

AI ASSISTANT CODING

ASSIGNMENT-7.3

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Batch:05

Task-01: Fixing Syntax Errors

Identification of error:



The screenshot shows a code editor with a Python function definition. The code is:

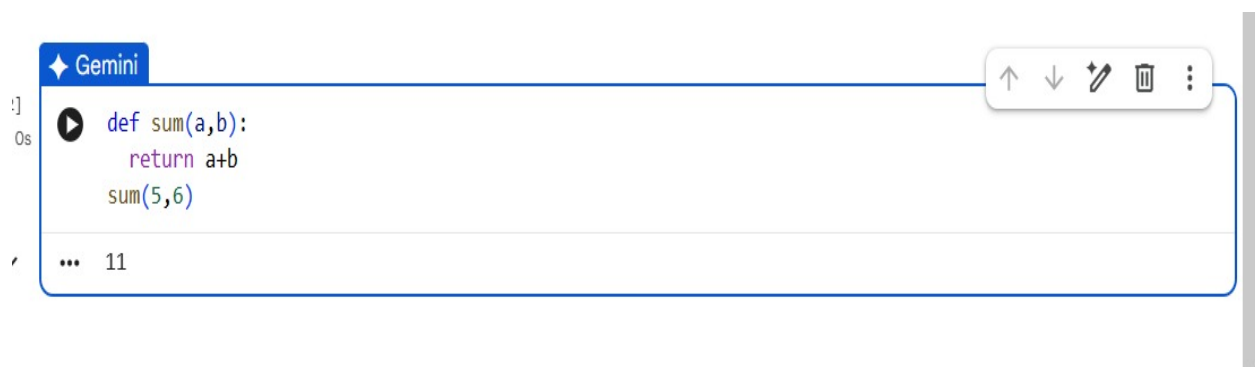
```
[1] def sum(a,b)
    return a+b
    sum(5,6)
```

The error message is:

```
... File "/tmp/ipython-input-2461189405.py", line 1
      def sum(a,b)
              ^
SyntaxError: expected ':'
```

Next steps: [Explain error](#)

Fixing Error:



The screenshot shows the same code editor with the corrected Python function definition. The code is:

```
[1] def sum(a,b):
    return a+b
    sum(5,6)
```

The error message is now:

```
... 11
```

Explanation of Error:

Please explain this error:

 **SyntaxError:** expected ':'

The error 'SyntaxError: expected ':' indicates that a colon is missing after the parameter list in the `def sum(a,b)` line. In Python, function definitions require a colon after the parentheses enclosing the parameters. I've updated the code to include the missing colon.



EXPLANATION:

- A Python function named `add(a, b)` is created to perform addition.
- The function definition initially has a syntax error because the colon (:) is missing.
- When the program is executed, Python raises a syntax error.
- The AI tool analyzes the code and identifies the missing colon as the issue.
- The function definition is corrected by adding the required colon.
- The corrected function follows proper Python syntax rules.
- The function executes successfully and returns the correct result.

Task-02: Debugging Logic Errors in Loops

Identification of Error:

```
Gemini
def count_down(n):
    while(n>=0):
        print(n)
        n+=1
    count_down(10)
```

identify why i am getting infinite loop

```
def count_down(n):
```

The code `count_down(n)` in cell `idszBEVuBTL5` is causing an infinite loop because inside the `while` loop, the value of `n` is increasing with `n += 1`.

Fixing Error:

```
def count_down(n):
    while(n>=0):
        print(n)
        n-=1
    count_down(10)
```

```
... 10
      9
      8
      7
      6
      5
      4
      3
      2
      1
      0
```

Explanation:

- A loop is written with a logical error in its increment/decrement statement.
- Due to this mistake, the loop condition never becomes false, causing infinite execution.
- When the program is run, the loop continues indefinitely without termination.

- The AI tool analyzes the loop condition and identifies the incorrect increment/decrement logic.
- The loop logic is corrected so that the loop control variable moves toward the terminating condition.
- After correction, the loop executes a finite number of times.
- The infinite loop issue is resolved, and the program behaves as expected.

Task-03: Handling Runtime Errors (Division by Zero)

Identification of Error:

```
def divide(a,b):  
    return a/b  
print(divide(10,0))  
  
-----  
ZeroDivisionError                                Traceback (most recent call last)  
/tmp/ipython-input-3986490526.py in <cell line: 0>()  
      1 def divide(a,b):  
      2     return a/b  
----> 3 print(divide(10,0))  
  
/tmp/ipython-input-3986490526.py in divide(a, b)  
      1 def divide(a,b):  
----> 2     return a/b  
      3 print(divide(10,0))  
  
ZeroDivisionError: division by zero
```

Next steps: [Explain error](#)

Explanation of Error:

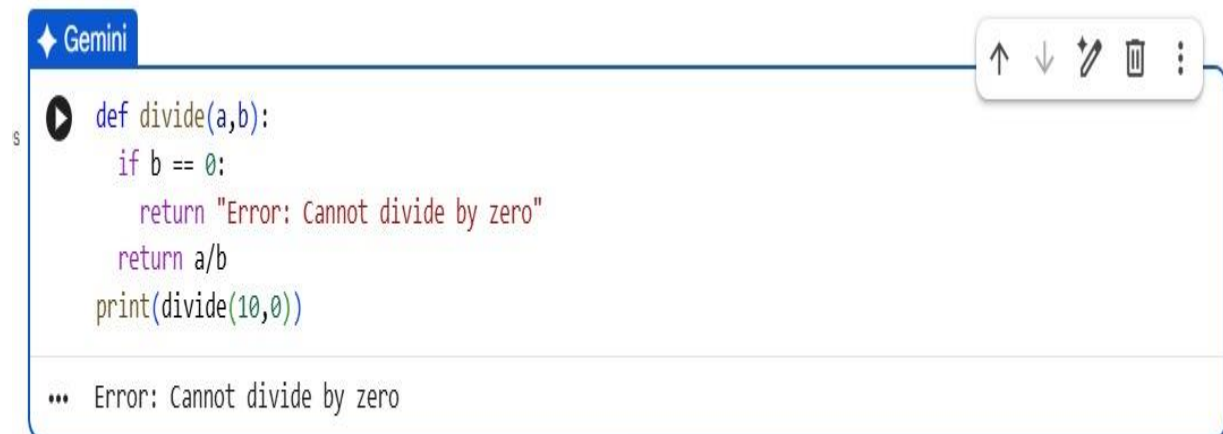
Please explain this error:

ZeroDivisionError: division by zero

The error **ZeroDivisionError: division by zero** occurs because you are trying to divide the number 10 by 0, which is not mathematically allowed. To prevent this, you can add a check for the divisor before performing the division. I've updated the code to handle this scenario.

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Fixing Error:



The screenshot shows a Gemini AI chat window. The code being executed is a Python function `divide(a,b)` that checks if `b` is zero. If `b` is zero, it returns the string "Error: Cannot divide by zero". Otherwise, it returns `a/b`. The function is called with `print(divide(10,0))`. The output shows a runtime error: `... Error: Cannot divide by zero`.

```
def divide(a,b):  
    if b == 0:  
        return "Error: Cannot divide by zero"  
    return a/b  
print(divide(10,0))
```

... Error: Cannot divide by zero

EXPLANATION:

- A Python function is defined to perform division of two numbers without input validation.
- When the divisor value is zero, the function crashes during execution.
- Python raises a runtime error called `ZeroDivisionError`.
- The AI tool analyzes the error and identifies division by zero as the cause.
- A try-except block is added to handle the division operation safely.
- The try block performs the division, and the except block catches the runtime error.
- The function now executes without crashing and handles division by zero gracefully.

Task-04: Debugging Class Definition Errors

Identification of Error:

```
class Rectangle:
    def __init__(length,width):
        self.length = length
        self.width = width
    def area(self):
        return self.length * self.width
print(Rectangle(5,6).area())
```

Traceback (most recent call last)

```
/tmp/ipython-input-1857360067.py in <cell line: 0>()
      5 def area(self):
      6     return self.length * self.width
----> 7 print(Rectangle(5,6).area())

TypeError: Rectangle.__init__() takes 2 positional arguments but 3 were given
```

Next steps: [Explain error](#)

Explanation of Error:

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◆ Gemini

```
[2] class Rectangle:
    - def __init__(length,width):
    + def __init__(self,length,width):
        self.length = length
        self.width = width
    def area(self):
        return self.length * self.width
print(Rectangle(5,6).area())
```

Traceback (most recent call last)

```
/tmp/ipython-input-1857360067.py in <cell line: 0>()
      5 def area(self):
      6     return self.length * self.width
----> 7 print(Rectangle(5,6).area())

TypeError: Rectangle.__init__() takes 2 positional arguments but 3 were given
```

Next steps: [Explain error](#)

Release notes Gemini X

⚠ **TypeError: Rectangle.__init__() takes 2 positional argumer**

◆ The error `TypeError: Rectangle.__init__() takes 2 positional arguments but 3 were given` means that the `__init__` method of your `Rectangle` class is missing the `self` parameter. All instance methods in Python, including `__init__`, automatically receive the instance itself as their first argument. You called `Rectangle(5, 6)`, which implicitly passes the instance object, plus `5` and `6`, making it three arguments in total for a method defined to accept only two (`length` and `width`). I've updated the `__init__` method definition to include `self` as its first parameter.

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▶ Accept & Run ✓ Accept ✕ Cancel

[class Rectangle: X](#)

Fixing Error:



```
class Rectangle:
    def __init__(self,length,width):
        self.length = length
        self.width = width
    def area(self):
        return self.length * self.width
print(Rectangle(5,6).area())
```

... 30

EXPLANATION:

- A Python class is defined with a constructor method `__init__()` that is missing the `self` parameter.
- When an object of the class is created, Python raises an error due to the incorrect constructor definition.
- The AI tool analyzes the class and identifies the missing `self` parameter as the issue.
- The constructor is corrected by adding `self` as the first parameter in the `__init__()` method.
- The `self` parameter allows instance variables to be associated with the current object.
- After correction, the class initializes objects properly.
- The corrected class follows object-oriented programming principles and works as expected.

Task-05: Resolving Index Errors in Lists

Identification of Error:

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```
numbers=[1,2,3]
print(numbers[5])
```


IndexError Traceback (most recent call last)
/tmp/ipython-input-3809996345.py in <cell line: 0>()
 1 numbers=[1,2,3]
----> 2 print(numbers[5])

IndexError: list index out of range

Next steps: [Explain error](#)

Explanation of Error:

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▶

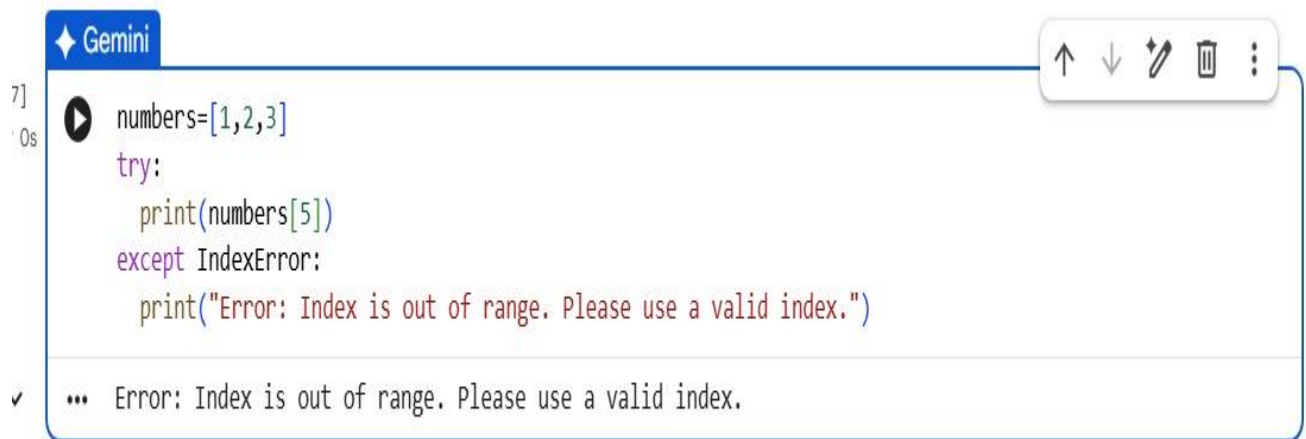
```
numbers=[1,2,3]
-print(numbers[5])
+try:
+  print(numbers[5])
+except IndexError:
+  print("Error: Index is out of range. Please use a valid index.")
```


IndexError Traceback (most recent call last)
/tmp/ipython-input-3809996345.py in <cell line: 0>()
 1 numbers=[1,2,3]
----> 2 print(numbers[5])

IndexError: list index out of range

Next steps: [Explain error](#)

Fixing Error:



The screenshot shows a Gemini AI chat window. At the top, there's a blue header with the Gemini logo. Below it, a code editor displays a Python snippet: `numbers=[1,2,3]`, `try:`, `print(numbers[5])`, `except IndexError:`, and `print("Error: Index is out of range. Please use a valid index.")`. The code is color-coded. To the right of the code editor is a toolbar with icons for up, down, copy, delete, and a menu. Below the code editor, the output of the execution is shown: `... Error: Index is out of range. Please use a valid index.`. The output is preceded by a checkmark icon.

```
7] 0s numbers=[1,2,3]
try:
    print(numbers[5])
except IndexError:
    print("Error: Index is out of range. Please use a valid index.")

... Error: Index is out of range. Please use a valid index.
```

EXPLANATION:

- A Python program attempts to access a list element using an index that is out of range.
- When the program is executed, Python raises an `IndexError`.
- The AI tool analyzes the code and identifies the invalid index access as the cause of the error.
- The AI suggests using safe access methods such as bounds checking or exception handling.
- Bounds checking ensures the index is within the valid range before accessing the list.
- Alternatively, a try-except block is used to catch the `IndexError`.
- After applying safe access logic, the program executes without crashing.
- The index error is successfully resolved, and list access becomes safe.

