to build, modify, and improve.
- *Turtle robots* are controlled by simple instructions like `forward`, `backward`, `left`, and `right`, and their visual tracks are instructive as well as entertaining. They also demonstrate how systems with simple rules can have complex behaviors, something we see in nature all the time.

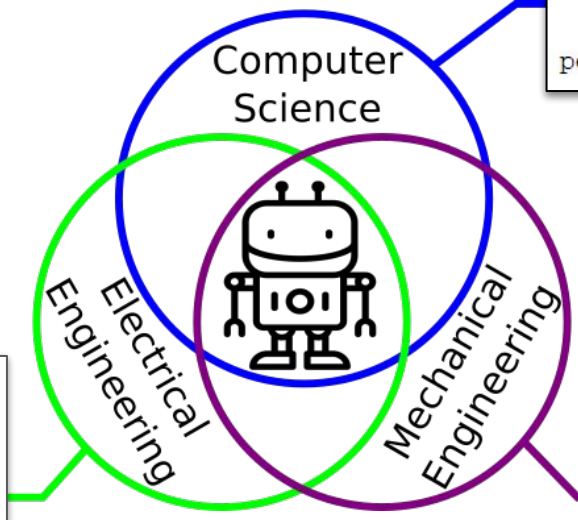
What is a robot? Robots are machines that are programmed to react to and manipulate their environments.

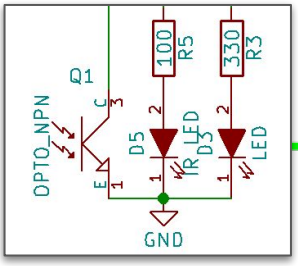
Which of the following would you consider to be a robot?

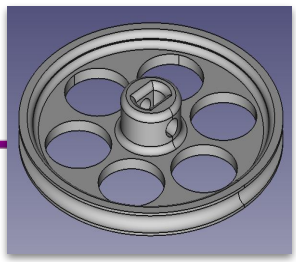
- ❑ Mars Rover
- ❑ 3D Printer
- ❑ Autonomous Car
- ❑ Artificial Arm

```
from turtle import *

pendown()
for x in range(5):
    forward(100)
    right(144)
penup()
```



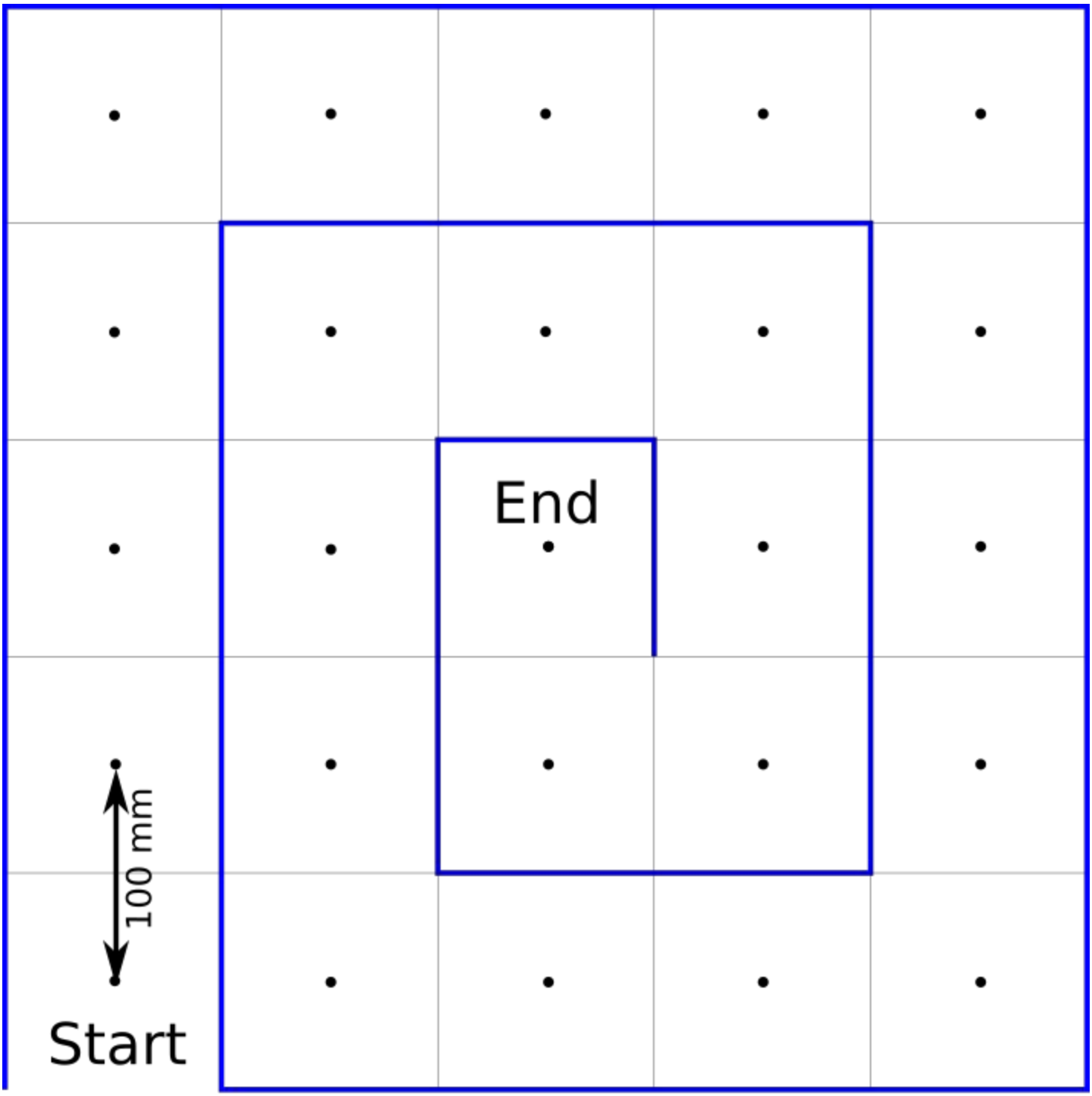




Going Further:

- Build a Turtle Robot of your own from Instructables: *http://bit.ly/OSTurtle*
- Play with Turtle graphics online at :
  - *https://blockly-games.appspot.com/* (block programming)
  - *http://bit.ly/ttturtle* (JavaScript)
  - *https://groklearning.com/hoc/activity/snowflake/* (Python)
- Do an “Hour of Code” activity at *https://hourofcode.com/us/learn*
- Check for Maker Spaces or programs in your community or at the library.
- ChickTech Workshops: *https://chicktech.org/*

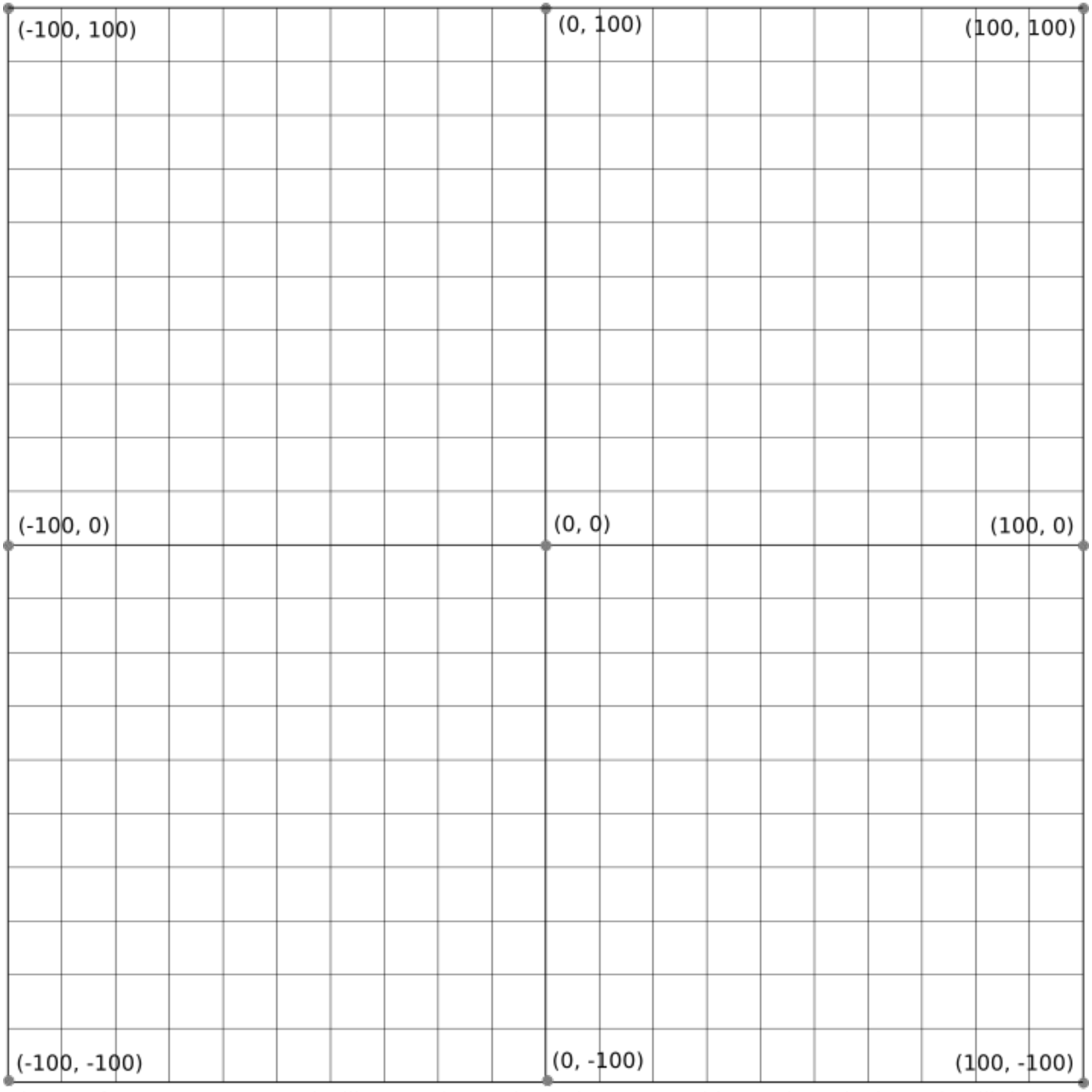
Ken Olsen www.MakersBox.us 648.ken@gmail.com



Complete the sequence to get your robot from Start to End. Bonus for using loops.

```
forward(400)
right(90), ...
```

Turtle goto(x, y) Command



The **turtle goto()** command will move the turtle to the x, y cooridate. If pen is down, it will draw a line. If you put the points in a list, you can itterate through them. What shape does the following make? Can you make your own shape above?

```
points = [(0, 0), (-8, -8), (-4, -24), (-16, -36), (-28, -28), (-36, -32), (-24, -44),
          (-28, -60), (-20, -76), (-32, -88), (-24, -96), (-16, -84), (0, -92),
          (16, -84), (24, -96), (32, -88), (20, -76), (28, -60), (24, -44), (36, -32),
          (28, -28), (16, -36), (4, -24), (8, -8), (0, 0)]

for point in points:
    goto(point)
```