ALA 1: Debugging Detective

Given Problem:

Prime Range Analyzer:

(Given Code):

```
print("Prime Range Analyzer")
start = int(input("Enter start: "))
end = int(input("Enter end: "))
num = start
prime_count = 0
while num <= end:
i = 2
flag = 0
while i < num:
  if num % i == 0:
    flag = 1
 i = i + 1
if flag == 0:
  print("Prime:", num)
  prime_count = prime_count + 1
  num = num + 1
print("Total primes:", prime_count
if prime_count > 10:
  print("Many primes")
else:
  print("Few primes")
```

Errors:

1. Syntax - Indentation Error:
Line(7)

```
while num <= end:
 i = 2
flag = 0
```

Fix;

```
while num <= end:
    i = 2
   flag  = 0
```

Result: Now both " i = 2" and "flag = 0" are a part of the while loop

2. Conditional - Doesn't accept Num<1:
Line(9)

```
while i < num:
  if num % i == 0:
   flag = 1
```

Fix:

```
while i < num:

  i = 2
  flag = 0
  if num <= 1:
    flag = 1
```

Result: Now it accepts numbers below 0 too.

3. **Syntax -** Indentation Error:

Line(12)

```
while i < num:
  if num % i == 0:
    flag = 1
  i = i + 1
```

Fix:

```
while i < num:
  if num % i == 0:
    flag = 1
  i = i + 1
```

Result: Now "i = i+1" is a part of while loop

4. **Logic**: Adding break statement:
(Same Line as above):

Fix:
```
while i < num:
  if num % i == 0:
    flag = 1
    break
  i = i + 1
```

Result: Avoids repetition.

5. **Syntax**: Incomplete Bracket

Line(17)
```
print("Total primes:", prime_count
```

Fix:

```
print("Total primes:", prime_count)
```

Fixed Code:

```
print("Prime Range Analyzer")

start = int(input("Enter start: "))
end = int(input("Enter end: "))

num = start
prime_count = 0

while num <= end:

    i = 2
    flag = 0

    if num <= 1:
        flag = 1

    while i < num:
        if num % i == 0:
            flag = 1
            break
        i = i + 1

    if flag == 0:
        print("Prime:", num)
        prime_count = prime_count + 1

    num = num + 1

print("Total primes:", prime_count)

if prime_count > 10:
    print("Many primes")
else:
    print("Few primes")
```

Output:

```
Prime Range Analyzer
Enter start: 10
Enter end: 40
Prime: 11
Prime: 13
Prime: 17
Prime: 19
Prime: 23
Prime: 29
Prime: 31
Prime: 37
Total primes: 8
Few primes
```