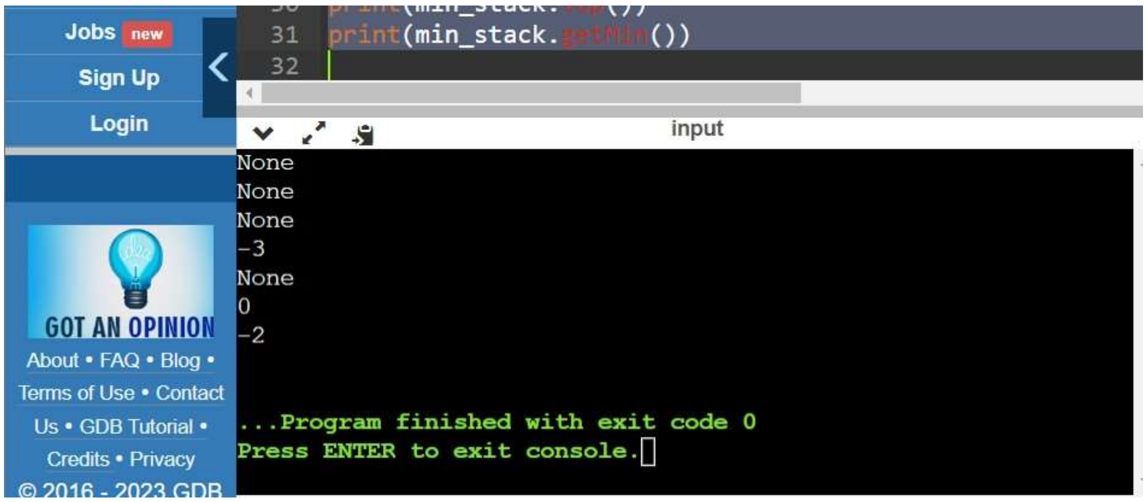
Problem 5: Implement Min Stack | O(2N) and O(N) Space Complexity.Design a stack that supports push, pop, top, and retrieving the minimum element in constant time.

```
class MinStack:
    def__init__(self):
        self.stack = []
        self.min_stack = []

    def push(self, val):
        self.stack.append(val)
        if not self.min_stack or val <= self.min_stack[-1]:
            self.min_stack.append(val)

    def pop(self):
        if self.stack:
            val = self.stack.pop()
            if val == self.min_stack[-1]:
                self.min_stack.pop()

    def top(self):
        if self.stack:
            return self.stack[-1]

    def getMin(self):
        if self.min_stack:
```

```
        return self.min_stack[-1]

min_stack = MinStack()

print(min_stack.push(-2))

print(min_stack.push(0))

print(min_stack.push(-3))

print(min_stack.getMin())

print(min_stack.pop())

print(min_stack.top())

print(min_stack.getMin())
```



```
print(min_stack.getMin())
```

```
None
None
None
-3
None
0
-2


...Program finished with exit code 0
Press ENTER to exit console.
```