

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. Here's a detailed explanation of that part:

```
while B != 0:
    temp = B
    B = A % B
    A = temp
```

Step-by-Step Explanation:

1. Loop Condition (`while B != 0`):

- The loop continues to execute as long as B is not zero. The Euclidean algorithm works by repeatedly replacing the larger number by the remainder of the division of the larger number by the smaller number until the remainder is zero.

2. Temporary Variable (`temp = B`):

- 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. Update B (`B = A % B`):

- B is updated to the remainder of the division of A by B (`A % B`). This step effectively reduces the problem size by replacing the larger number with the remainder.

4. Update A (`A = temp`):

- A is updated to the value of `temp`, which is the old value of B. This step completes the swap, preparing for the next iteration of the loop.

Context in the Whole Program:

• Function Definition (`find_gcd`):

- The `find_gcd` function takes two positive integers A and B as input and returns their GCD. The specific part you mentioned is the main logic of this function.

• Main Function (`main`):

- 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 two integers, and the result (GCD) 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. First Iteration:

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

2. Second Iteration:

- $\text{temp} = 56$
- $B = 98 \% 56 = 42$
- $A = 56$

3. Third Iteration:

- $\text{temp} = 42$
- $B = 56 \% 42 = 14$
- $A = 42$

4. Fourth Iteration:

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

At this point, B becomes 0, and the loop terminates. The value of A (which is 14) is the GCD of 56 and 98.

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