def pattern(): n=5 for i in range(1,n+1): print("*"*i) pattern()

```
def pattern():
    n=5
    for i in range(1,n+1):
        print("*"*i)
pattern()
```

```
*
**
***
****
*****
```

```
def pattern():
    n=5
    for i in range(n,0,-1):
        print("*"*i)
pattern()
```

```
*****
****
***
**
*
```

```
def pattern():
    n=4
    for i in range(1,n+1):
        print("*"*i)
    for i in range(n,0,-1):
        print("*"*i)
pattern()
```

```
 *
 **
 ***
 ****
 ****
 ***
 **
 *
```

```
def pattern():
    n = 5
    for i in range(1, n + 1):
        print(" " * (n - i), "*" * i)
    for i in range(n - 1, 0, -1):
        print(" " * (n - i), "*" * i)

pattern()
```

```
    *
   **
  ***
 ****
*****
 ****
  ***
   **
    *
```

```
a=[1,0,3,0,0,4,5,0,6]
temp=[]
zeros=[]
for i in range(len(a)):
    if a[i] !=0:
        temp.append(a[i])
    else:
        zeros.append(a[i])
print(temp+zeros)
```

```
 [1, 3, 4, 5, 6, 0, 0, 0, 0]
```

```
def fun(n):
    print(n)
    if n==1:
        return
    fun(n-1)
fun(12)
```

```
12
11
10
9
8
7
6
5
4
3
2
1
```

```
def armstrong():
    num=int(input("Enter a number: "))
    arms=str(num)
    result=0
    for i in arms:
        result=result+int(i)**len(arms)
    print(result)
    if result==num:
       print("armstrong")

    else:
        print("not armstrong")
armstrong()
```

```
 Enter a number: 12
 5
 not armstrong
```

```
num = int(input("Enter a number :"))
def fibonacci(num):
    if num == 0:
        return 0
    elif num == 1:
        return 1
    else:
        return fibonacci(num-1) + fibonacci(num-2)

for i in range(num):
        print(fibonacci(i),end=" ")
```

```
 Enter a number :4
 0 1 1 2
```

```
def factorial(n):
    if n < 0:
        return "Factorial is not defined for negative numbers."
    elif n == 0:
        return 1
    else:
        result = 1
        for i in range(1, n + 1):
            result *= i
        return result

if __name__ == "__main__":
    num = int(input("Enter a number to compute its factorial: "))
    print("Factorial of", num, "is", factorial(num))
```

```
Enter a number to compute its factorial: 4
Factorial of 4 is 24
```

```
def login():

    valid_username = "arjun"
    valid_password = "1234"

    username = input("Enter username: ")
    password = input("Enter password: ")


    if username == valid_username and password == valid_password:
        print("Login successful!")
    else:
        print("Invalid username or password. Please try again.")

if __name__ == "__main__":
    login()
```

```
Enter username: arjun
Enter password: 1234
Login successful!
```

```
class ATM:
    def __init__(self, balances):
        self.balances = balances

    def check_balance(self, username):
        if username in self.balances:
            return self.balances[username]
        else:
            return "User not found"

    def withdraw_cash(self, username, amount):
        if username in self.balances:
            if amount > self.balances[username]:
                return "Insufficient balance"
            else:
                self.balances[username] -= amount
                return f"Withdrawal successful. Remaining balance: {self.balances[username]}"
        else:
            return "User not found"

def authenticate(username, password):
    # Here, you can implement your authentication logic
    credentials = {
        "abhi": "1111",
        "arun": "2222",
        "ram": "3333"
    }
    return credentials.get(username) == password

def main():
    # Initialize ATM with starting balances for each user
    balances = {
        "abhi": 10000,
        "arun": 20000,
        "ram": 30000,
    }
    atm = ATM(balances)

    # Authentication loop
```

```
    authenticated = False
    while not authenticated:
        username = input("Enter username: ")
        password = input("Enter password: ")
        authenticated = authenticate(username, password)
        if not authenticated:
            print("Invalid username or password. Please try again.")

    # Main ATM loop
    while True:
        print("\n1. Check Balance")
        print("2. Withdraw Cash")
        print("3. Exit")

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

        if choice == 1:
            print(f"Your current balance is: {atm.check_balance(username)}")

        elif choice == 2:
            amount = float(input("Enter the amount to withdraw: "))
            print(atm.withdraw_cash(username, amount))

        elif choice == 3:
            print("Thank you for using the ATM. Goodbye!")
            break

        else:
            print("Invalid choice. Please enter a valid option.")

if __name__ == "__main__":
    main()
```

```
Enter username: abhi
Enter password: 1111
```

```
def print_outer_stars_triangle(size):
    for i in range(size):
        if i == 0 or i == size - 1:
            print("*" * size)
        else:
            print("*" + " " * (size - 2) + "*")

if __name__ == "__main__":
    square_size = 10

    print_outer_stars_triangle(square_size)
```

```
**********
*        *
*        *
*        *
```