

Reading from Files II

```
file = open("filename.txt", "r")
```

```
for line in file:
```

```
    line = line.rstrip()
```

```
    # do something with line
```

```
file.close()
```

Reading one
string per line

```
-----  
file = open("filename.txt", "r")
```

```
for line in file:
```

```
    line = line.rstrip()
```

```
    num = int(line)
```

```
    # do something with num
```

```
file.close()
```

Reading one int
per line

- Re-open your code from the last class that read in a text file of integers and printed their total sum.
- Change the program to print the differences between pairs of consecutive numbers. Hint: use the sliding window technique.
- Change the program to print a "moving average" of the most recent three numbers in the file. (This means print the average of the numbers on lines 1, 2, and 3; then 2, 3, and 4; then 3, 4, and 5, etc)
 - Use the sliding window technique, but use *two* sliding variables to hold the previous number, as well as the number from two lines ago.
- **Challenge:** Change your program to print out the largest and smallest numbers in the file.

- Problem that re-occurs often in CS:
- Finding the largest item in a set of things where you can only look at each thing once.

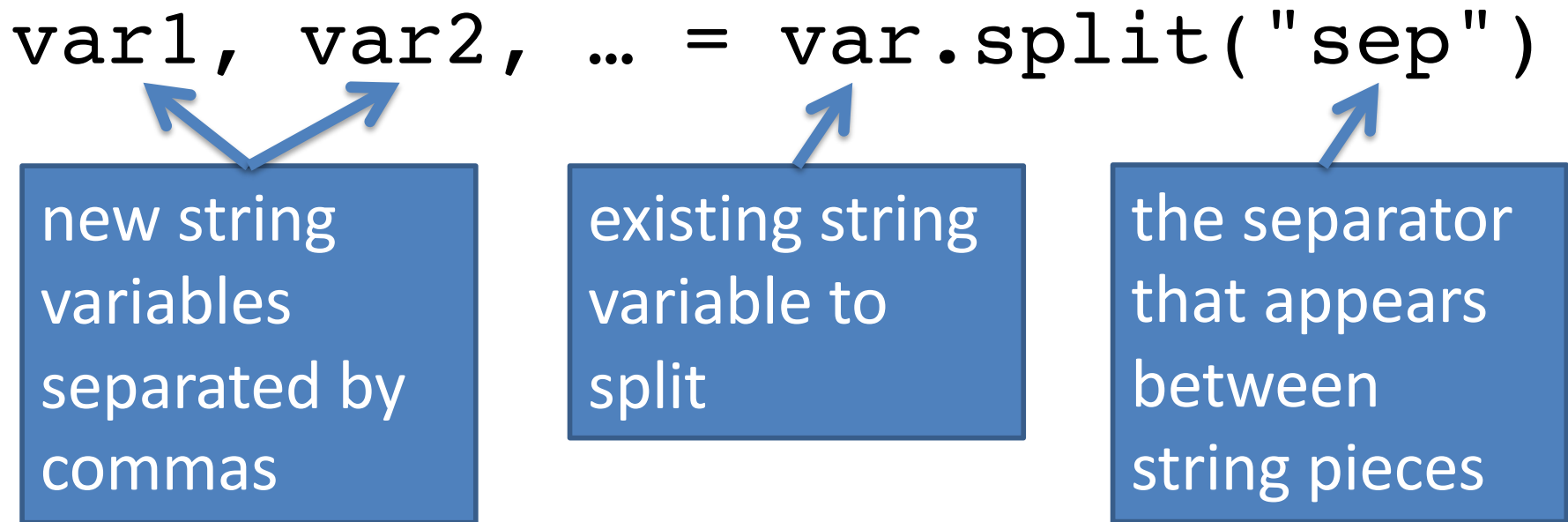


- Pseudocode for finding the largest number in a collection of numbers:
- **largest** = [smallest possible number that you could ever see]
- loop over each number:
 - if the current number > **largest**, then
largest = current number
- after this loop, **largest** will have the largest number in it!

Split function

Splits a string into multiple string variables based on a separator:

```
var1, var2, ... = var.split("sep")
```



new string
variables
separated by
commas

The diagram illustrates the syntax of the split function. It shows the code `var1, var2, ... = var.split("sep")` at the top. Below the code, three blue boxes provide explanations. The first box, under `var1, var2, ...`, explains that these are new string variables separated by commas. The second box, under `var`, explains that this is the existing string variable to be split. The third box, under `"sep"`, explains that this is the separator that appears between string pieces. Blue arrows point from each box to its corresponding part of the code.

existing string
variable to
split

the separator
that appears
between
string pieces

Reading multiple strings per line

```
file = open("filename.txt", "r")
for line in file:
    line = line.rstrip()
    var1, var2, ... = var.split("sep")
    # do something with var1, var2, etc.
```

- Copy the `people.txt` file from the class website (code written in class -> today's date) to your Python directory. Open the file and notice how it is organized: every line has a person's first name, last name, and year of birth separated by commas.
- Write a program to print the year the oldest person was born, and the year the youngest person was born.
- Edit your program to print the ***names*** of the oldest and youngest person.
- Make a new program to print the first and last names of the person who comes first alphabetically (by last name), and last alphabetically.