Input:

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

def subtract(a, b):
    return a - b

def multiply(a, b):
    return a * b

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

def power(a, b):
    return a ** b

def get_number(prompt):
    while True:
        try:
            return float(input(prompt))
        except ValueError:
            print("Invalid input! Please enter a number.")

def get_operation():
    operations = ['+', '-', '*', '/', '^']
    while True:
        op = input("Enter operation (+, -, *, /, ^): ").strip()
        if op in operations:
            return op
        else:
            print("Invalid operation! Choose from +, -, *, /, ^.")

def calculator():
    while True:
        print("\n--- Calculator Menu ---")
        print("1. Perform a calculation")
        print("2. Exit")

        choice = input("Choose an option (1 or 2): ")
```

```
        if choice == '2':
            print("Goodbye!")
            break
        elif choice == '1':
            num1 = get_number("Enter the first number: ")
            num2 = get_number("Enter the second number: ")
            operation = get_operation()

            if operation == '+':
                result = add(num1, num2)
            elif operation == '-':
                result = subtract(num1, num2)
            elif operation == '*':
                result = multiply(num1, num2)
            elif operation == '/':
                result = divide(num1, num2)
            elif operation == '^':
                result = power(num1, num2)

            print("Result:", result)
        else:
            print("Invalid option. Please choose 1 or 2.")

calculator()
```

Output: