Ternary Operator in Python: Short and Sweet Decisions

Hey Python wizards! Today, we're exploring the **Ternary Operator**—a slick one-liner for making choices. It's like an `if-else` statement shrunk down to fit in an expression. We'll:

- Learn its syntax.
- Compare it to `if-else`.
- Play with examples and challenges!

Run the cells, tweak the code, and try it out—let's make decisions the concise way!

What's the Ternary Operator?

The **ternary operator** lets you write a conditional expression in one line. It's called "ternary" because it has three parts:

- Syntax: `value_if_true if condition else value_if_false`
- Think of it as: "Do this if true, otherwise do that."

It's perfect for quick decisions—faster to write and read than a full `if-else`!

```
# Example 1: Simple Ternary
age = 20
status = "Adult" if age >= 18 else "Minor"
print(status)  # "Adult"
```

```
Adult
```

```
# Compare to If-Else
if age >= 18:
    status = "Adult"
else:
    status = "Minor"
print(status)  # Same result, more lines!
```

```
# Example 2: Numeric Decision
score = 85
result = "Pass" if score >= 70 else "Fail"
print(f"Score {score}: {result}")
```

```
Score 85: Pass
```

```
# Challenge: Your first ternary!
your_age = int(input("Enter your age: "))
message = "Vote!" if your_age >= 18 else "Wait!"
print(message)
```

```
Enter your age: 50
Vote!
```

Ternary with Multiple Conditions

You can chain ternaries (like `elif`) or use logical operators (`and`, `or`). Let's see it in action!

```
# Example 1: Chained Ternary (like if-elif-else)
temp = 25
weather = "Hot" if temp > 30 else "Nice" if temp > 20 else "Cold"
print(f"Temp {temp}: {weather}")
```

```
Temp 25: Nice
```

```
# Example 2: With Logical Operators
speed = 65
limit = 60
warning = "Speeding" if speed > limit else "Safe"
print(warning)
```

```
Speeding
```

```
# Using and/or
is_raining = False
mood = "Great" if temp > 20 and not is_raining else "Meh"
print(f"Mood: {mood}")
```

```
Mood: Great
```

```
# Challenge: Chain your own!
your_score = int(input("Enter your score (0-100): "))
grade = "A" if your_score >= 90 else "B" if your_score >= 80 else "C or below"
print(f"Your grade: {grade}")

```

Ternary in Expressions

The ternary operator shines inside expressions—like calculations or strings. It's not just for assignments!

```
# Example 1: Inside a Calculation
x = 10
adjusted = x + (5 if x > 0 else -5)
print(f"Adjusted x: {adjusted}")  # 15
```

```
Adjusted x: 15
```

```
# Example 2: In a String
name = "Alice"
greeting = f"Hi, {name if name else 'Guest'}!"
print(greeting)  # "Hi, Alice!"
```

```
# Example 3: With Loops
numbers = [1, -2, 3, -4]
positives = [num if num > 0 else 0 for num in numbers]
print("Negatives to 0:", positives)  # [1, 0, 3, 0]

```

```
# Challenge: Express yourself!
your_num = int(input("Enter a number: "))
result = your_num * (2 if your_num > 0 else 3)
print(f"Result: {result}")
# Try adding it to a string or list comprehension!
```

When to Use the Ternary Operator?

- **Use it**: For simple, one-line decisions (e.g., assignments, expressions).
- **Avoid it**: For complex logic—stick to `if-else` for readability.

It's all about keeping code clean and quick—Python's style (Page 2 of our notes)!

```
# Practical Example: Discount Calculator
price = 100
is_member = input("Are you a member? (yes/no): ").lower() == "yes"
final_price = price * (0.9 if is_member else 1.0)  # 10% off for members
print(f"Final price: ${final_price}")
```

```
Start coding or generate with AI.
```