



9.2 Listening

Talking to each other · Robot club · about 15 min

Name _____

Class _____

Date _____

What this lesson is about

`messages()`: what arrived since you last asked, and who sent it.

- They queue up
- Ask often
- Whose message?

Questions

6 marks in all

1. What does `messages()` give you? [1 mark]

- ☐ A Everything that arrived since you last asked, oldest first, as (sender, text) pairs
- ☐ B Only the newest message
- ☐ C Every message ever sent in the run, including yours
- ☐ D The text of the next message, waiting until one comes

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

```
inbox = [("Beacon", "tick 1"), ("Scout", "at 25,55"), ("Beacon", "tick 2")]
for sender, text in inbox:
    if sender == "Beacon":
        print("heard", sender + ":", text)
```

3. The Beacon sends a message once a second, the first at 0.1 s. Your program waits 3.2 s and then calls `messages()`. How many messages does it get? [1 mark]

4. A polling loop checks `messages()` but has no `wait`. What is the problem? [1 mark]

- ☐ A It asks thousands of times a second and the robot has no time for anything else
- ☐ B It misses every message
- ☐ C It sends a message each time round
- ☐ D Nothing, it is the fastest way to listen

5. Your program is busy driving for 5 seconds and does not call `messages()`. What happens to the Beacon's messages? [1 mark]

- ☐ A They queue up and are all there next time you ask
- ☐ B They are lost
- ☐ C Only the last one is kept
- ☐ D The Beacon stops sending

6. You call `send("hello")` and then `messages()`. Is your own `hello` in the list?

[1 mark]

- ☐ A No: `send` goes to every other robot, so you only get what others sent
- ☐ B Yes, everyone hears everything, you included
- ☐ C Yes, as the first item
- ☐ D Only if nobody else replied

The task: listen

Print `heard <sender>: <text>` for each of the Beacon's messages, at least five of them. Do not drive.

```
# the two lines every program starts with: the commands, then the robot
from bugbot import *
connect()
# pause 2 s (the robot keeps doing what it was told)
wait(2)
print(messages())
```

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



Do it on the robot

www.bugbotlab.com/learn/9-2-listening/

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

Challenges

1. Count the ticks and print the total at the end.
2. Print the time between one tick and the next, using `clock()`.
3. Stop listening as soon as `tick 5` arrives.