7,368,787

Or, how well does ChatGPT code?

(AI C Gen on github)

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Project Goal

Determine how well ChatGPT can code

Measure results empirically

Create a framework that allows different problems to be easily submitted

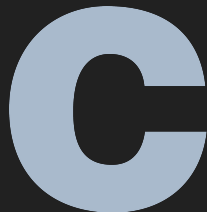Pick the best ChatGPT coding reply from many samples

Methodology

Ask ChatGPT to solve a problem by writing a program (Find prime numbers)

C or Python

Automatically prompt, compile, run and verify

Many iterations of the same prompt

Time program execution for scoring

C

GPT 3.5 Sample program output
Python - find the 500,000th prime number
Execution time .867 seconds

```python
def sieve_of_eratosthenes(n):
        primes = [True] * (n+1)
        primes[0] = primes[1] = False

        p = 2
        while p**2 <= n:
                if primes[p]:
                        for i in range(p**2, n+1, p):
                                primes[i] = False
                p += 1

        return [num for num, is_prime in enumerate(primes) if is_prime]

n = 500000
primes = sieve_of_eratosthenes(7368788)  # Approximate size determined by prime number theorem
print(f"The {n}th prime number is: {primes[n-1]}")
```


Eratosthenes

Results (Program V2 09/18/23)

ChatGPT Model	Prime Objective	Program Language	Cycles	Success Rate	Runtime Minimum (seconds)	Runtime Maximum (seconds)	Compile Errors	GPT Errors	Cost
3.5	500,000th	C	150	25%	.104	5.83	9%	2	$.13
3.5	500,000th	Python	150	58%	.867	87.3	NA	1	$.12
3.5	100th	C	150	91%	.002	.045	1.3%	4	$.12
3.5	100th	Python	150	88%	.015	1.15	NA	3	$.11
4	500,000th	C	25	64%	.143	2.95	8%	0	$.72
4	500,000th	Python	25	40%	.294	31.2	NA	0	$.63

Prompt: Write a (Python / C) program that calculates the (500,000th / 100th) prime number efficiently.

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