

Copilot

Sure, I'd be happy to help explain that part of the program!

The specific part you mentioned is the core of the `find_gcd` function, which uses the **Euclidean algorithm** to find the Greatest Common Divisor (GCD) of two positive integers, A and B. Let's break it down step by step:

1. **while B != 0:**

- This line starts a loop that continues as long as B is not zero. The Euclidean algorithm relies on repeatedly applying the modulo operation until one of the numbers becomes zero.

2. **temp = B:**

- Here, the current value of B is stored in a temporary variable `temp`. This is done to preserve the value of B before it gets updated in the next step.

3. **B = A % B:**

- This line updates the value of B to be the remainder of the division of A by B (`A % B`). The modulo operation finds the remainder when A is divided by B. This step is crucial in the Euclidean algorithm as it reduces the problem size.

4. **A = temp:**

- The value of A is then updated to the value stored in `temp` (which is the old value of B). This effectively swaps the roles of A and B for the next iteration of the loop.

The loop continues until B becomes zero. At that point, A contains the GCD of the original values of A and B.

Context in the Whole Program

- **Function Definition:**

- The `find_gcd` function is defined to take two arguments, A and B, and returns their GCD using the Euclidean algorithm.

- **Main Function:**

- In the main function, two integers A and B are defined (56 and 98 in this case).
- The `find_gcd` function is called with these values, and the result is stored in the variable `gcd`.
- The result is then printed to the console.

Example Walkthrough

Let's walk through an example with A = 56 and B = 98:

1. Initial values: A = 56, B = 98

2. First iteration:

- `temp = 98`
- `B = 56 % 98 = 56`
- `A = 98`

3. Second iteration:

- `temp = 56`
- `B = 98 % 56 = 42`
- `A = 56`

4. Third iteration:

- `temp = 42`
- `B = 56 % 42 = 14`
- `A = 42`

5. Fourth iteration:

- $\text{temp} = 14$
- $B = 42 \% 14 = 0$
- $A = 14$

At this point, B is 0, so the loop exits, and the function returns A, which is 14. Therefore, the GCD of 56 and 98 is 14.

I hope this helps! If you have any more questions or need further clarification, feel free to ask.