

## Lesson Plan 11 | Form 2 | Group Problem-Solving with Threads

### Objective

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Students will practice their problem-solving skills by modifying a provided Python program containing two sequential infinite loops in order to make both run at the same time.

### Warm-up

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None.

### Presentation

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Remind students about the importance of being able to solve problems independently and with others, and preface by acknowledging that today's lesson will be challenging.

### Guided Practice

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None.

### Independent Practice

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On the whiteboard, or as a file in the students' central server directories, write the following code:

```
import time

while True:
    print "A"
    time.sleep(1)

while True:
    print "B"
    time.sleep(1)
```

Have students run the program to see for themselves that only the first string is repeatedly displayed. Remind students that in the lesson before last, they were shown something similar on the board, and they were also shown how to put one loop in a thread in order for both loops to run at the same time.

Tell the students that they should do the same with this program, so that both loops run at the same time.

As this is independent practice, it's advisable only to give occasional hints as needed to further class/individual progress, but not explicitly tell students what to write.

Code that satisfies the requirements is as follows:

```
import time, threading

def loop():
    while True:
        print "A"
        time.sleep(1)

t1 = threading.Thread(target=loop)
t1.start()

while True:
    print "B"
    time.sleep(1)
```

## **Closing**

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Have students save their program to their central file directory for additions, changes, etc. in later lessons.

## **In Hindsight**

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02/10/2017: Overall students did well with this challenge, with a few not needing much, if any, help while most needed a few hints, which is to be expected. I stretched the hints out over the entire class period so as to encourage persistence for as long as possible. Some used one thread as above, others used two threads, one for each of the while loops; I used this as an opportunity to show that two different programs can accomplish the same objective.