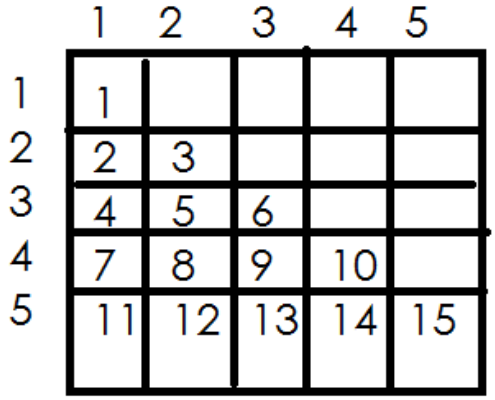
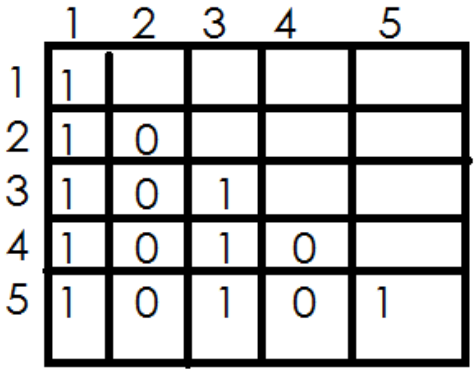


```
num=1
for r in range(1,6):
    for c in range(1,r+1):
        print(num,end=' ')
        num=num+1
    print()
```



```
for r in range(1,6):
    for c in range(1,r+1):
        if c%2==0:
            print("0",end=' ')
        else:
            print("1",end=' ')
    print()
```

break, continue

break and continue are called branching statements

these statements are used to move the execution control from one place to another place.

These branching statements are used inside looping statements

1. While
2. For

break

break is a keyword or branching statement, which terminates execution of looping statement (while, for) unconditionally.

Example:

write a program to first n even numbers

```
num=1
n=int(input("enter the value of n"))# 3
```

```
c=0
while True:
    if num%2==0:
        print(num)
        c=c+1
    num=num+1
    if c==n:
        break
```

Output:

```
enter the value of n5
2
4
6
8
10

========== RESTART: F:/python6pmaug/test86.py =========
enter the value of n2
2
4
```

Example:

```
# write a program to find input number is prime or not

num=int(input("enter any number")) # 6
i=1
c=0
while i<=num:
    if num%i==0:
        c=c+1
    i=i+1
    if c>2:
        break

if c==2:
    print(num,"is prime")
else:
    print(num,"is not prime")
```

Output:

```
========== RESTART: F:/python6pmaug/test87.py =========
enter any number7
7 is prime

========== RESTART: F:/python6pmaug/test87.py =========
enter any number6
6 is not prime
```

continue

continue is keyword or branching statement
this statement is used inside looping statements (while/for)
this statement is used to move execution control to the beginning of the looping statement. After continue any statements are written not executed.

Example:

```
for num in range(1,21): # 1 2 3 4 5 .. 20
    if num%2==0:
        continue
    print(num)
```

Output:

```
1
3
5
7
9
11
13
15
17
19
```

Data structures or Collections

What is data structure?

Data structure is concept
Data structures define set of rules and regulations to represent data in memory

Data structures define set of rules and regulations to organize data in memory.

What is collection?
Collection is object which represent more than one value or object
Grouping all the objects and representing as one object (collection)
Collection types are used to represent more than one value

Python collection types are classified into 3 categories

1. Sequences
    a. list
    b. tuple
    c. range
    d. string
    e. bytes
    f. bytesarray
2. Sets
    a. set
    b. frozenset
3. Mapping
    a. dictionary

by grouping values, perform aggregate operations

Sequences
Sequence type organizes data in memory in sequential order (OR) one by one
Sequence types are two

1. mutable sequences
    a. list, bytearray
2. immutable sequences
    a. tuple
    b. str
    c. range
    d. bytes

sequences are index based collections. Where reading and writing is done index.

Each location in sequence is identified with unique number called index. Index represents position of the value.

List