



7.1 Servos

Hands and feet · Robot club · about 15 min

Name _____

Class _____

Date _____

What this lesson is about

Angles, speed, what a servo can and cannot do.

- What a servo is
- They take time
- Sweeping
- What a servo cannot do

Questions

7 marks in all

1. What does the number 90 mean in `servo(0, 90)`? [1 mark]

- ☐ A The angle for servo 0 to go to and hold
- ☐ B How fast servo 0 should spin
- ☐ C How many seconds servo 0 should run for
- ☐ D How many degrees to turn from where it is now

2. Which servo works which attachment on BugBot? [1 mark]

- ☐ A Servo 0 the gripper, servo 1 the kicker
- ☐ B Servo 0 the kicker, servo 1 the gripper
- ☐ C Servo 1 the gripper, servo 2 the kicker
- ☐ D Both servos work the gripper together

3. What does this program print? [1 mark]

```
for angle in range(0, 181, 45):  
    print("servo 0 at", angle)
```

4. A hobby servo turns about 60 degrees in a tenth of a second. About how many seconds does it take to swing from 0 to 180? Give your answer to one decimal place. [1 mark]

5. A program runs `servo(0, 180)` and on the very next line `servo(0, 0)`, with no wait between. What does servo 0 do? [1 mark]

- ☐ A It barely moves, because it is sent back to 0 before it gets anywhere near 180
- ☐ B It goes all the way to 180, then back to 0
- ☐ C Python stops with an error
- ☐ D It waits at 180 until you call wait

6. Which of these can a normal (not continuous-rotation) servo NOT do?

[1 mark]

Tick every answer that is true.

- ☐ A Spin round and round
- ☐ B Tell you what it touched
- ☐ C Push harder than its small gearbox allows
- ☐ D Hold an angle once it gets there
- ☐ E Go to 45 degrees

7. What does this program print?

[1 mark]

```
for angle in range(180, -1, -60):  
    print(angle)
```

The task: servo sweep

Move servo 0 to 0, 45, 90, 135 and 180 in turn, printing `servo 0 at <angle>` each time. Do not drive.

```
# the two lines every program starts with: the commands, then the robot  
from bugbot import *  
connect()  
  
# servo 0 to 90 degrees  
servo(0, 90)  
print("servo 0 at", 90)
```

Plan your program here, then type it in and press Run.



Do it on the robot

www.bugbotlab.com/learn/7-1-servos/

The simulator checks it and tells you when it passes. Nothing to install, no account.

Challenges

1. Sweep servo 1 the same way and watch the kicker. It is the continuous-rotation kind, so the angle sets whether it turns, not where it points, and it keeps turning until it is sent 90. End with `servo(1, 90)`.
2. Wave: swing servo 0 between 60 and 120 five times.

3. Write `slowly(index, angle)` that moves a servo to an angle in steps of 5 degrees with a short wait between each.