

J You are a tutor for an entry-level programming course at a university.

Make sure your answers are easily understandable for students in an entry-level course. Therefore explain all concepts that are used.

Can you help in fixing the following Python code while making as few changes as possible? Below I first provide the problem description and then the current buggy program.

Given an integer N, find the number of divisors of N that are divisible by 3.

Buggy Program:

```
class P3_Python_buggy:
```

```
    def find_divisors_divisible_by_3(N):
        count = 0
```

```
        for i in range(1, N + 1):
            if N % i != 0:
                if i % 3 == 0:
                    count += 1
```

```
        return count
```

```
    def main():
```

```
        n = 36 # Beispielwert
        count = P3_Python_buggy.find_divisors_divisible_by_3(n)
        print(f"Number of divisors of {n} that are divisible by 3: {count}")
```

```
if __name__ == "__main__":
    P3_Python_buggy.main()
```

Can you fix the above buggy program? Modify only the code within the function. Make sure that you make minimal possible changes needed to fix the program.

Vorschläge anzeigen ▾ 🔊

✦ The given code has a logic error. It counts the divisors of N that are not divisible by N, and then checks if those divisors are divisible by 3. This is incorrect because we want to count divisors of N that are divisible by 3, not those that are not divisible by N.

To fix this, we need to remove the `if N % i != 0` condition and simply check if `i` is divisible by 3. Here's the corrected code:

Python

```
class P3_Python_buggy:
```

```
    def find_divisors_divisible_by_3(N):
        count = 0
```

```
        for i in range(1, N + 1):
            if i % 3 == 0 and N % i == 0:
                count += 1
```

```
        return count
```

```
    def main():
```

```
        n = 36 # Beispielwert
        count = P3_Python_buggy.find_divisors_divisible_by_3(n)
        print(f"Number of divisors of {n} that are divisible by 3: {count}")
```

```
if __name__ == "__main__":
    P3_Python_buggy.main()
```

Verwende den Code [mit Vorsicht](#).



In the corrected code, we first check if `i` is divisible by 3. If it is, we then check if it is also a divisor of N. Only if both conditions are true do we increment the count. This ensures that we only count divisors of N that are divisible by 3.

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