

```
In [1]: #QUESTION NUMBER 1
def number_arrow(n):
    for i in range(1, n+1):
        print(",".join(map(str, range(1, i+1))))
    for i in range(n-1, 0, -1):
        print(",".join(map(str, range(1, i+1))))
n = int(input("Enter the size of the number arrow: "))
number_arrow(n)
```

```
1
1,2
1,2,3
1,2,3,4
1,2,3,4,5
1,2,3,4
1,2,3
1,2
1
```

```
In [2]: #QUESTION NUMBER 2
n = int(input("Enter a positive integer: "))
divisors_sum = 0
for i in range(1, n):
    if n % i == 0:
        divisors_sum += i
if divisors_sum == n:
    print(f"{n} is a perfect number.")
else:
    print(f"{n} is not a perfect number.")
```

18 is not a perfect number.

```
In [3]: #QUESTION NUMBER 3
def dletter(char1, char2):
    return abs(ord(char1) - ord(char2))

def distance(word1, word2):
    if len(word1) != len(word2):
        return -1
    total_distance = 0
    for c1, c2 in zip(word1, word2):
        total_distance += dletter(c1, c2)

    return total_distance
word1 = input("Enter the first word: ")
word2 = input("Enter the second word: ")
result = distance(word1, word2)

if result == -1:
    print("The words have unequal lengths.")
else:
    print(f"The distance between '{word1}' and '{word2}' is: {result}")
```

The words have unequal lengths.

```
In [5]: #QUESTION NUMBER 4
words = input("Enter a sequence of words: ").split()
freq = {}
for word in words:
```

```

    if word in freq:
        freq[word] += 1
    else:
        freq[word] = 1
print("Frequency of words:", freq)

```

Frequency of words: {'shikha': 1}

```

In [6]: #QUESTION NUMBER 5
def get_toppers(scores_dataset, subject, gender):
    highest_score = -1
    toppers = []
    for student in scores_dataset:
        if student['Gender'] == gender:
            current_score = student[subject]
            if current_score > highest_score:
                highest_score = current_score
                toppers = [student['Name']]
            elif current_score == highest_score:
                toppers.append(student['Name'])
    return toppers
scores_dataset = [
    {'SeqNo': 1, 'Name': 'Devika', 'Gender': 'F', 'City': 'Bengaluru',
     'Mathematics': 94, 'Physics': 84, 'Chemistry': 79, 'Biology': 99,
     'Computer Science': 88, 'History': 63, 'Civics': 88, 'Philosophy': 85},
    {'SeqNo': 2, 'Name': 'Ravi', 'Gender': 'M', 'City': 'Mumbai',
     'Mathematics': 88, 'Physics': 92, 'Chemistry': 75, 'Biology': 95,
     'Computer Science': 90, 'History': 70, 'Civics': 83, 'Philosophy': 89},
    {'SeqNo': 3, 'Name': 'Sneha', 'Gender': 'F', 'City': 'Delhi',
     'Mathematics': 96, 'Physics': 78, 'Chemistry': 80, 'Biology': 91,
     'Computer Science': 85, 'History': 67, 'Civics': 82, 'Philosophy': 88}
]
toppers = get_toppers(scores_dataset, 'Mathematics', 'F')
print("Toppers in Mathematics (Female):", toppers)

```

Toppers in Mathematics (Female): ['Sneha']

In [ ]: