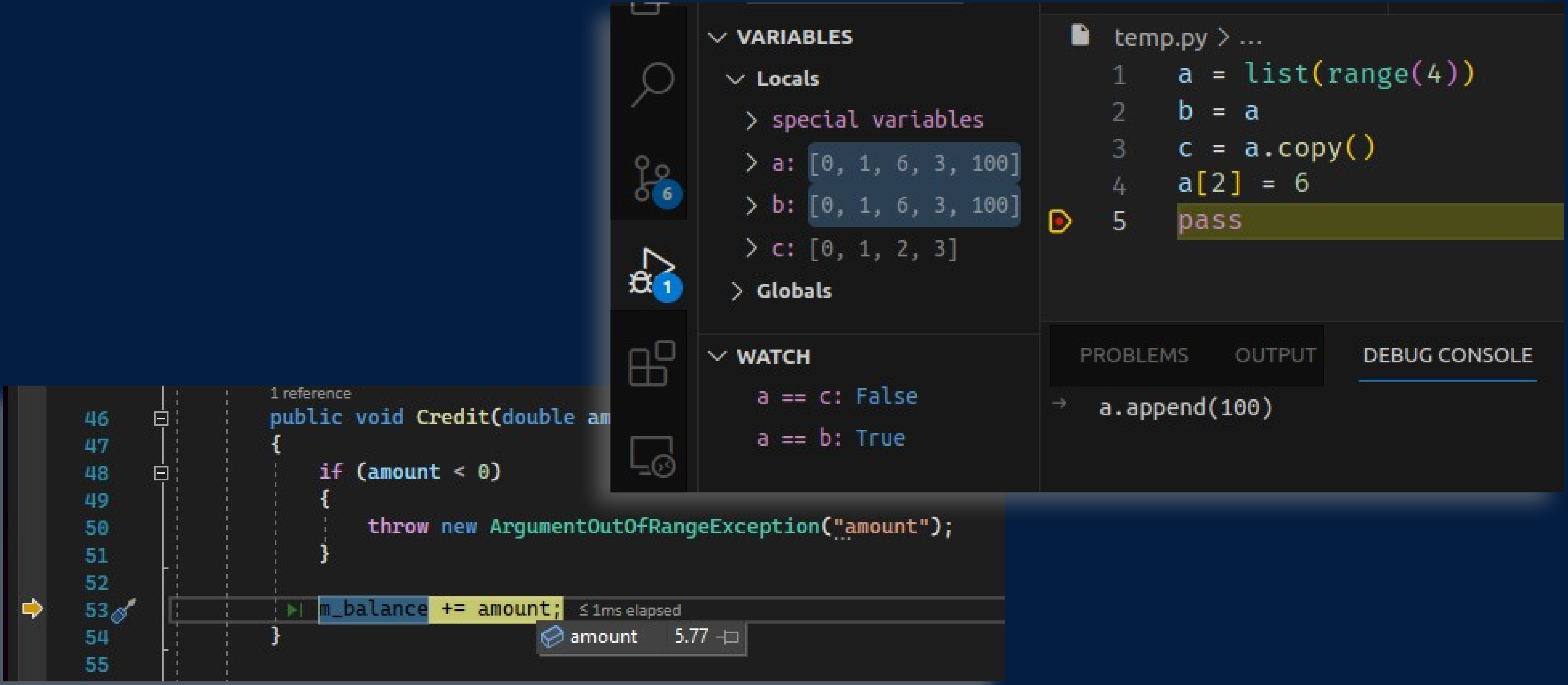
DEBUGGING:
AN UNDERUSED TEACHING TOOL



VARIABLES

Locals

special variables

a: [0, 1, 6, 3, 100]

b: [0, 1, 6, 3, 100]

c: [0, 1, 2, 3]

Globals

WATCH

a == c: False

a == b: True

temp.py > ...

```python
a = list(range(4))
b = a
c = a.copy()
a[2] = 6
pass
```

PROBLEMS OUTPUT DEBUG CONSOLE

```
a.append(100)
```

1 reference

```csharp
public void Credit(double am
{
    if (amount < 0)
    {
        throw new ArgumentOutOfRangeException("amount");
    }

    m_balance += amount;
}
```

≤ 1ms elapsed

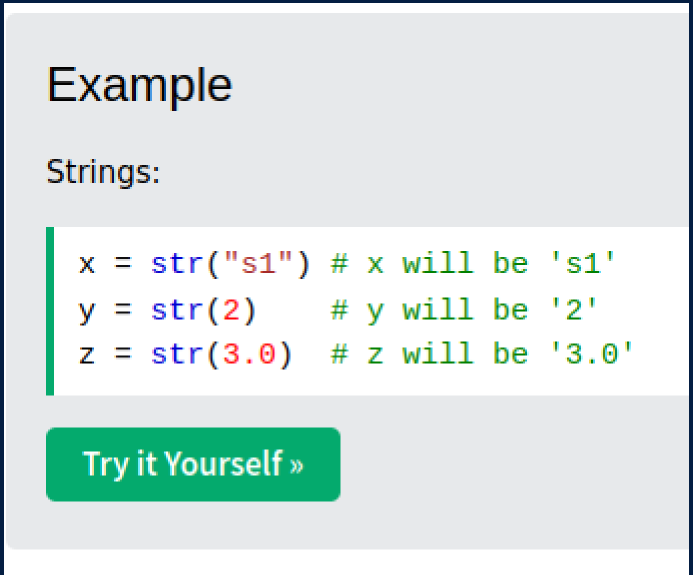
amount 5.77

STARTING TO PROGRAM IS HARD

STRUGGLING STUDENTS CAN BE EASY TO MISS

BUT THEY EXIST

TEACHING METHODS

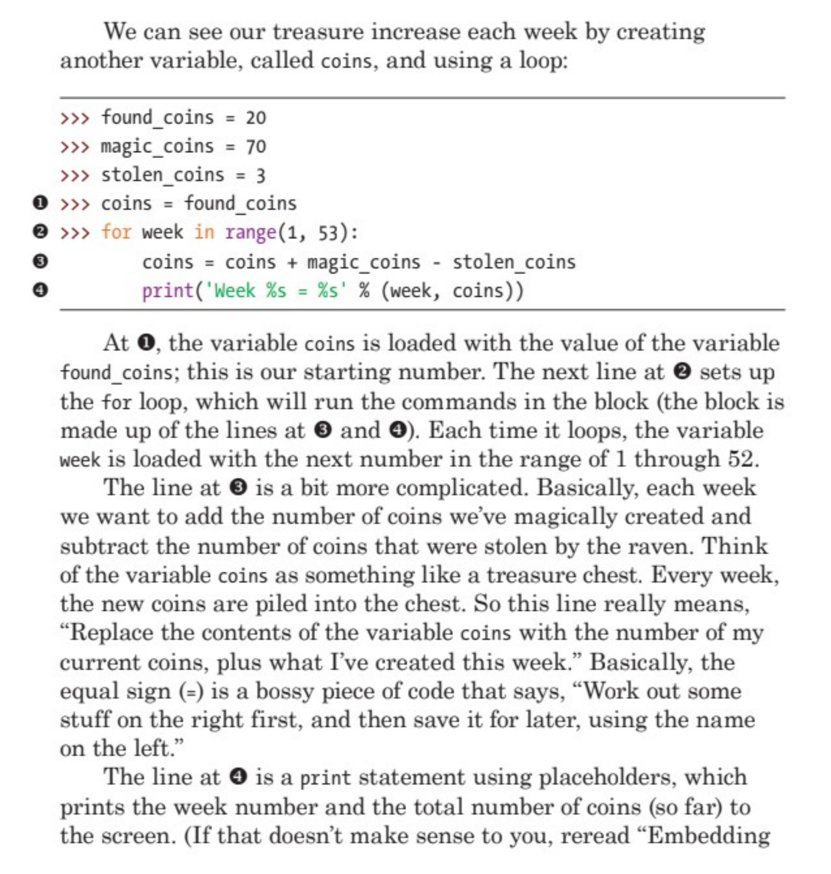


Example

Strings:

```
x = str("s1") # x will be 's1'
y = str(2)    # y will be '2'
z = str(3.0)  # z will be '3.0'
```

www.w3schools.com



We can see our treasure increase each week by creating another variable, called coins, and using a loop:

```
  >>> found_coins = 20
  >>> magic_coins = 70
  >>> stolen_coins = 3
❶ >>> coins = found_coins
❷ >>> for week in range(1, 53):
❸         coins = coins + magic_coins - stolen_coins
❹         print('Week %s = %s' % (week, coins))
```

At ❶, the variable coins is loaded with the value of the variable found_coins; this is our starting number. The next line at ❷ sets up the for loop, which will run the commands in the block (the block is made up of the lines at ❸ and ❹). Each time it loops, the variable week is loaded with the next number in the range of 1 through 52.

The line at ❸ is a bit more complicated. Basically, each week we want to add the number of coins we've magically created and subtract the number of coins that were stolen by the raven. Think of the variable coins as something like a treasure chest. Every week, the new coins are piled into the chest. So this line really means, "Replace the contents of the variable coins with the number of my current coins, plus what I've created this week." Basically, the equal sign (=) is a bossy piece of code that says, "Work out some stuff on the right first, and then save it for later, using the name on the left."

The line at ❹ is a print statement using placeholders, which prints the week number and the total number of coins (so far) to the screen. (If that doesn't make sense to you, reread "Embedding

Python for kids – A playful introduction to programming

THE POINT

[...]