Multi-threading

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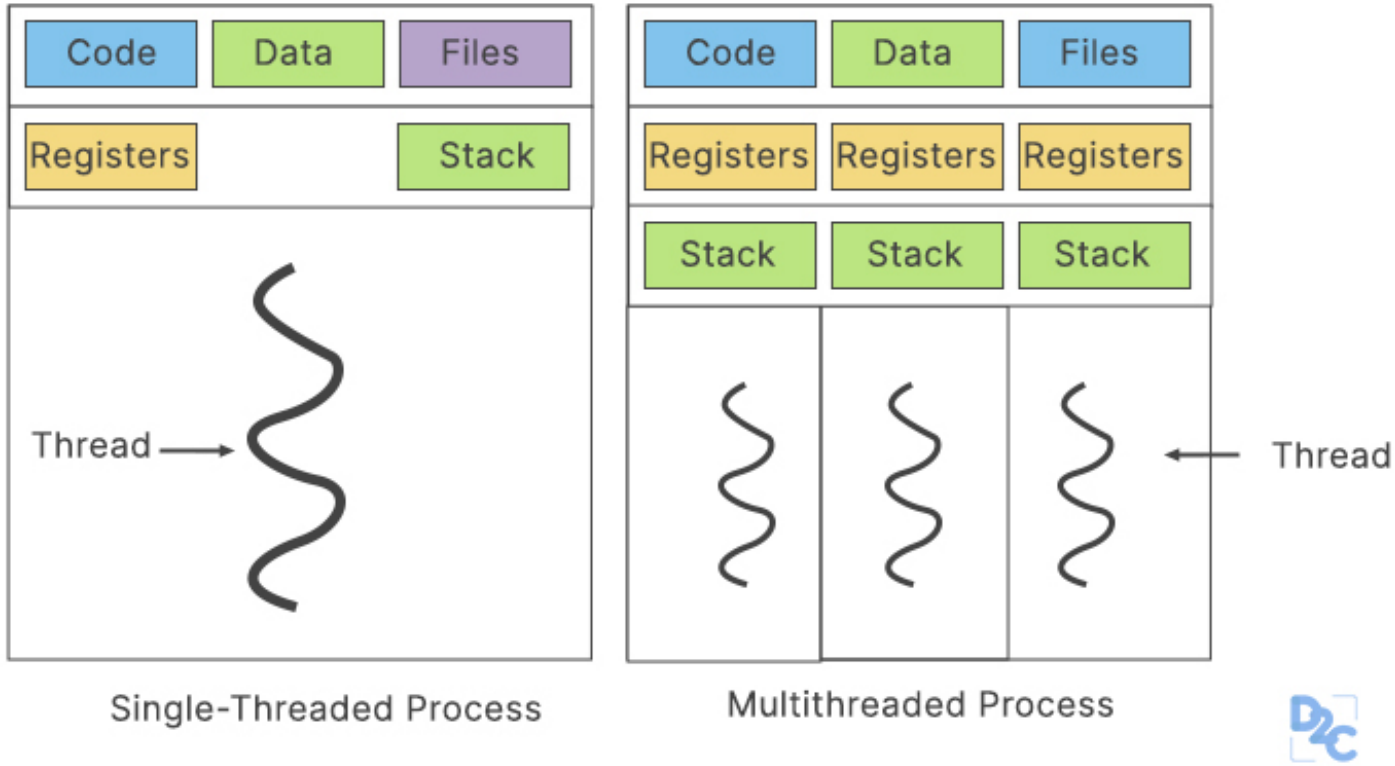
CLASS STARTING SHARP AT 6:05 PM

THIS WILL BE LAST SESSION FOR ADVANCED PYTHON

What is Multi-threading



1. Imagine you have a bigger home to clean
2. If you as individual try to clean home it will take more time
3. If you call your friends for help it will take lesser time to complete same task.
4. You will assign tasks to friends, like cleaning shelf, vacuuming Hall

Simple Multithreading Example

```python
import threading

# Function to calculate the square of a number
def calculate_square(number):
    result = number * number
    print(f"The square of {number} is {result}.")

# Create a list of numbers
numbers = [2, 4, 6, 8, 10]

# Create a thread for each number and calculate the square
threads = []
for num in numbers:
    thread = threading.Thread(target=calculate_square, args=(num,))
    thread.start()
    threads.append(thread)

# Wait for all threads to finish
for thread in threads:
    thread.join()

print("All calculations completed.")
```

Function to apply threading

Multiple Data Points to calculate function

Start Threading

Wait for all threads to finish

Multithreading example 2

```python
import threading

# Function to print a message
def print_message(message):
    print(f"Printing: {message}")

# Function to calculate the factorial of a number
def calculate_factorial(number):
    factorial = 1
    for i in range(1, number + 1):
        factorial *= i
    print(f"The factorial of {number} is {factorial}.")

# Create a thread for printing a message
print_thread = threading.Thread(target=print_message, args=("Hello, Multithreading!",))

# Create a thread for calculating the factorial
factorial_thread = threading.Thread(target=calculate_factorial, args=(5,))

# Start both threads
print_thread.start()
factorial_thread.start()

# Wait for both threads to finish
print_thread.join()
factorial_thread.join()

print("All tasks completed.")
```

Multithread example 3

Download files from Multiple URLS:

https://raw.githubusercontent.com/utkarshg1/mlproject_regression/main/artifacts/data.csv

https://raw.githubusercontent.com/utkarshg1/mlproject_regression/main/artifacts/test.csv

https://raw.githubusercontent.com/utkarshg1/mlproject_regression/main/artifacts/train.csv

```
from urllib.request import urlretrieve
```

Multithreading example 3

```python
import urllib.request
import threading

# List of URLs to download
urls = [
    'https://example.com/file1.txt',
    'https://example.com/file2.txt',
    'https://example.com/file3.txt',
    # Add more URLs as needed
]

# Function to download a file from a given URL
def download_file(url):
    file_name = url.split('/')[-1]  # Extract the file name from the URL
    print(f"Downloading {file_name}...")
    urllib.request.urlretrieve(url, file_name)
    print(f"{file_name} downloaded.")

# Create a thread for each URL and start downloading
threads = []
for url in urls:
    thread = threading.Thread(target=download_file, args=(url,))
    thread.start()
    threads.append(thread)

# Wait for all threads to finish
for thread in threads:
    thread.join()

print("All files downloaded.")
```

Thank you
All Advanced Python Sessions complete

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