FastAPI Examples

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Introduction to FastAPI Examples

These simple examples to help you understand the FastAPI framework better.

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2. Square of a Number
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5. Check Prime Number
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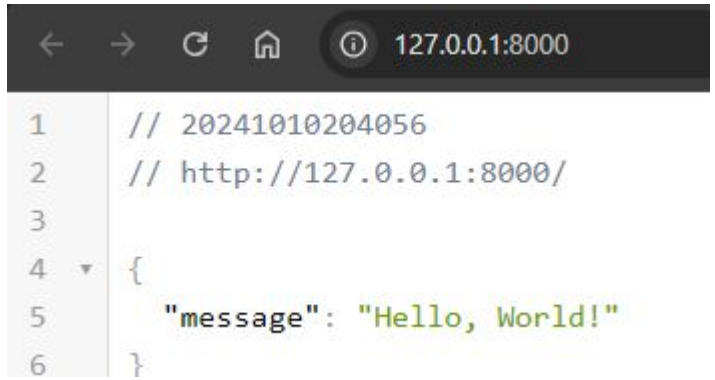
https://github.com/DrMohammedhbi/FastApiExamples

Hello World Example

```
> fastapi dev .\HelloWorld.py
```

```python
from fastapi import FastAPI
app = FastAPI()

@app.get('/')
async def root():
    return {'message': 'Hello, World!'}
```



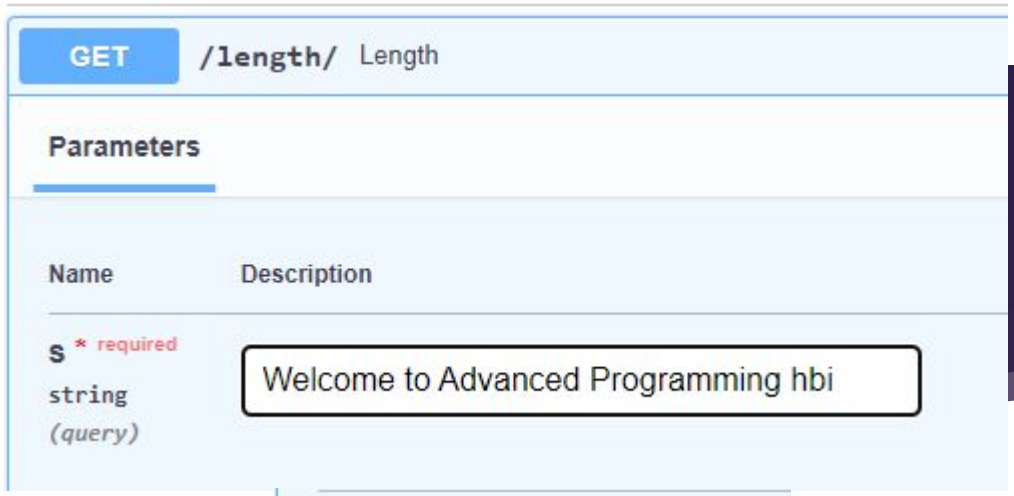
- Explanation: The root endpoint ('/') returns a JSON message {'message': 'Hello, World!'}.

Square of a Number


```
from fastapi import FastAPI

app = FastAPI()

@app.get('/square/{num}')
async def square(num: int):
    return {'square': num ** 2}
```

- Explanation: The path parameter num is squared and returned in the response.

String Length



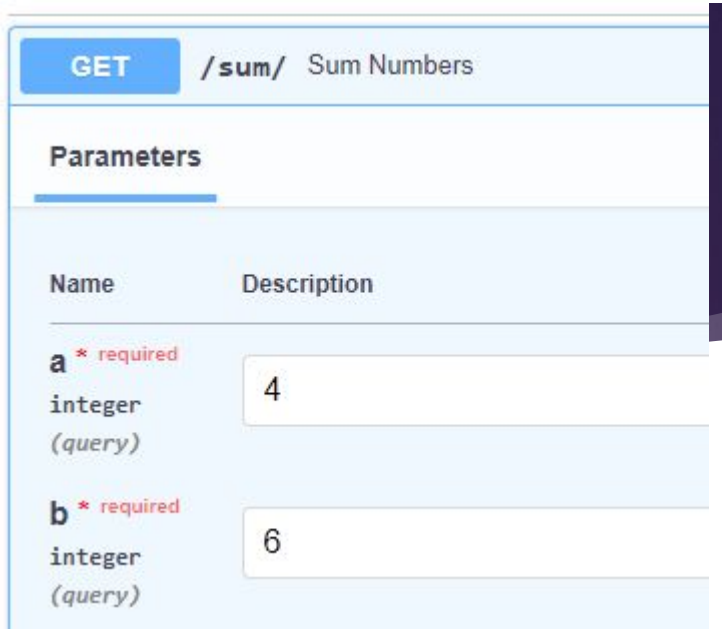

```
from fastapi import FastAPI

app = FastAPI()

@app.get('/length/')
async def length(s: str):
    return {'length': len(s)}
```

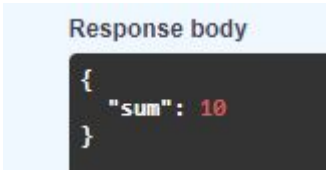
```
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/length/?s=Welcome%20to%20Advanced%20Programming%20hbi
{"length":35}
C:\Users\hbi>
```

- Explanation: The query parameter s (a string) is measured, and the length is returned.

Sum of Two Numbers

```
from fastapi import FastAPI
app = FastAPI()

@app.get('/sum/')
async def sum_numbers(a: int, b: int):
    return {'sum': a + b}
```

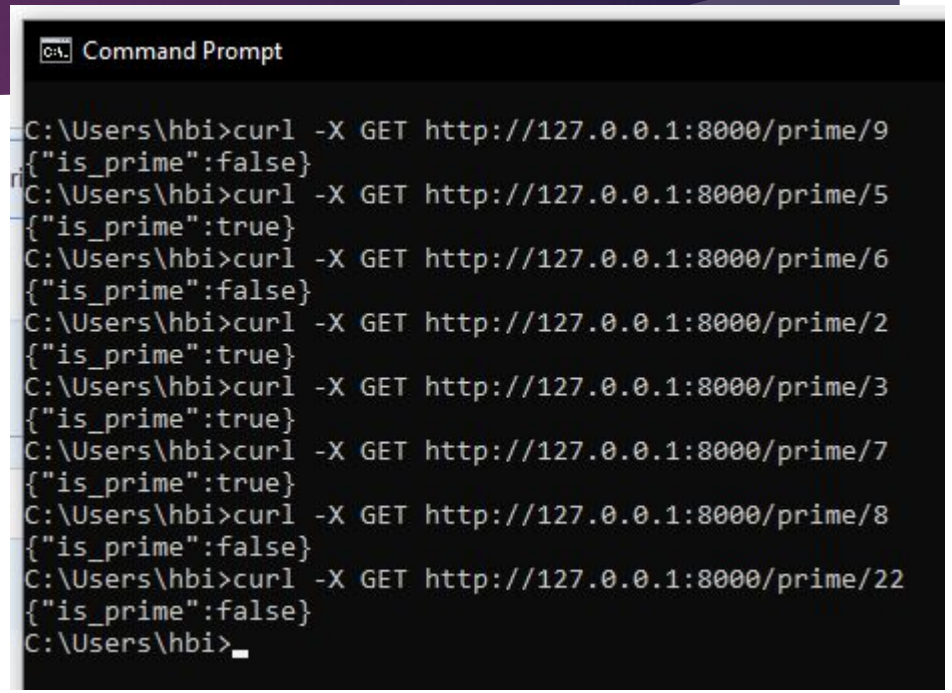




- Explanation: Two integers, a and b, are passed as query parameters, and their sum is returned.

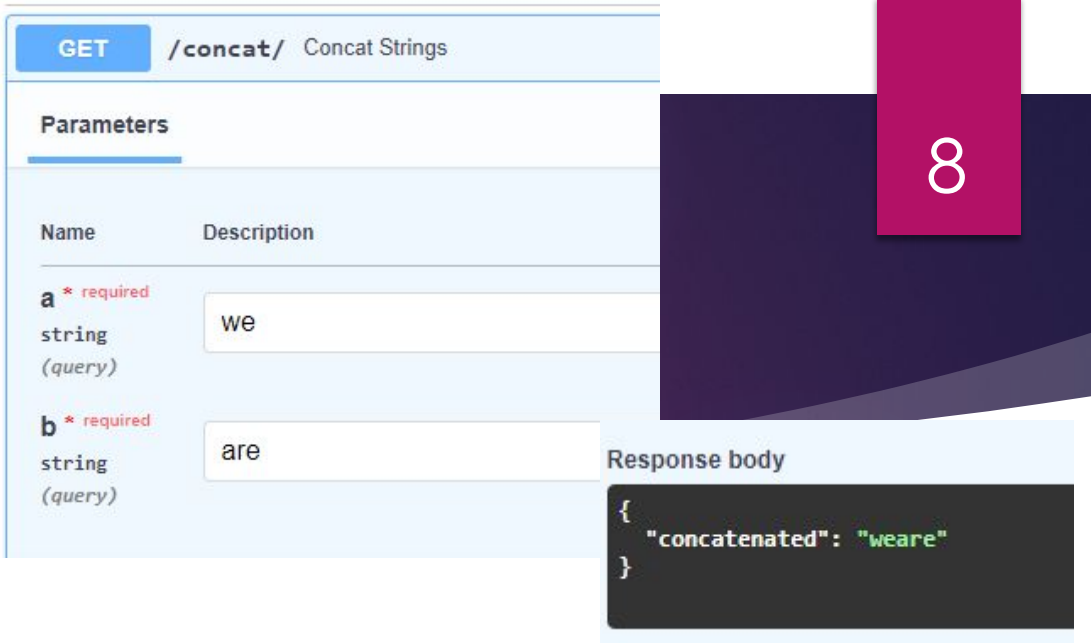
Check Prime Number

```python
from fastapi import FastAPI, HTTPException

app = FastAPI()

def is_prime(n: int) -> bool:
    if n < 2:
        return False
    for i in range(2, int(n**0.5) + 1):
        if n % i == 0:
            return False
    return True

@app.get("/prime/{num}")
async def prime(num: int):
    if num < 1:
        raise HTTPException(status_code=400, detail="Input must be greater than 0.")
    return {"is_prime": is_prime(num)}

```



- Explanation: Checks if num is prime and returns the result. Validates that the number is greater than 0.

Concatenate Strings

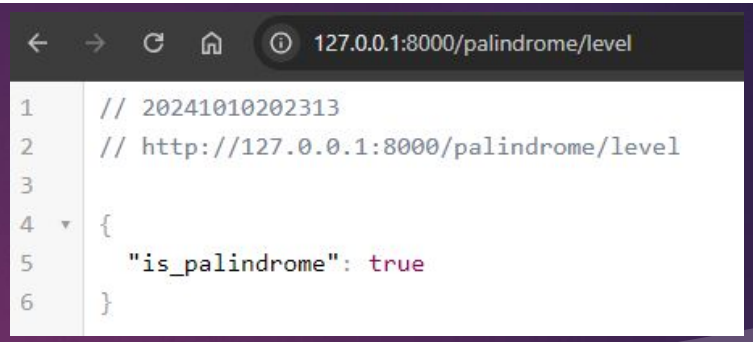



```
from fastapi import FastAPI
app = FastAPI()

@app.get('/concat/')
async def concat_strings(a: str, b: str):
    return {'concatenated': a + b}
```

```
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/concat/?a=we^&b=areIntheclass
{"concatenated":"weareIntheclass"}
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/concat/?a=How^&b=areYou
{"concatenated":"HowareYou"}
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/concat/?a=Advanced^&b=computer programming
{"concatenated":"Advancedcomputer"}curl: (6) Could not resolve host: programming

C:\Users\hbi>curl -X GET http://127.0.0.1:8000/concat/?a=Advanced^&b=computerProgramming
{"concatenated":"AdvancedcomputerProgramming"}
C:\Users\hbi>
```

- Explanation: Takes two strings a and b as query parameters and returns their concatenation.

Check Palindrome




```
200 OK
> fastapi dev .\CheckPalindrome.py
```

```
from fastapi import FastAPI

app = FastAPI()

@app.get('/palindrome/{word}')
async def check_palindrome(word: str):
    is_palindrome = word == word[::-1]
    return {'is_palindrome': is_palindrome}
```

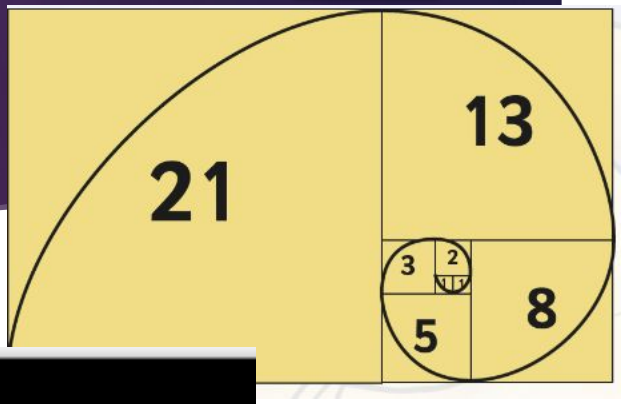
```
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/palindrome/racecar
{"is_palindrome":true}
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/palindrome/level
{"is_palindrome":true}
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/palindrome/welcome
{"is_palindrome":false}
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/palindrome/nerom
{"is_palindrome":false}
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/palindrome/civic
{"is_palindrome":true}
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/palindrome/noon
{"is_palindrome":true}
C:\Users\hbi>
```

- Explanation: The path parameter word is checked if it reads the same forwards and backwards.
- ''racecar''''level''''deified''''radar''''madam''''civic''''kayak''''rotator''''noon''''deed''

http://localhost:8000/palindrome/racecar
http://localhost:8000/palindrome/level
http://localhost:8000/palindrome/deified

Generate a Fibonacci Sequence

```
> fastapi dev .\FibonacciSequence.py
```




```python
from fastapi import FastAPI
app = FastAPI()

def fibonacci(n: int):
    sequence = [0, 1]
    while len(sequence) < n:
        sequence.append(sequence[-1] + sequence[-2])
    return sequence[:n]

@app.get('/fibonacci/{count}')
async def generate_fibonacci(count: int):
    if count <= 0:
        return {'error': 'Count must be a positive integer.'}
    return {'fibonacci': fibonacci(count)}
```

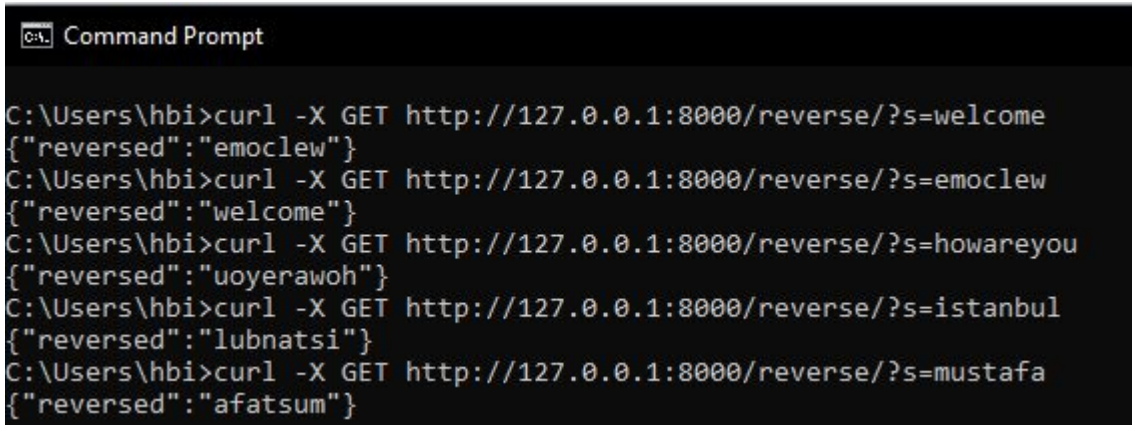
```
Command Prompt

C:\Users\hbi>curl -X GET http://127.0.0.1:8000/fibonacci/2
{"fibonacci":[0,1]}
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/fibonacci/3
{"fibonacci":[0,1,1]}
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/fibonacci/4
{"fibonacci":[0,1,1,2]}
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/fibonacci/7
{"fibonacci":[0,1,1,2,3,5,8]}
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/fibonacci/9
{"fibonacci":[0,1,1,2,3,5,8,13,21]}
C:\Users\hbi>curl -X GET http://127.0.0.1:8000/fibonacci/15
{"fibonacci":[0,1,1,2,3,5,8,13,21,34,55,89,144,233,377]}
C:\Users\hbi>
```

- Explanation: The path parameter count is used to generate and return a Fibonacci sequence of that length. For example, 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377.

Reverse a String

```
3> fastapi dev .\ReverseString.py
```

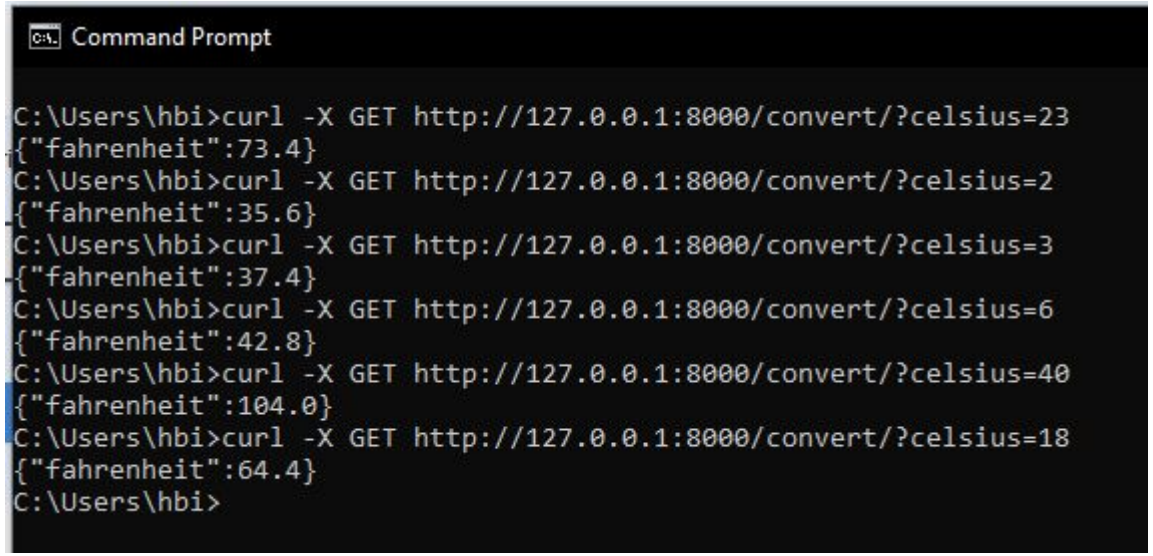
```
from fastapi import FastAPI

app = FastAPI()

@app.get('/reverse/')
async def reverse_string(s: str):
    return {'reversed': s[::-1]}
```



- Explanation: The string s passed as a query parameter is reversed and returned.

Convert Celsius to Fahrenheit

```
from fastapi import FastAPI

app = FastAPI()

@app.get('/convert/')
async def convert_celsius_to_fahrenheit(celsius: float):
    fahrenheit = (celsius * 9/5) + 32
    return {'fahrenheit': fahrenheit}
```



- Explanation: Takes a celsius value as a query parameter and returns the corresponding temperature in Fahrenheit.

*Euclid's Algorithm - **gcd***

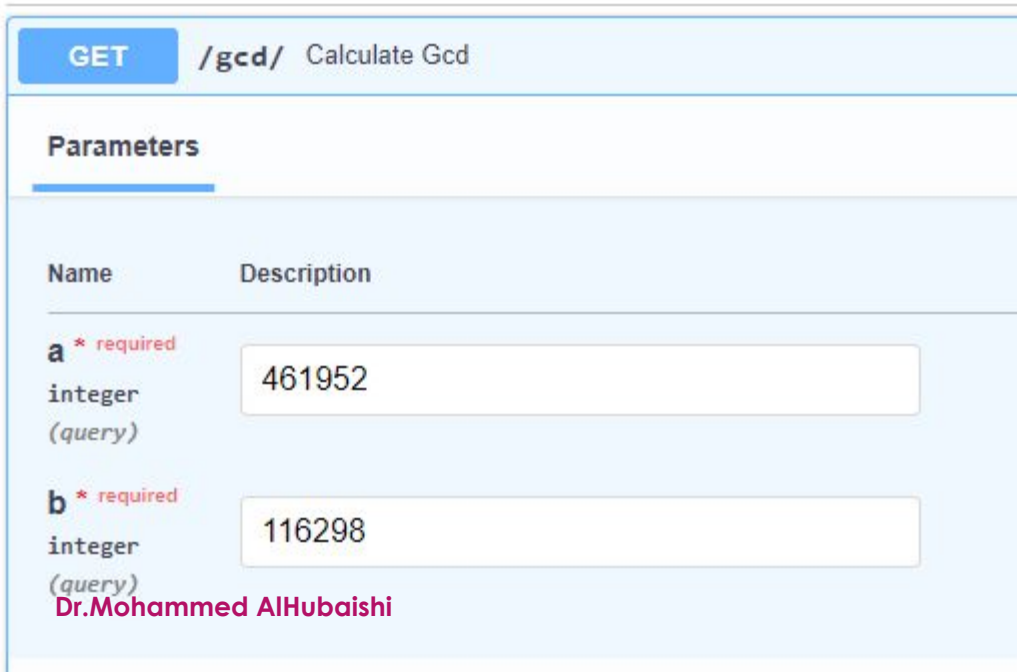
- Euclid's algorithm is based on the fact that if u is greater than v then the greatest common divisor of u and v is the same as the **greatest common divisor** of v and u%v.
- This description explains how to compute the greatest common divisor of two numbers by computing the greatest common divisor of two smaller numbers.
- We can implement this method in FastApi python simply by having the **gcd function**
- **gcd(461952,116298);**

```python
from fastapi import FastAPI, HTTPException
app = FastAPI()

# Euclidean algorithm to calculate GCD
def euclidean_algorithm(u: int, v: int) -> int:
    while v != 0:
        u, v = v, u % v
    return u

@app.get("/gcd/")
async def calculate_gcd(a: int, b: int):
    if a <= 0 or b <= 0:
        raise HTTPException(status_code=400, detail="Both numbers

    gcd_value = euclidean_algorithm(a, b)
    return {"GCD": gcd_value}
```

$$(461952, 116298)$$
$$(116298, 113058)$$
$$(113058, 3240)$$
$$(3240, 2898)$$
$$(2898, 342)$$
$$(342, 162)$$
$$(162, 18)$$
$$(18, 0)$$

```python
from fastapi import FastAPI, HTTPException
app = FastAPI()

# Euclidean algorithm to calculate GCD
def euclidean_algorithm(u: int, v: int) -> int:
    while v != 0:
        u, v = v, u % v
    return u

@app.get("/gcd/")
async def calculate_gcd(a: int, b: int):
    if a <= 0 or b <= 0:
        raise HTTPException(status_code=400, detail="Both numbers

    gcd_value = euclidean_algorithm(a, b)
    return {"GCD": gcd_value}
```

curl -X GET http://127.0.0.1:8000/gcd/?a=461952^&b=116298



References

https://fastapi.tiangolo.com/

https://github.com/DrMohammedhbi/FastApiExamples