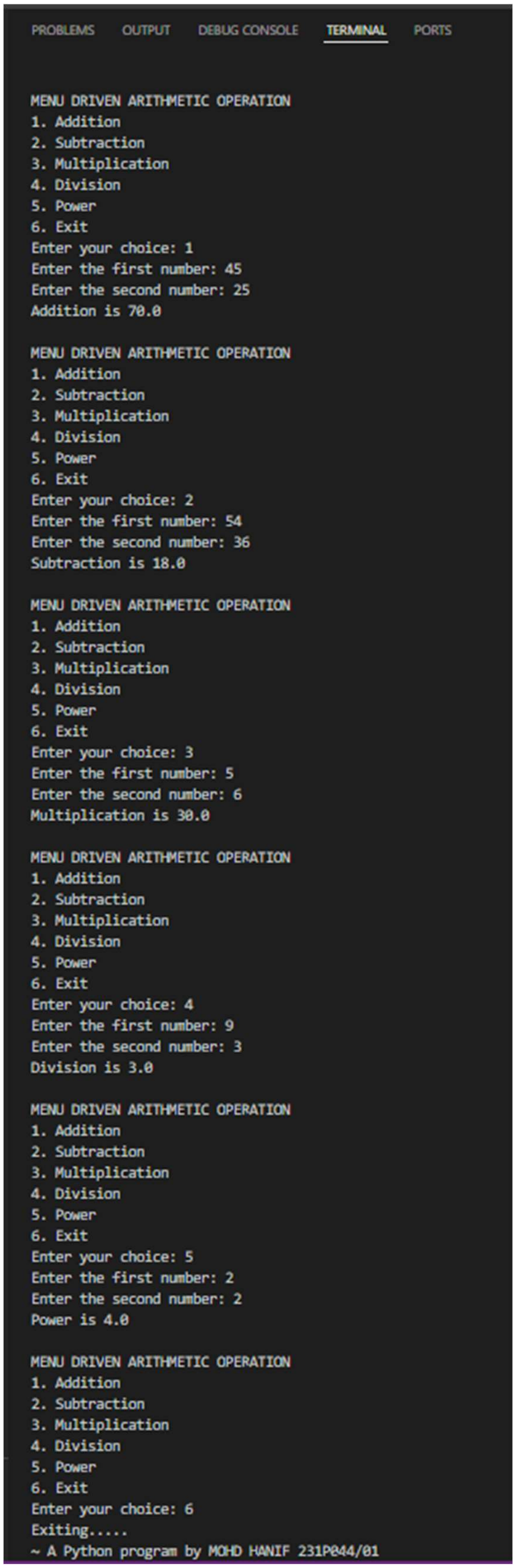
```
"""AIM: Write a program to perform menu driven arithmetic operation.
   NAME: MOHD HANIF 231P044/01"""

while True:
    print("\nMENU DRIVEN ARITHMETIC OPERATION")
    print("1. Addition")
    print("2. Subtraction")
    print("3. Multiplication")
    print("4. Division")
    print("5. Power")
    print("6. Exit")

    choice = int(input("Enter your choice: "))

    if choice == 6:
        print("Exiting.....")
        break

    if choice >= 1 and choice <= 5:
        num1 = float(input("Enter the first number: "))
        num2 = float(input("Enter the second number: "))

        if choice == 1:
            print("Addition is", num1 + num2)
        elif choice == 2:
            print("Subtraction is", num1 - num2)
        elif choice == 3:
            print("Multiplication is", num1 * num2)
        elif choice == 4:
            if num2 != 0:
                print("Division is", num1 / num2)
            else:
                print("Error: Division by zero is not allowed!")
        elif choice == 5:
            print("Power is", num1 ** num2)
    else:
        print("Invalid Choice, please try again!")
print("~ A Python program by MOHD HANIF 231P044/01")
```

OUTPUT:



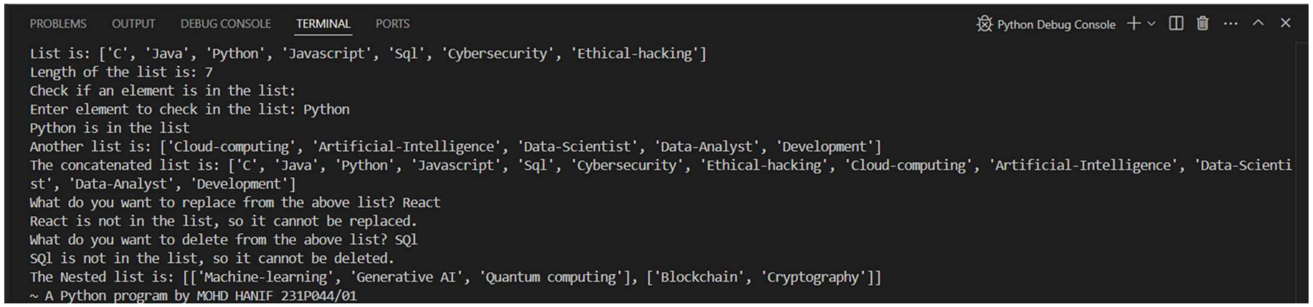
```
MENU DRIVEN ARITHMETIC OPERATION
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Power
6. Exit
Enter your choice: 1
Enter the first number: 45
Enter the second number: 25
Addition is 70.0

MENU DRIVEN ARITHMETIC OPERATION
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Power
6. Exit
Enter your choice: 2
Enter the first number: 54
Enter the second number: 36
Subtraction is 18.0

MENU DRIVEN ARITHMETIC OPERATION
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Power
6. Exit
Enter your choice: 3
Enter the first number: 5
Enter the second number: 6
Multiplication is 30.0

MENU DRIVEN ARITHMETIC OPERATION
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Power
6. Exit
Enter your choice: 4
Enter the first number: 9
Enter the second number: 3
Division is 3.0

MENU DRIVEN ARITHMETIC OPERATION
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Power
6. Exit
Enter your choice: 5
Enter the first number: 2
Enter the second number: 2
Power is 4.0

MENU DRIVEN ARITHMETIC OPERATION
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Power
6. Exit
Enter your choice: 6
Exiting.....
~ A Python program by MOHD HANIF 231P044/01
```

1b.

```
"""WAP in Python to implement the following list operations:
1. Create a list
2. Display list
3. Find length of list
4. Check if an element is in the list using control statements
5. Concatenate lists in Python
6. Replace list elements with new ones in Python
7. Delete elements from list in Python
8. Create nested lists and display elements of nested list
Name: MOHD HANIF 231P044/01
"""
# Create a list
my_list = ["C", "Java", "Python", "Javascript", "Sql", "Cybersecurity", "Ethical-hacking"
# Display the created list
print("List is:", my_list
# Find length of the list
print("Length of the list is:", len(my_list))
# Check if an element is in the list
print("Check if an element is in the list:")
check_element = input("Enter element to check in the list: ")
if check_element in my_list:
    print(f"{check_element} is in the list")
else:
    print(f"{check_element} is not in the list")
# Concatenating lists in Python
additional_list = ["Cloud-computing", "Artificial-Intelligence", "Data-Scientist", "Data-Analyst", "Development"]
```

```
print("Another list is:", additional_list
# Extend the main list with the additional list
my_list.extend(additional_list)
print("The concatenated list is:", my_list)
# Replacing list elements with a new one
old_element = input("What do you want to replace from the above list? ")
if old_element in my_list:
    new_element = input("What do you want to replace it with? ")
    index = my_list.index(old_element)
    my_list[index] = new_element
    print("The list after replacement:", my_list)
else:
    print(f"{old_element} is not in the list, so it cannot be replaced.")
# Deleting an element from the list
delete_element = input("What do you want to delete from the above list? ")
if delete_element in my_list:
    my_list.remove(delete_element)
    print(f"List after deleting {delete_element}:", my_list)
else:
    print(f"{delete_element} is not in the list, so it cannot be deleted.")
# Create a nested list and display its elements
nested_list = [
    ['Machine-learning', 'Generative AI', 'Quantum computing'],
    ['Blockchain', 'Cryptography']
]
print("The Nested list is:", nested_list)
print("~ A Python program by MOHD HANIF 231P044/01")
```

OUTPUT:



```
List is: ['C', 'Java', 'Python', 'Javascript', 'Sql', 'Cybersecurity', 'Ethical-hacking']
Length of the list is: 7
Check if an element is in the list:
Enter element to check in the list: Python
Python is in the list
Another list is: ['Cloud-computing', 'Artificial-Intelligence', 'Data-Scientist', 'Data-Analyst', 'Development']
The concatenated list is: ['C', 'Java', 'Python', 'Javascript', 'Sql', 'Cybersecurity', 'Ethical-hacking', 'Cloud-computing', 'Artificial-Intelligence', 'Data-Scienti
st', 'Data-Analyst', 'Development']
What do you want to replace from the above list? React
React is not in the list, so it cannot be replaced.
What do you want to delete from the above list? SQl
SQl is not in the list, so it cannot be deleted.
The Nested list is: [['Machine-learning', 'Generative AI', 'Quantum computing'], ['Blockchain', 'Cryptography']]
~ A Python program by MOHD HANIF 231P044/01
```

1c.

```
"""WAP to perform the following operations on tuple.
1. Create tuple
2. Display tuple
3. Sort the tuple
4. Reverse the tuple
5. Replicate the tuple
6. Find the sum of elements of a tuple (only if tuple has numbers)
7. Display frequency of an element using count method
Name: MOHD HANIF 231P044/01"""
# 1. Create a tuple
Tuple = ('chai', 'dosa', 'vada-pav', 'samosa-pav', 'pav-bhaji')
# 2. Display the created tuple
print("The created tuple is:", Tuple)
# 3. Sort the tuple (Sorting works for string elements)
SortedTuple = tuple(sorted(Tuple))
print("The sorted tuple is:", SortedTuple)
# 4. Reverse the tuple using slicing
ReversedTuple = Tuple[::-1]
print("The reversed tuple is:", ReversedTuple)
# 5. Replicate the tuple 3 times
ReplicatedTuple = Tuple * 3
print("The replicated tuple after 3 times is:", ReplicatedTuple)
# 6. Sum of tuple elements (only if the tuple has numeric values)
# Since the original tuple has strings, let's create a numeric tuple for demonstration
NumericTuple = (10, 20, 30, 40, 50)
```

print("Numeric Tuple:", NumericTuple)

print("The sum of elements in Numeric Tuple is:", sum(NumericTuple))

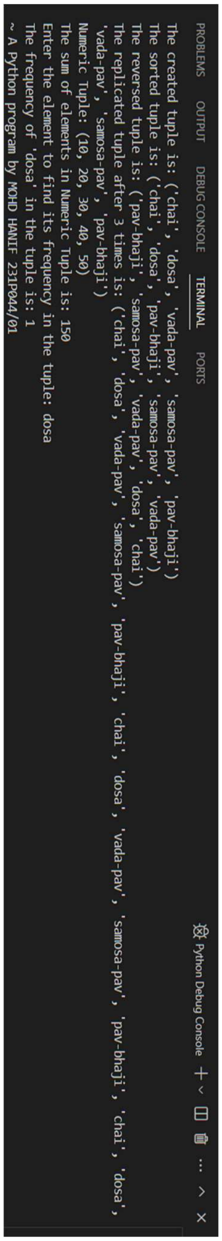
# 7. Display frequency of an element using count method

count_element = input("Enter the element to find its frequency in the tuple: ")

print(f"The frequency of '{count_element}' in the tuple is:", Tuple.count(count_element))

print("~ A Python program by MOHD HANIF 231P044/01")

Output:

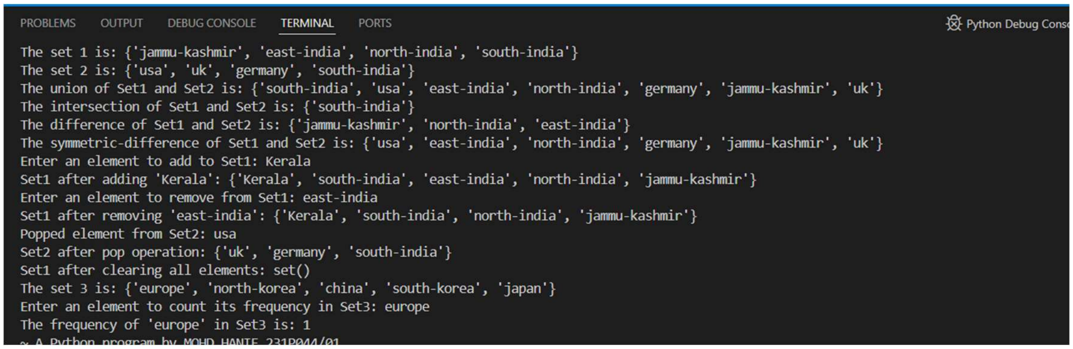


```
The created tuple is: ('chai', 'dosa', 'vada-pav', 'samosa-pav', 'pav-bhaji')
The sorted tuple is: ('chai', 'dosa', 'pav-bhaji', 'samosa-pav', 'vada-pav')
The reversed tuple is: ('pav-bhaji', 'samosa-pav', 'vada-pav', 'dosa', 'chai')
The replicated tuple after 3 times is: ('chai', 'dosa', 'vada-pav', 'samosa-pav', 'pav-bhaji', 'chai', 'dosa', 'vada-pav', 'samosa-pav', 'pav-bhaji', 'chai', 'dosa',
'vada-pav', 'samosa-pav', 'pav-bhaji')
Numeric Tuple: (10, 20, 30, 40, 50)
The sum of elements in Numeric Tuple is: 150
Enter the element to find its frequency in the tuple: dosa
The frequency of 'dosa' in the tuple is: 1
~ A Python program by MOHD HANIF 231P044/01
```

1d.

```
"""WAP on set to perform the following operations:
1. Create a set
2. Perform Union, Intersection, Difference, and Symmetric-Difference
3. Change set by adding elements
4. Remove elements from a set
5. Use pop() and clear()
6. Display frequency of an element using control statements
Name: MOHD HANIF 231P044/01"""
# 1. Create sets
Set1 = {'jammu-kashmir', 'south-india', 'north-india', 'east-india'}
Set2 = {'germany', 'uk', 'usa', 'south-india'}
# Display sets
print("The set 1 is:", Set1)
print("The set 2 is:", Set2)
# 2. Set Operations
print("The union of Set1 and Set2 is:", Set1.union(Set2))
print("The intersection of Set1 and Set2 is:", Set1.intersection(Set2))
print("The difference of Set1 and Set2 is:", Set1.difference(Set2))
print("The symmetric-difference of Set1 and Set2 is:", Set1.symmetric_difference(Set2))
# 3. Change the set by adding an element
change_element = input("Enter an element to add to Set1: ")
Set1.add(change_element)
print(f"Set1 after adding '{change_element}':", Set1)
# 4. Remove elements from a set
remove_element = input("Enter an element to remove from Set1: ")
if remove_element in Set1:
    Set1.remove(remove_element)
    print(f"Set1 after removing '{remove_element}':", Set1)
else:
    print(f"'{remove_element}' is not in Set1, so it cannot be removed.")
# 5. Use pop() and clear()
if Set2:  # Check if Set2 is not empty before popping
    popped_element = Set2.pop()
    print("Popped element from Set2:", popped_element)
print("Set2 after pop operation:", Set2)
# Clear Set1
Set1.clear()
print("Set1 after clearing all elements:", Set1)
# 6. Display frequency of an element using control statements
Set3 = {'europe', 'japan', 'south-korea', 'north-korea', 'china'}
print("The set 3 is:", Set3)
target = input("Enter an element to count its frequency in Set3: ")
count = 0
for item in Set3:
    if item == target:
        count += 1  # Count occurrences
print(f"The frequency of '{target}' in Set3 is:", count)
print("~ A Python program by MOHD HANIF 231P044/01")
```

Output:



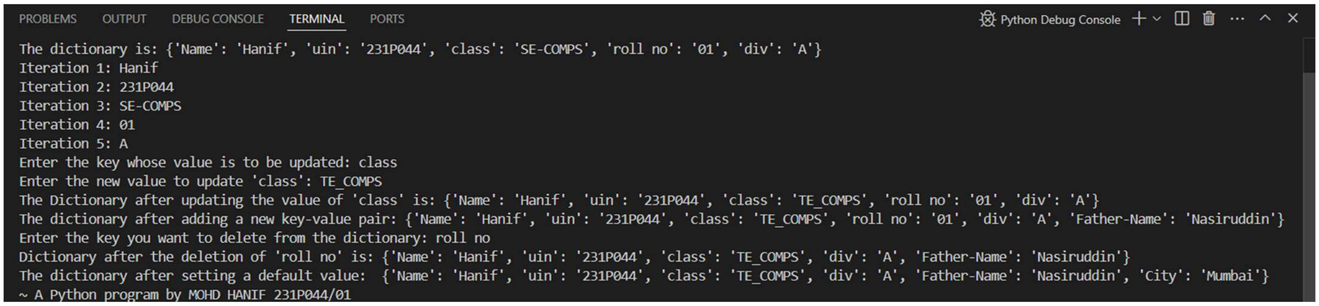
```
The set 1 is: {'jammu-kashmir', 'east-india', 'north-india', 'south-india'}
The set 2 is: {'usa', 'uk', 'germany', 'south-india'}
The union of Set1 and Set2 is: {'south-india', 'usa', 'east-india', 'north-india', 'germany', 'jammu-kashmir', 'uk'}
The intersection of Set1 and Set2 is: {'south-india'}
The difference of Set1 and Set2 is: {'jammu-kashmir', 'north-india', 'east-india'}
The symmetric-difference of Set1 and Set2 is: {'usa', 'east-india', 'north-india', 'germany', 'jammu-kashmir', 'uk'}
Enter an element to add to Set1: Kerala
Set1 after adding 'Kerala': {'Kerala', 'south-india', 'east-india', 'north-india', 'jammu-kashmir'}
Enter an element to remove from Set1: east-india
Set1 after removing 'east-india': {'Kerala', 'south-india', 'north-india', 'jammu-kashmir'}
Popped element from Set2: usa
Set2 after pop operation: {'uk', 'germany', 'south-india'}
Set1 after clearing all elements: set()
The set 3 is: {'europe', 'north-korea', 'china', 'south-korea', 'japan'}
Enter an element to count its frequency in Set3: europe
The frequency of 'europe' in Set3 is: 1
~ A Python program by MOHD HANIF 231P044/01
```

1e.

```
"""WAP to implement the following Dictionary operations:

1. Create Dictionary (key-value)

2. Iterate values from a Dictionary

3. Update value of any key

4. Add a new Key-value pair in a dictionary

5. Delete key-value pair from a dictionary

6. Set Default value and display

Name: MOHD HANIF 231P044/01

"""

# Create a dictionary

Dictionary = {

    "Name": "HANIF",

    "uin": "231P044",

    "class": "SE-COMPS",

    "roll no": "01",

    "div": "A"

}

print("The dictionary is:", Dictionary)

# Iterate values from a Dictionary
```

```
n = 1
for value in Dictionary.values():
    print(f"Iteration {n}: {value}")
    n += 1
# Update value of any key
UpdateKey = input("Enter the key whose value is to be updated: ")
if UpdateKey in Dictionary:
    UpdateValue = input(f"Enter the new value to update '{UpdateKey}': ")
    Dictionary[UpdateKey] = UpdateValue
    print(f"The Dictionary after updating the value of '{UpdateKey}' is:", Dictionary)
else:
    print(f"Key '{UpdateKey}' not found in the dictionary!")
# Add a new Key-Value pair in a dictionary
Dictionary["Father-Name"] = "Nasiruddin"
print("The dictionary after adding a new key-value pair:", Dictionary)
# Delete key-value pair from a dictionary
DeleteKey = input("Enter the key you want to delete from the dictionary: ")
if DeleteKey in Dictionary:
    del Dictionary[DeleteKey]
    print(f"Dictionary after the deletion of '{DeleteKey}' is:", Dictionary)
else:
    print(f"Key '{DeleteKey}' not found in the dictionary!")
# Set Default value and display
Dictionary.setdefault("City", "Mumbai")
print("The dictionary after setting a default value: ", Dictionary)
print("~ A Python program by MOHD HANIF 231P044/01")
```

OUTPUT:

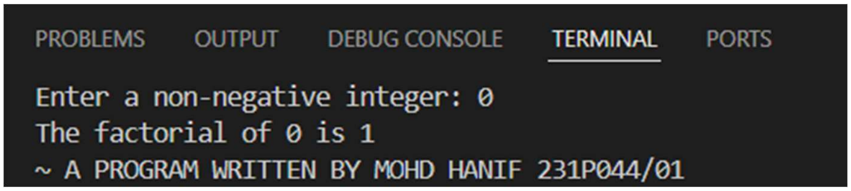


```
The dictionary is: {'Name': 'Hanif', 'uin': '231P044', 'class': 'SE-COMPS', 'roll no': '01', 'div': 'A'}
Iteration 1: Hanif
Iteration 2: 231P044
Iteration 3: SE-COMPS
Iteration 4: 01
Iteration 5: A
Enter the key whose value is to be updated: class
Enter the new value to update 'class': TE_COMPS
The Dictionary after updating the value of 'class' is: {'Name': 'Hanif', 'uin': '231P044', 'class': 'TE_COMPS', 'roll no': '01', 'div': 'A'}
The dictionary after adding a new key-value pair: {'Name': 'Hanif', 'uin': '231P044', 'class': 'TE_COMPS', 'roll no': '01', 'div': 'A', 'Father-Name': 'Nasiruddin'}
Enter the key you want to delete from the dictionary: roll no
Dictionary after the deletion of 'roll no' is: {'Name': 'Hanif', 'uin': '231P044', 'class': 'TE_COMPS', 'div': 'A', 'Father-Name': 'Nasiruddin'}
The dictionary after setting a default value:  {'Name': 'Hanif', 'uin': '231P044', 'class': 'TE_COMPS', 'div': 'A', 'Father-Name': 'Nasiruddin', 'City': 'Mumbai'}
~ A Python program by MOHD HANIF 231P044/01
```

1f.

```
"""Write a program in Python to compute factorial of a number.

NAME: MOHD HANIF 231P044/01"""

num = int(input("Enter a non-negative integer: "))

if num < 0:

    print("Factorial is not defined for negative numbers.")

elif num == 0:

    print("The factorial of 0 is 1")

else:

    factorial = 1

    for i in range(1, num + 1):

        factorial *= i

    print(f"The factorial of {num} is {factorial}")

print("~ A PROGRAM WRITTEN BY MOHD HANIF 231P044/01")
```

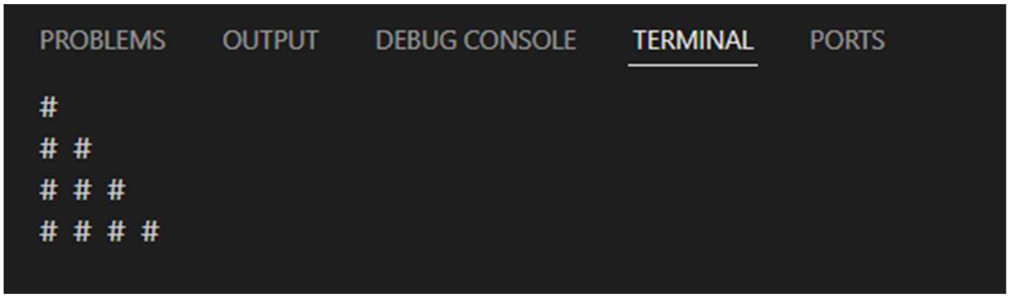
OUTPUT:



```
Enter a non-negative integer: 0
The factorial of 0 is 1
~ A PROGRAM WRITTEN BY MOHD HANIF 231P044/01
```

1g: """Write a program to print the pattern

```
"""Write a program to print the pattern
#
# #
# # #
# # # #
NAME: MOHD HANIF 231P044/01"""
rows = 4

for i in range(1, rows + 1):
   print("# " * i)

print("\nA Program written by MOHD HANIF 231P044/01")
```



```
#
# #
# # #
# # # #
```