

Take input as n and print:

```
# n = 4
```

```
# # # #
```

```
print("#", end=" ")
```

```
print("#", end=" ")
```

```
print("#", end=" ")
```

```
print("#", end=" ")
```

```
# # # #
```

```
for i in range(4):
```

```
    print("#", end=" ")
```

```
# # # #
```

```
for i in range(5):
```

```
    print("#", end=" ")
```

```
# # # # #
```

Problem 2

```
# N = 4
```

```
# # # #
```

```
# # # #
```

```
# # # #
```

```
# # # #
```

```
# Quiz
```

```
# We should end with new line after every row
```

```
for i in range(4):
```

```
    print("#", end="")
```

```
# Move to next line
```

```
print()
```

```
for i in range(4):
```

```
    print("#", end="")
```

```
print()
```

```
for i in range(4):
```

```
    print("#", end="")
print()
```

```
for i in range(4):
    print("#", end="")
```

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

```
# print?
```

Nested for loop

```
for i in range(4):
    for j in range(4):
        print("#", end="")
    print()
```

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

```
for i in range(5):
    for j in range(5):
        print("#", end=" ")
    print()
```

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

Print N * N pattern

```
# Outer loop is for how many rows
# Internal loop is for how many columns
```

```
n = int(input())
```

```
for i in range(n): # n rows
```

```

    for j in range(n): # n number of cols
        print("#", end=" ")
    print()

```

10

```

# # # # # # # # # #
# # # # # # # # # #
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# # # # # # # # # #
# # # # # # # # # #
# # # # # # # # # #

```

Quizzes

```

for i in range(3):
    print('*', end='')
for i in range(3):
    print('*', end='')
for i in range(3):
    print('*', end='')

```

```

for i in range(2):
    for j in range(1):
        print('*', end='')
    print()

```

*
*

```

for i in range(1):
    for j in range(2):
        print('*', end='')
    print()

```

**

N = 1

```

for i in range(N):
    for j in range(N):
        print('*', end='')
    print('')

```

```

N = int(input())
for i in range(2):
    for j in range(N):
        print('*', end='')

```

3

Iteration protocols

how to know if anything is iterable?

print(dir(object))

```
print(dir(range(10)))
```

```

['_bool_', '__class__', '__contains__', '__delattr__', '__dir__',
 '__doc__', '__eq__', '__format__', '__ge__', '__getattribute__',
 '__getitem__', '__gt__', '__hash__', '__init__', '__init_subclass__',
 '__iter__', '__le__', '__len__', '__lt__', '__ne__', '__new__',
 '__reduce__', '__reduce_ex__', '__repr__', '__reversed__',
 '__setattr__', '__sizeof__', '__str__', '__subclasshook__', 'count',
 'index', 'start', 'step', 'stop']

```

print(dir(23))

Integers are not iterable

```
rahul = iter("Rahul")
```

```
type(rahul)
```

```
str_iterator
```

```
i = iter(range(10))
```

```
type(i)
```

```
range_iterator
```

```
print(next(i))
```

```
0
```

```
print(next(i))
```

```
1
```

```
print(next(i))
```

2

```
print(next(i))
```

```
-----
StopIteration                                Traceback (most recent call
last)
/var/folders/zn/hkv6562d6_d30glfs8yc76900000gn/T/ipykernel_29813/30219
17106.py in <module>
----> 1 print(next(i))
```

StopIteration:

Quizzes

```
i = iter(range(7))
```

```
print(next(i) * 3)
```

```
print(next(i) * 5)
```

0

5

```
i = iter(range(1, 7, 5))
```

```
res = next(i)
```

```
res = next(i)
```

```
print(res)
```

6

GCD

Following is the code for all common factors

```
n = 10
```

```
for i in range(1, n + 1):
```

```
    if n % i == 0:
```

```
        print(i)
```

1

2

```
5
10
```

```
n = 20
m = 10
```

```
low = min(m, n)
```

```
for i in range(1, low + 1):
    if n % i == 0 and m % i == 0:
        print(i)
```

```
1
2
5
10
```

```
# starting from opposite direction
# These are all common factors of m and n
```

```
n = 20
m = 10
```

```
low = min(m, n)
```

```
for i in range(low, 0, -1):
    if n % i == 0 and m % i == 0:
        print(i)
        # once you get the first factor just break there
        break
```

```
10
```

```
# Final
```

```
n = int(input())
m = int(input())
```

```
low = min(m, n)
```

```
for i in range(low, 0, -1):
    if n % i == 0 and m % i == 0:
        print(i)
        # once you get the first factor just break there
        break
```

```
6
8
```

