

## Reading Parts of a File

### Textbook

## Read Parts of the File



Sometimes text files can be really long with hundreds of lines of text. What happens if you only want to read certain parts of the text file? Python can do that too!

The `read()` function also allows us to only read parts of the file. By default this function reads the entire file, but if we add a number it will read that many characters from the file.

Let's say our "example.txt" file has the alphabet text inside it

```
abcdefghijklmnopqrstuvwxyz .
```

This code would print the entire alphabet:

```
1 file = open("example.txt", "r")
2 print(file.read())
```

While this code would only print out the first 5 characters:

```
1 file = open("example.txt", "r")
2 print(file.read(5))
```

**NOTICE** how the number 5 is telling the code to print five characters. This is NOT using indexing, which starts counting at 0.

## Read Lines of the File

The `readline()` function will read entire lines of the text file. Let's say this is our example text file:

```
1 Hello! This is a test file for Skill Struck students!
2 I hope you're enjoying the class so far.
3 Have you learned anything interesting?
4 The skills you're gaining are very valuable!
```

Try using this code in your Python file and see what happens!

```
1 file = open("example.txt", "r")
2 print(file.readline())
```

This code will open the text file named example.txt. Then, it reads the first line of that text file.

```
Hello! This is a test file for Skill Struck students!
```

On you Python file calling `readline()` twice will read the first two lines of the file:

```
1 file = open("example.txt", "r")
2 print(file.readline())
3 print(file.readline())
```

This will print out:

```
Hello! This is a test file for Skill Struck students!
```

```
I hope you're enjoying the class so far.
```

## Read the Next Line of the File (Streaming)

Streaming information from the text file is when we systematically move through the file line by line. The `next()` code helps with this.

```
1 file = open("example.txt", "r")
2 print(file.readline())
3 line = next(file)
4 print(line)
```

# Closing Files

When your program is finished reading the file, it's important to close it. This is done in your Python file by calling the `close()` function on your variable named file.

```
1 file.close()
```

## Checkpoint

### Read Parts of a File

1. Inside your Python file create a variable and assign it to a command to open the text file. Make sure to include the `r` which means to read!
2. Print out the **first 10 characters** of a text file.
3. Print out the **first two lines** of the text file.
4. Close the text file from within the Python code.

### Requirements:

- In your Python file, create a variable and assign it to a command to open the text file.
- Print out the first 10 characters of a text file.
- Print out the first two lines of the text file.
- Close the text file

## Questions (7)

**1. True or False: You must read an entire text file when using Python code.**

MULTIPLE CHOICE

Choose the correct answer:

- A. True
- B. False

**2. Which piece of Python code would you use to read the first line of a text file?**

MULTIPLE CHOICE

Choose the correct answer:

- A. `print(file.read())`
- B. `print(file.read(10))`
- C. `print(file.readline())`
- D. `file.close()`

### 3. Which piece of Python code would you use to read the first 20 characters of a text file?

MULTIPLE CHOICE

Choose the correct answer:

- A. `print(file.read())`
- B. `print(file.read(20))`
- C. `print(file.readline())`
- D. `print(file.read(21))`

### 4. True or False: To print the first three lines from a text file, just use the following code 3 times in your Python file.

MULTIPLE CHOICE

```
print(file.readline())
```

Choose the correct answer:

- A. True
- B. False

### 5. Which piece of code would you use to close the text file?

MULTIPLE CHOICE

Choose the correct answer:

- A. `print(file.read())`
- B. `print(file.read(5))`
- C. `print(file.readline())`
- D. `file.close()`

### 6. How many lines of text will the following code print out?

MULTIPLE CHOICE

```
file = open("example.txt", "r") print(file.readline()) print(file.readline())
```

Choose the correct answer:

- A. 0
- B. 1
- C. 2
- D. 10

## 7. What will the following code print out?

```
file = open("example.txt", "r") print(file.read(5))
```

Choose the correct answer:

- A. The first 5 lines
- B. The first 5 characters
- C. The whole file
- D. It will close the file

## Challenges (3)

### 1. Read a Specific Number of Characters

Write a program that takes in one integer as the input.

Your program should then read that many characters of your text file and print them out.

*Note: for this challenge, you need to create a variable named `file`.*

#### Requirements:

- Write a program that takes in one integer as the input.
- Your program should then read that many characters of your text file and print them out.
- Close the text file.

### 2. How Many Words?

Write a program that prints the number of words in a text file.

Hint: `stringname.split( )` will separate the string into a list. It separates the string anywhere there is a space.

#### Requirements:

- In your Python file, create a variable and assign it to a command to open the text file.
- Create a variable and assign it to a command to read the text file.
- Create another variable and assign it to the previous variable that has been split up into a list of words.
- Print out the length of the list of words
- Close the text file

### 3. How Many Lines?

Write a program that prints out the number of lines in a text file.

*Note: this is a stretch challenge. Try using this method in this challenge.* `file.readlines()`

This method will return all the lines in a file in the format of a list where each element is a line in the file.

#### Requirements:

- In your Python file, create a variable and assign it to a command to open the text file.
- Print out the number of lines in the text file.
- Close the file

## Answer Keys & Solutions

### Checkpoint Solutions

#### Read Parts of a File

```
1 file = open("example.txt", "r")
2 print(file.read(10))
3 print(file.readline())
4 print(file.readline())
5 file.close()
```

### Questions

#### 1. True or False: You must read an entire text file when using Python code.

MULTIPLE CHOICE

##### Correct Answer:

A. True

✗ Incorrect

B. False

✓ Correct

##### Explanation:

A Python program can read a certain number of characters or lines of a text file.

#### 2. Which piece of Python code would you use to read the first line of a text file?

MULTIPLE CHOICE

##### Correct Answer:

A. print(file.read())

✗ Incorrect

B. print(file.read(10))

✗ Incorrect

C. print(file.readline())

✓ Correct

D. file.close()

✗ Incorrect

##### Explanation:

readline means to read a whole line in the text file.

### 3. Which piece of Python code would you use to read the first 20 characters of a text file?

MULTIPLE CHOICE

Correct Answer:

- A. `print(file.read())` × Incorrect
- B. `print(file.read(20))` ✓ Correct
- C. `print(file.readline())` × Incorrect
- D. `print(file.read(21))` × Incorrect

#### Explanation:

The `file.read( )` is saying how many characters to print--not the index number.

### 4. True or False: To print the first three lines from a text file, just use the following code 3 times in your Python file.

MULTIPLE CHOICE

Correct Answer:

- A. True ✓ Correct
- B. False × Incorrect

#### Explanation:

Each time you use that code, it will print another line in the text file.

### 5. Which piece of code would you use to close the text file?

MULTIPLE CHOICE

Correct Answer:

- A. `print(file.read())` × Incorrect
- B. `print(file.read(5))` × Incorrect
- C. `print(file.readline())` × Incorrect



D. `file.close()`

✓ Correct

**Explanation:**

`close` will close the file.

**6. How many lines of text will the following code print out?**

MULTIPLE CHOICE

**Correct Answer:**

A. 0

✗ Incorrect

B. 1

✗ Incorrect

C. 2

✓ Correct

D. 10

✗ Incorrect

**Explanation:**

Each command of `file.readline()` will print a line

**7. What will the following code print out?**

MULTIPLE CHOICE

**Correct Answer:**

A. The first 5 lines

✗ Incorrect

B. The first 5 characters

✓ Correct

C. The whole file

✗ Incorrect

D. It will close the file

✗ Incorrect

**Explanation:**

The 5 will print 5 characters

## Challenges

### 1. Read a Specific Number of Characters

**Solution:**

```
1 number = int(input("How many characters do you want to print?"))
2 file = open("Aimee.txt", "r")
3 print(file.read(number))
4 file.close()
```

## 2. How Many Words?

**Solution:**

```
1 file = open("example.txt", "r")
2 data = file.read()
3 words = data.split()
4 print(len(words))
5 file.close()
```

## 3. How Many Lines?

**Solution:**

```
1 file = open("example.txt", "r")
2 print(len(file.readlines()))
3 file.close()
```