

# 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 interface with a Python script. The script contains a function definition and a call to it. A red error indicator is present on the line where the function is defined. The error message is: "SyntaxError: expected ':'".

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

  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 after the error has been fixed. The red error indicator is gone, and the code runs successfully.

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

  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 of code:

### 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:

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

```
s  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
```

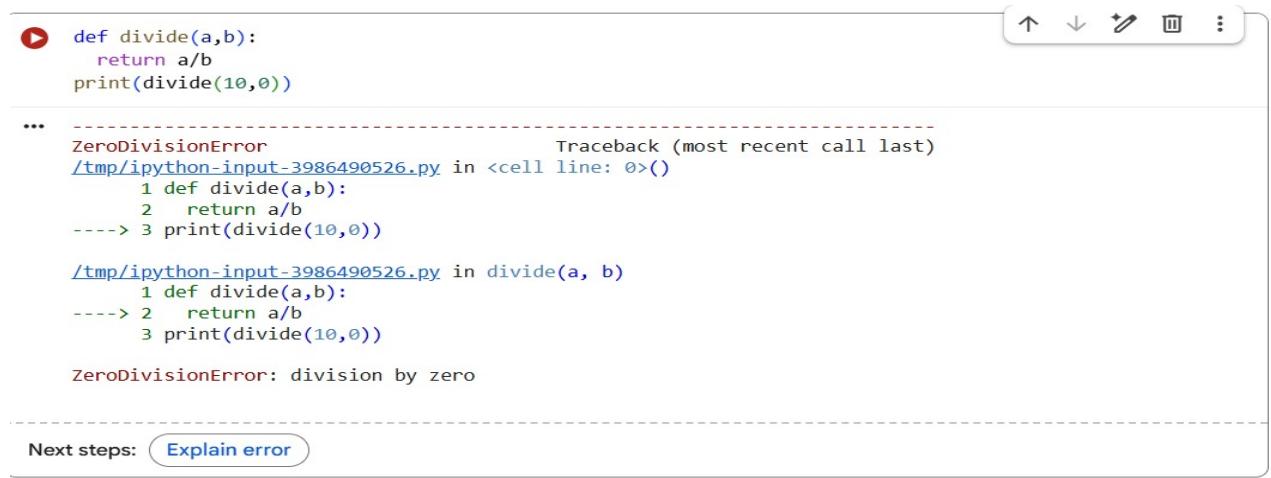
## Explanation of Code:

- 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:



The screenshot shows a Jupyter Notebook cell with the following code:

```
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:

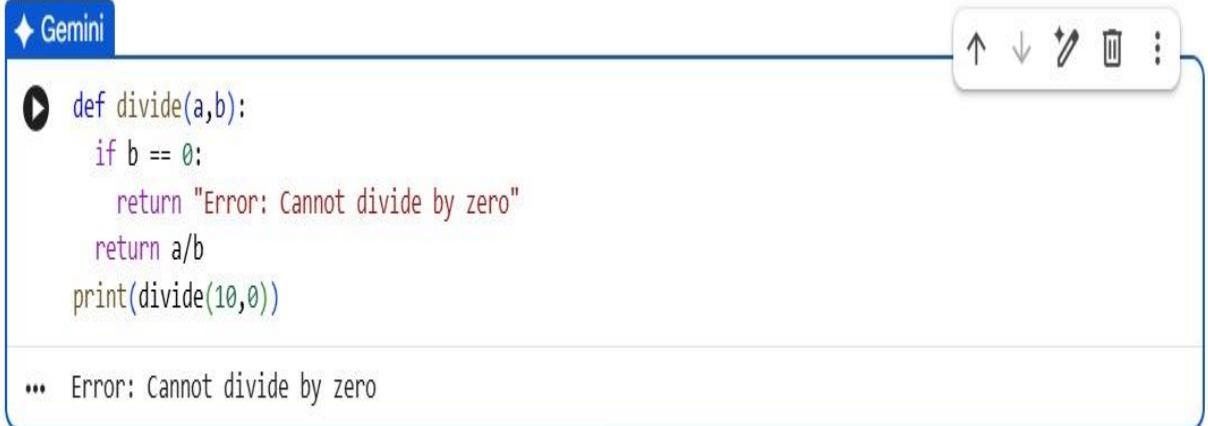
Please explain this error:

 `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.



## Fixing Error:



The screenshot shows a code editor window titled "Gemini". The code defines a function "divide" that checks if the divisor "b" is zero. If it is, it returns an error message. Otherwise, it returns the result of the division. A call to "print(divide(10,0))" is made at the bottom. The output of the execution is shown below the code, indicating that the program crashed with the error message "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:

A screenshot of a code editor window. The code defines a `Rectangle` class with `__init__` and `area` methods. A `TypeError` is raised when trying to print the area of a rectangle with three arguments. The error message is: `TypeError: Rectangle.__init__() takes 2 positional arguments but 3 were given`. Below the code, there is a button labeled "Explain 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())

...
TypeError
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:

A screenshot of a code editor window with a sidebar for "Gemini" AI. The sidebar shows a "Release notes" section with an explanation of the `TypeError`. It states that the `__init__` method is missing the `self` parameter and that the method definition was updated to include it. There are buttons for "Accept & Run", "Accept", and "Cancel".

The code editor shows the same Python script as before, with the `__init__` method highlighted in red and the new definition highlighted in green. The error message is identical.

```
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())

...
TypeError
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
```

# Fixing Error:

The screenshot shows the Gemini AI interface with a code editor window. The title bar says "Gemini". The code editor contains the following Python script:

```
s ◁ 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:

```
▶ 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:

```
◆ Gemini
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 the Gemini AI interface. At the top, there's a header with a play button icon and the word "Gemini". To the right is a toolbar with icons for up, down, edit, delete, and more. Below the header, the code editor contains the following Python code:

```
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.
```

The code attempts to print the element at index 5 of a list containing [1, 2, 3]. Since lists are zero-indexed, this is out of range. A try-except block catches the IndexError and prints an error message. The AI tool has analyzed this and identified the error.

## 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.

