# .ASSIGNMENT-7.3.

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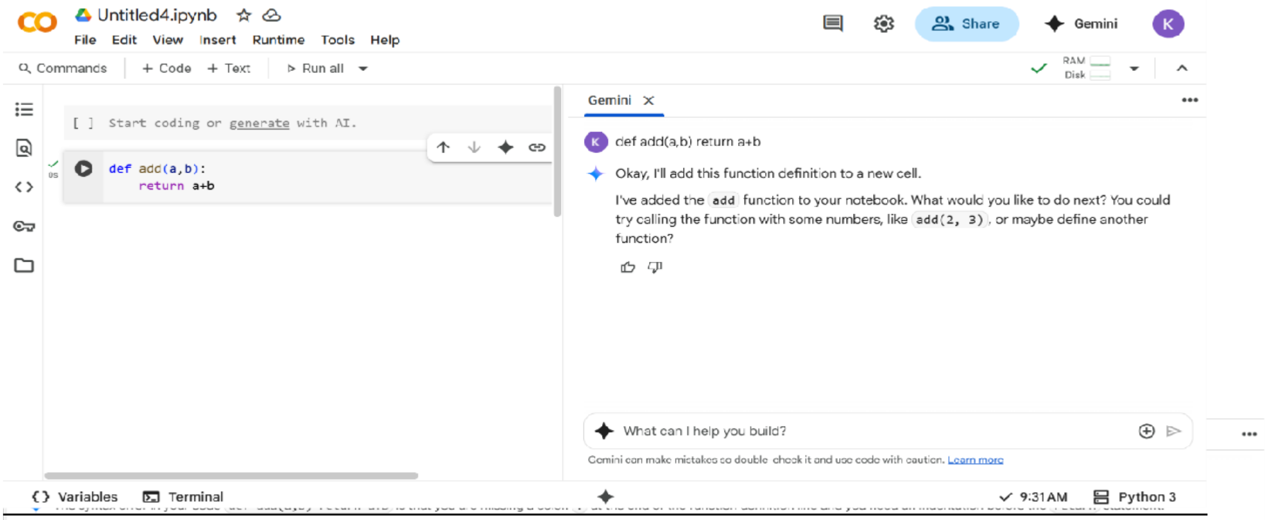
## Task 1:

```python
def add(a, b)
    return a + b
```

## Code and Output:



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Variables
Terminal
9:31 AM
Python 3

```python
def add(a,b):
    return a+b
```

Gemini

def add(a,b) return a+b

Okay, I'll add this function definition to a new cell.

I've added the `add` function to your notebook. What would you like to do next? You could try calling the function with some numbers, like `add(2, 3)`, or maybe define another function?

What can I help you build?

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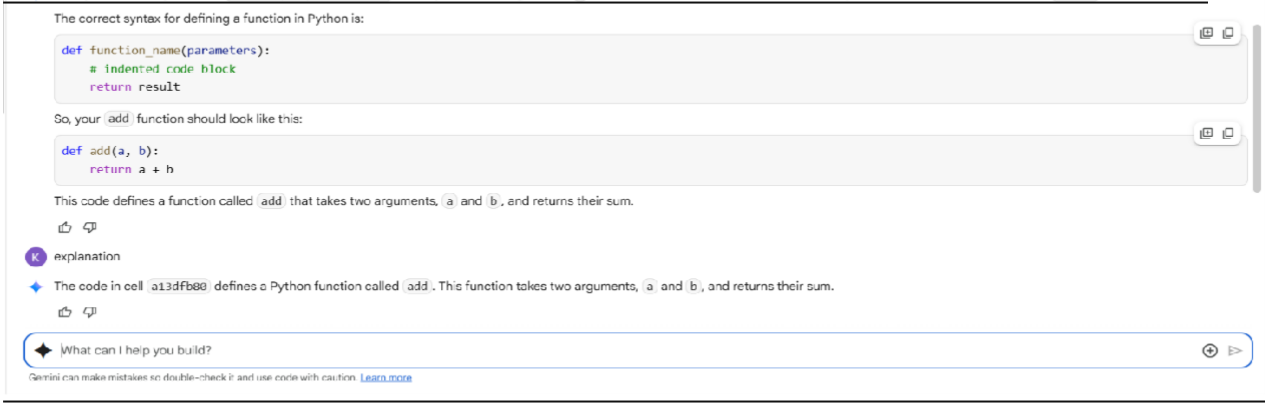

The correct syntax for defining a function in Python is:

```python
def function_name(parameters):
    # indented code block
    return result
```

So, your `add` function should look like this:

```python
def add(a, b):
    return a + b
```

This code defines a function called `add` that takes two arguments, `a` and `b`, and returns their sum.

explanation

The code in cell `a13dfb88` defines a Python function called `add`. This function takes two arguments, `a` and `b`, and returns their sum.

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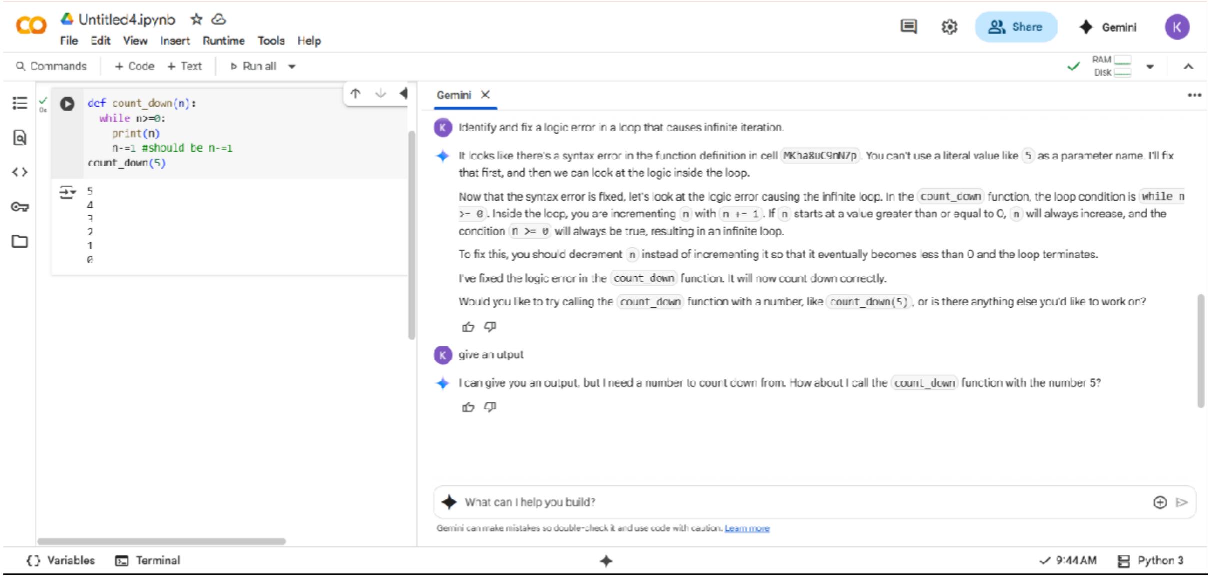
## Task 2:

```python
def count_down(n):
    while n >= 0:
        print(n)
        n += 1  # Should be n -= 1
```

Identify and fix a logic error in a loop that causes infinite iteration.

## Code and Output:



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```
def count_down(n):
  while n>=0:
    print(n)
    n-=1 #should be n-=1
count_down(5)
```

```
5
4
3
2
1
0
```

Identify and fix a logic error in a loop that causes infinite iteration.

It looks like there's a syntax error in the function definition in cell `MKha8uC9nN7p`. You can't use a literal value like `5` as a parameter name. I'll fix that first, and then we can look at the logic inside the loop.

Now that the syntax error is fixed, let's look at the logic error causing the infinite loop. In the `count_down` function, the loop condition is `while n >= 0`. Inside the loop, you are incrementing `n` with `n += 1`. If `n` starts at a value greater than or equal to 0, `n` will always increase, and the condition `n >= 0` will always be true, resulting in an infinite loop.

To fix this, you should decrement `n` instead of incrementing it so that it eventually becomes less than 0 and the loop terminates.

I've fixed the logic error in the `count_down` function. It will now count down correctly.

Would you like to try calling the `count_down` function with a number, like `count_down(5)`, or is there anything else you'd like to work on?

give an utput

I can give you an output, but I need a number to count down from. How about I call the `count_down` function with the number 5?

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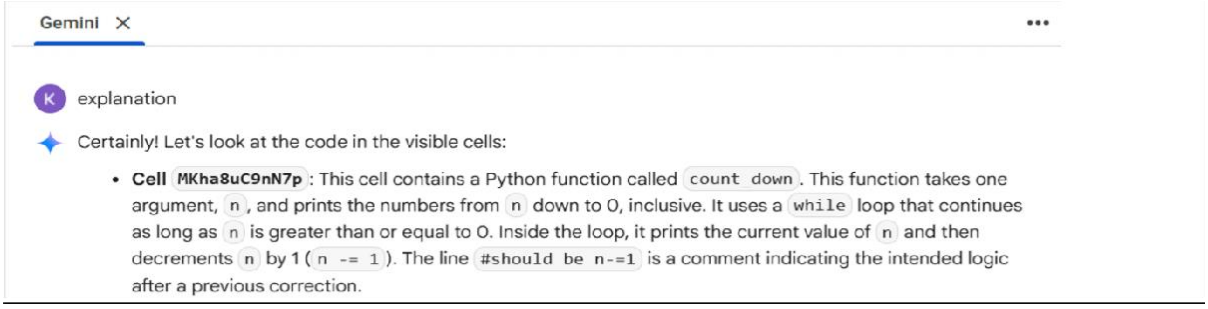
Terminal
9:44 AM
Python 3

## Explanation:



explanation

Certainly! Let's look at the code in the visible cells:

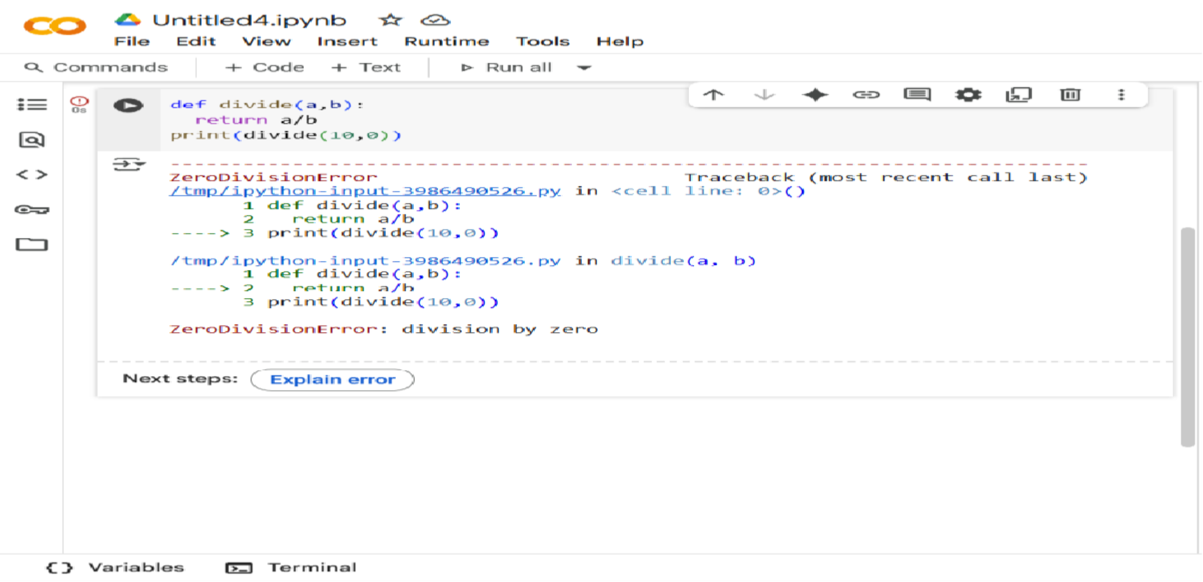
- **Cell** `MKha8uC9nN7p`: This cell contains a Python function called `count_down`. This function takes one argument, `n`, and prints the numbers from `n` down to 0, inclusive. It uses a `while` loop that continues as long as `n` is greater than or equal to 0. Inside the loop, it prints the current value of `n` and then decrements `n` by 1 (`n -= 1`). The line `#should be n-=1` is a comment indicating the intended logic after a previous correction.

## Task 3:

```python
# Debug the following code
def divide(a, b):
    return a / b

print(divide(10, 0))
```

## Code and Output: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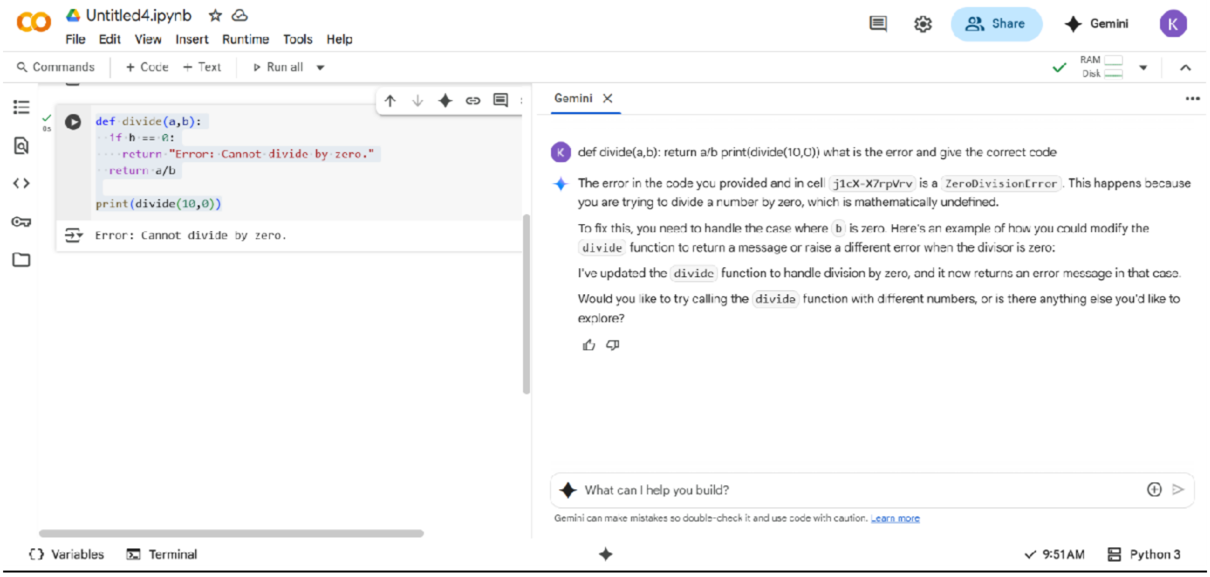
Next steps: Explain error
Variables Terminal

```
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
```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Variables Terminal
9:51AM
Python 3

```python
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.
```

def divide(a,b): return a/b print(divide(10,0)) what is the error and give the correct code

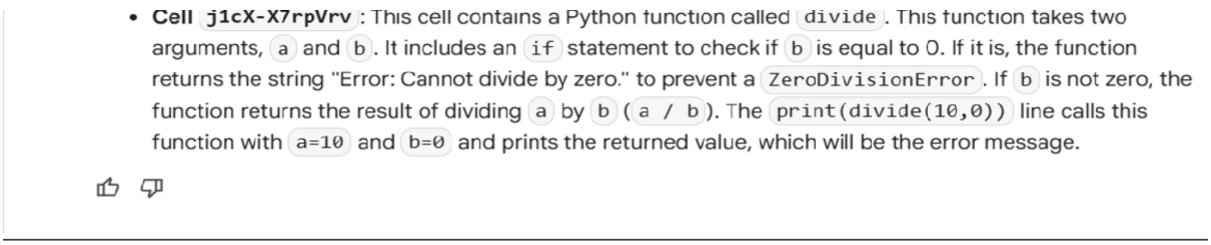
The error in the code you provided and in cell `j1cX-X7rpVrv` is a `ZeroDivisionError`. This happens because you are trying to divide a number by zero, which is mathematically undefined.

To fix this, you need to handle the case where `b` is zero. Here's an example of how you could modify the `divide` function to return a message or raise a different error when the divisor is zero:

I've updated the `divide` function to handle division by zero, and it now returns an error message in that case.

Would you like to try calling the `divide` function with different numbers, or is there anything else you'd like to explore?

## Explanation:

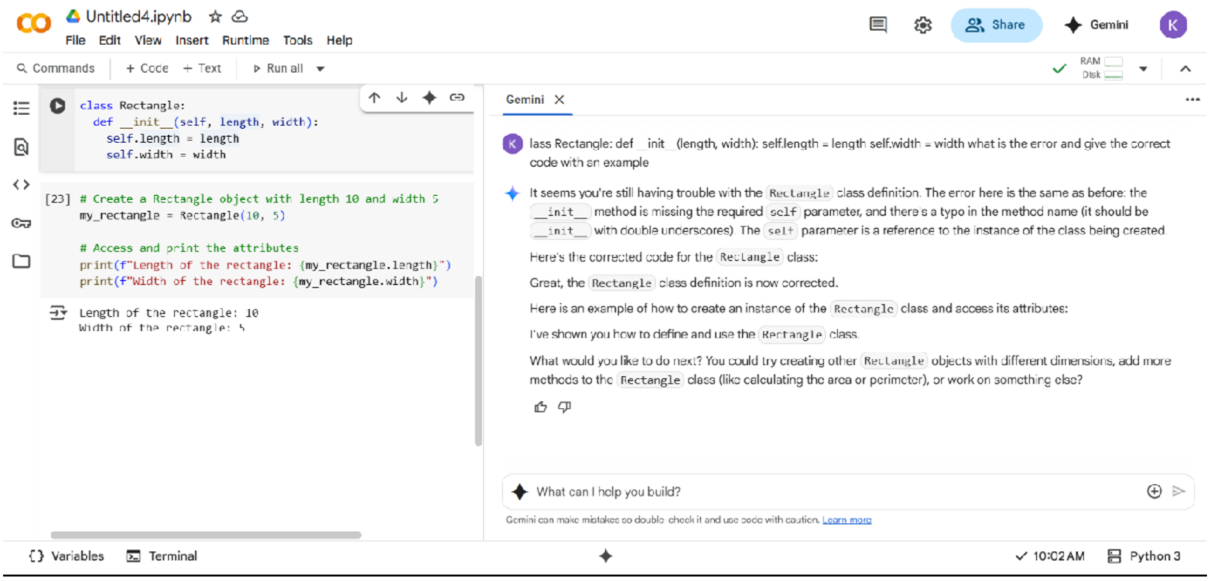


- **Cell** `j1cX-X7rpVrv`: This cell contains a Python function called `divide`. This function takes two arguments, `a` and `b`. It includes an `if` statement to check if `b` is equal to 0. If it is, the function returns the string "Error: Cannot divide by zero." to prevent a `ZeroDivisionError`. If `b` is not zero, the function returns the result of dividing `a` by `b` (`a / b`). The `print(divide(10,0))` line calls this function with `a=10` and `b=0` and prints the returned value, which will be the error message.

## Task 4:

```python
class Rectangle:
    def __init__(length, width):
        self.length = length
        self.width = width
```

## Code and output:



```
class Rectangle:
  def __init__(self, length, width):
    self.length = length
    self.width = width
```

```
[23] # Create a Rectangle object with length 10 and width 5
     my_rectangle = Rectangle(10, 5)

     # Access and print the attributes
     print(f"Length of the rectangle: {my_rectangle.length}")
     print(f"Width of the rectangle: {my_rectangle.width}")
```

```
Length of the rectangle: 10
Width of the rectangle: 5
```

lass Rectangle: def __init__(length, width): self.length = length self.width = width what is the error and give the correct code with an example

It seems you're still having trouble with the `Rectangle` class definition. The error here is the same as before: the `__init__` method is missing the required `self` parameter, and there's a typo in the method name (it should be `__init__` with double underscores). The `self` parameter is a reference to the instance of the class being created.

Here's the corrected code for the `Rectangle` class:

Great, the `Rectangle` class definition is now corrected.

Here is an example of how to create an instance of the `Rectangle` class and access its attributes:

I've shown you how to define and use the `Rectangle` class.

What would you like to do next? You could try creating other `Rectangle` objects with different dimensions, add more methods to the `Rectangle` class (like calculating the area or perimeter), or work on something else?

What can I help you build?

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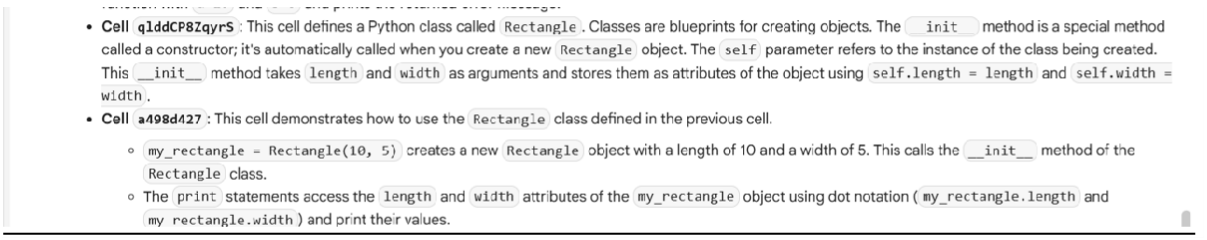
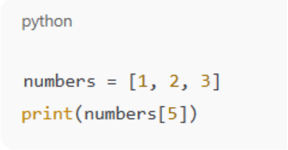
## Explanation:



- **Cell** `qlddCP8ZqyrS`: This cell defines a Python class called `Rectangle`. Classes are blueprints for creating objects. The `__init__` method is a special method called a constructor; it's automatically called when you create a new `Rectangle` object. The `self` parameter refers to the instance of the class being created. This `__init__` method takes `length` and `width` as arguments and stores them as attributes of the object using `self.length = length` and `self.width = width`.
- **Cell** `a498d427`: This cell demonstrates how to use the `Rectangle` class defined in the previous cell.
    - `my_rectangle = Rectangle(10, 5)` creates a new `Rectangle` object with a length of 10 and a width of 5. This calls the `__init__` method of the `Rectangle` class.
    - The `print` statements access the `length` and `width` attributes of the `my_rectangle` object using dot notation (`my_rectangle.length` and `my_rectangle.width`) and print their values.

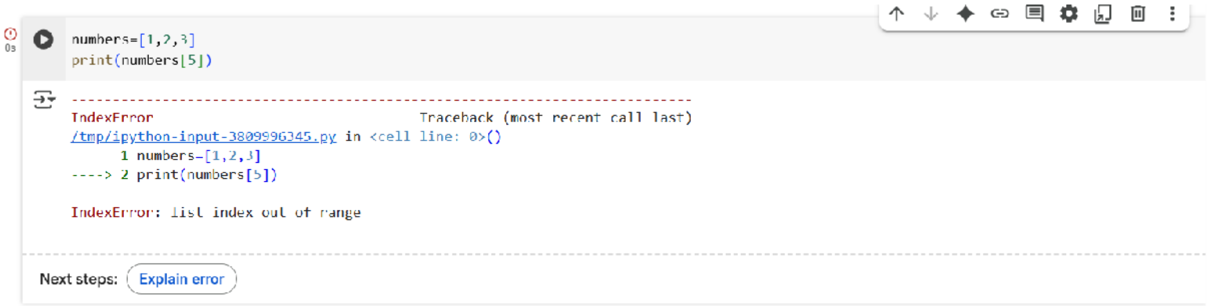
## Task 5:



python

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

## Code and Output:



```python
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
```

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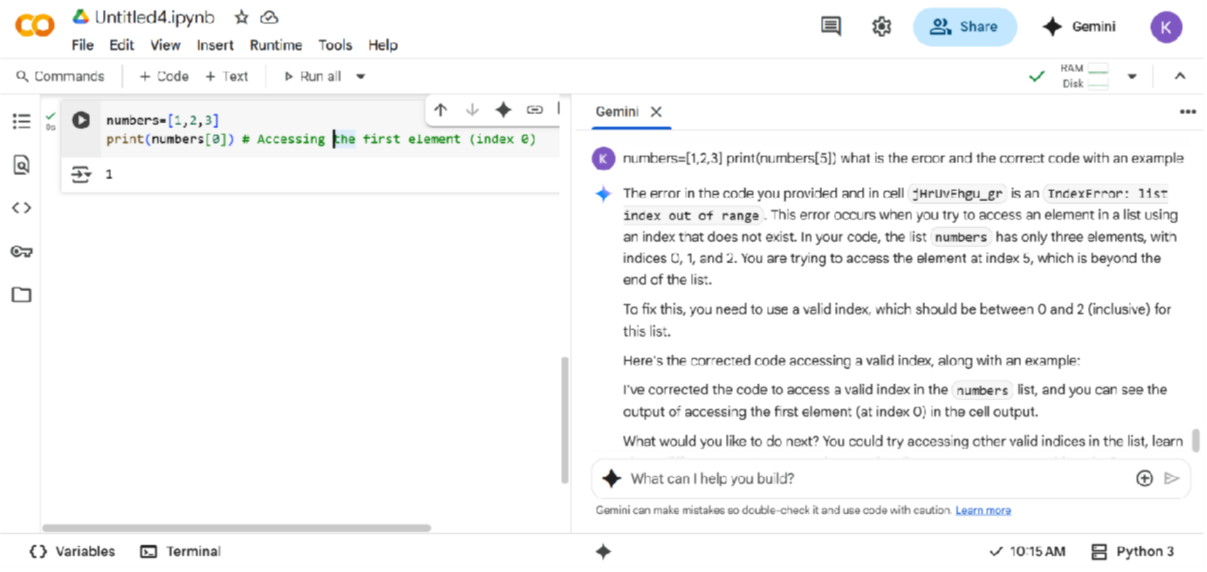

```python
numbers=[1,2,3]
print(numbers[0]) # Accessing the first element (index 0)
```

```
1
```

numbers=[1,2,3] print(numbers[5]) what is the eroor and the correct code with an example

The error in the code you provided and in cell `jHrUvEhgu_gr` is an `IndexError: list index out of range`. This error occurs when you try to access an element in a list using an index that does not exist. In your code, the list `numbers` has only three elements, with indices 0, 1, and 2. You are trying to access the element at index 5, which is beyond the end of the list.

To fix this, you need to use a valid index, which should be between 0 and 2 (inclusive) for this list.

Here's the corrected code accessing a valid index, along with an example:

I've corrected the code to access a valid index in the `numbers` list, and you can see the output of accessing the first element (at index 0) in the cell output.

What would you like to do next? You could try accessing other valid indices in the list, learn

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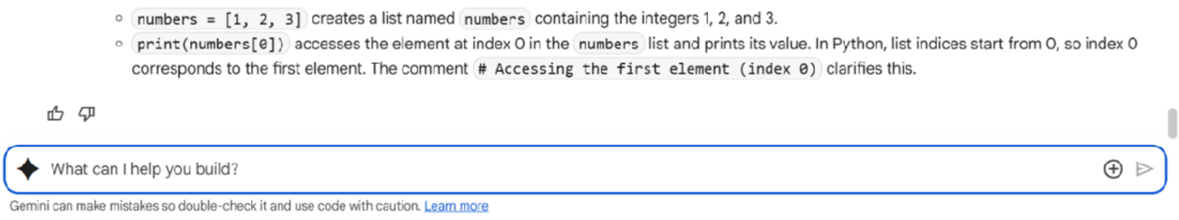
## Explanation:



- `numbers = [1, 2, 3]` creates a list named `numbers` containing the integers 1, 2, and 3.
- `print(numbers[0])` accesses the element at index 0 in the `numbers` list and prints its value. In Python, list indices start from 0, so index 0 corresponds to the first element. The comment `# Accessing the first element (index 0)` clarifies this.

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