

```
In [ ]: # needed to display the graphs
%matplotlib inline
from pylab import *
```

```
In [18]: x = linspace(0, 5, 10)
y = x ** 2

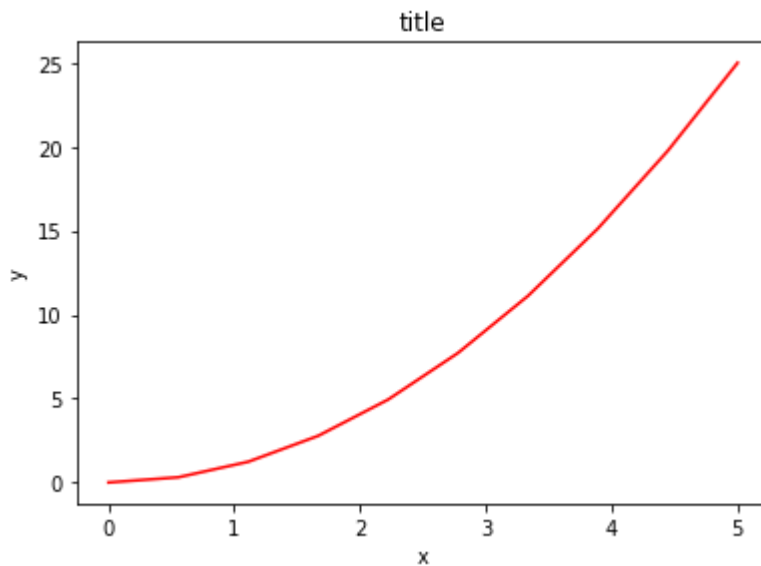
fig = plt.figure()

# left, bottom, width, height (range 0 to 1)
axes = fig.add_axes([0.1, 0.1, 0.8, 0.8])

axes.plot(x, y, 'r')

axes.set_xlabel('x')
axes.set_ylabel('y')
axes.set_title('title')
```

Out[18]: Text(0.5,1,'title')



```
In [17]: import random

foo = ['battery', 'correct', 'horse', 'staple']
secure_random = random.SystemRandom()
print(secure_random.choice(foo))
```

horse

```
In [20]: import random
group_of_items = {1, 2, 3, 4}           # a sequence or set will work here.
num_to_select = 2                       # set the number to select here.
list_of_random_items = random.sample(group_of_items, num_to_select)
first_random_item = list_of_random_items[0]
print(first_random_item)
```

1

```
In [27]: import secrets
foo = ['a', 'b', 'c', 'd', 'e']
print(secrets.choice(foo))
```

b

```
In [15]: s=set(range(1,6))
import random

while len(s)>0:
    s.remove(random.choice(list(s)))
    print(s)
```

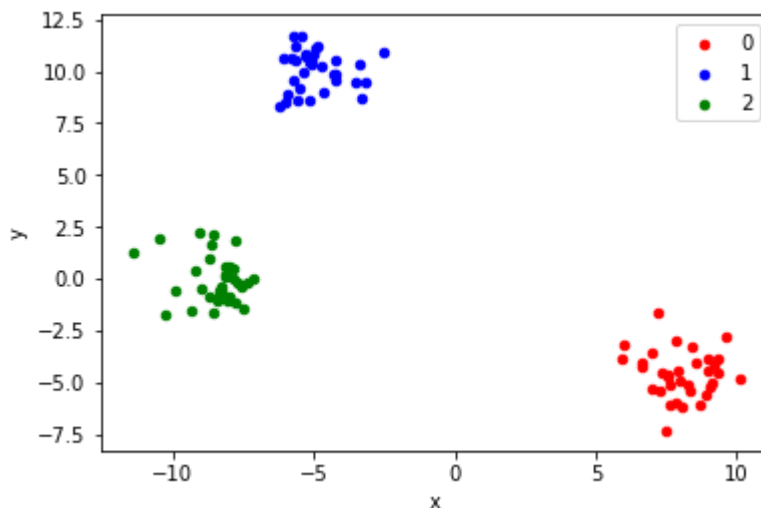
{2, 3, 4, 5}
{2, 3, 4}
{2, 4}
{4}
set()

In [44]:

```

from sklearn.datasets.samples_generator import make_blobs
from matplotlib import pyplot
from pandas import DataFrame
# generate 2d classification dataset
X, y = make_blobs(n_samples=100, centers=3, n_features=2)
# scatter plot, dots colored by class value
df = DataFrame(dict(x=X[:,0], y=X[:,1], label=y))
colors = {0:'red', 1:'blue', 2:'green'}
fig, ax = pyplot.subplots()
grouped = df.groupby('label')
for key, group in grouped:
    group.plot(ax=ax, kind='scatter', x='x', y='y', label=key, color=colors[key])
pyplot.show()

```



In [53]:

```

#import pandas as pd
#from collections import OrderedDict
#from datetime import date
sales = [{ 'account': 'Jones LLC', 'Jan': 150, 'Feb': 200, 'Mar': 140},
          { 'account': 'Alpha Co', 'Jan': 200, 'Feb': 210, 'Mar': 215},
          { 'account': 'Blue Inc', 'Jan': 50, 'Feb': 90, 'Mar': 95 } ]
df = pd.DataFrame(sales)
print(sales)

[{'account': 'Jones LLC', 'Jan': 150, 'Feb': 200, 'Mar': 140}, {'account': 'Alpha Co', 'Jan': 200, 'Feb': 210, 'Mar': 215}, {'account': 'Blue Inc', 'Jan': 50, 'Feb': 90, 'Mar': 95}]

```

```
In [71]: names = [('Mohamed', 60, 88, 90),
                  ('Hazem', 77, 69, 95),
                  ('Kalid', 74, 95, 83)]
labels = ['Courses', 'CPE120', 'CSM102', 'ISM102']
df = pd.DataFrame.from_records(names, columns=labels)
create_date = "{:%m-%d-%Y}".format(date.today())
created_by = "Eng.Abdelmoty Mahmoud"
footer = [('Created by', [created_by]), ('Created on', [create_date]), ('Version',
df_footer = pd.DataFrame.from_items(footer)
writer = pd.ExcelWriter('x1.xlsx', engine='xlsxwriter')
df.to_excel(writer, index=False)
df_footer.to_excel(writer, startrow=6, index=False)
writer.save()
```

C:\Users\kku\Anaconda3\lib\site-packages\ipykernel_launcher.py:9: FutureWarning: from_items is deprecated. Please use DataFrame.from_dict(dict(items), ...) instead. DataFrame.from_dict(OrderedDict(items)) may be used to preserve the key order.

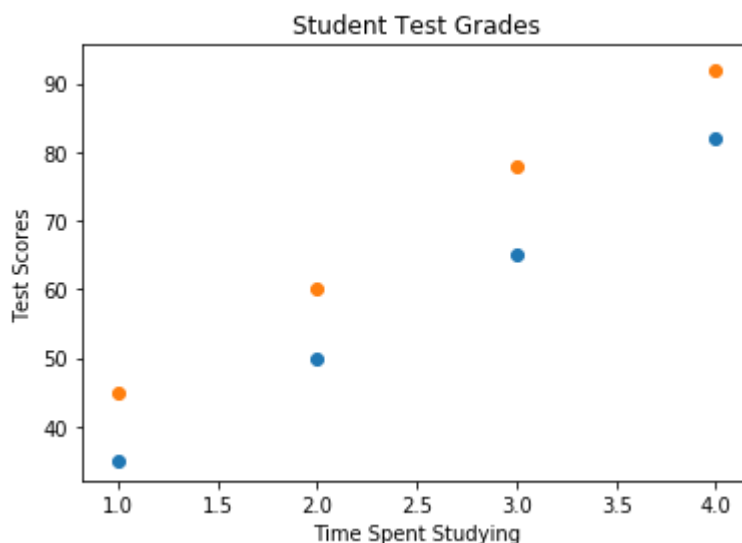
```
if __name__ == '__main__':
```

```
In [83]: import matplotlib.pyplot as plt

testscores_class1=[35, 50, 65, 82]
testscores_class2=[45, 60, 78, 92]
timestudying= [1,2, 3,4]

plt.scatter(timestudying, testscores_class1)
plt.scatter(timestudying, testscores_class2)
plt.title('Student Test Grades')
plt.xlabel('Time Spent Studying')
plt.ylabel('Test Scores')

plt.show()
```



```
In [9]: import matplotlib.pyplot as plt

testscores_class1 =[35, 50, 65, 82, 90, 99]
testscores_class2=[85, 90, 92, 95, 97, 100]

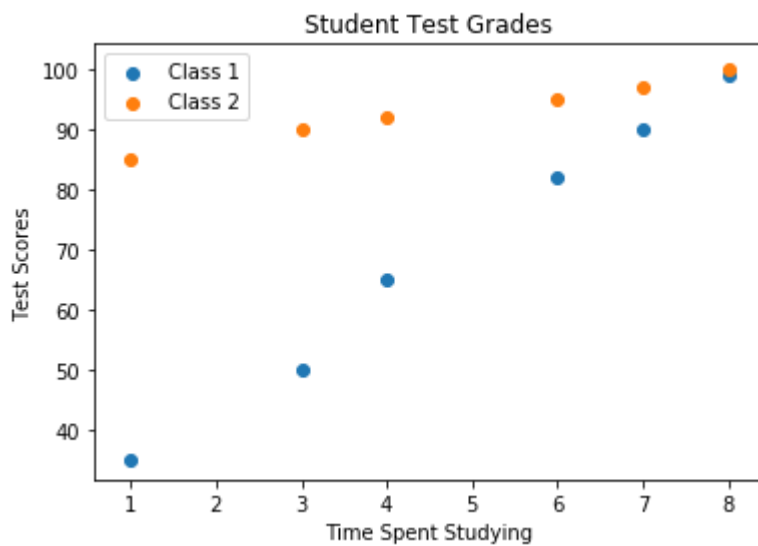
timestudying= [1,3, 4,6, 7, 8]

plt.scatter(timestudying, testscores_class1, label='Class 1')
plt.scatter(timestudying, testscores_class2, label='Class 2')

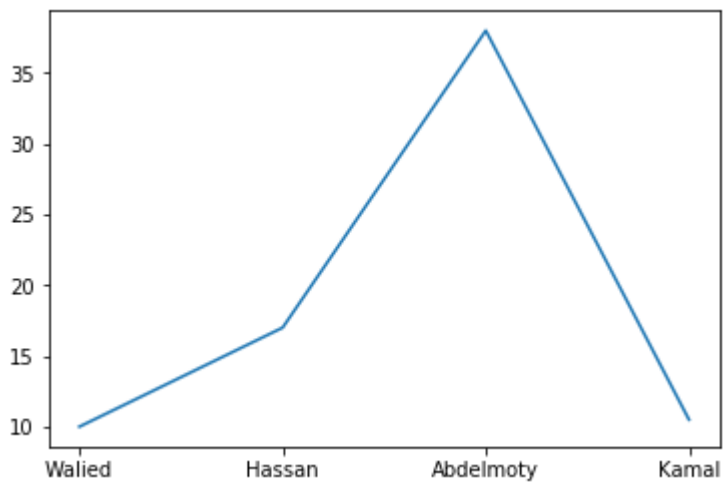
plt.title('Student Test Grades')
plt.xlabel('Time Spent Studying')
plt.ylabel('Test Scores')

plt.legend()

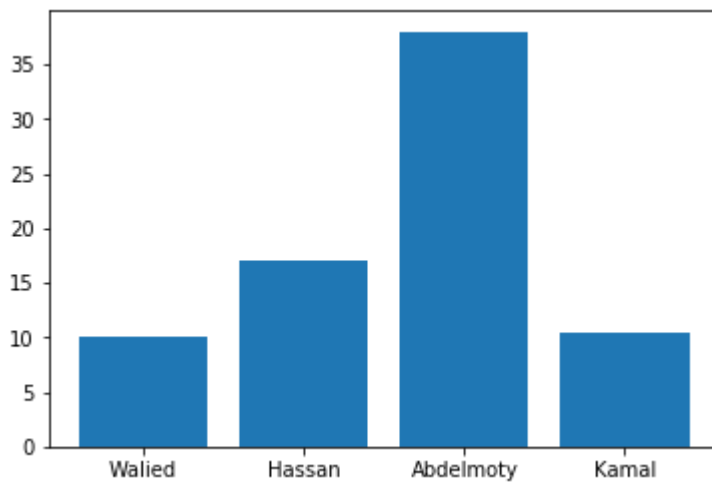
plt.show()
```



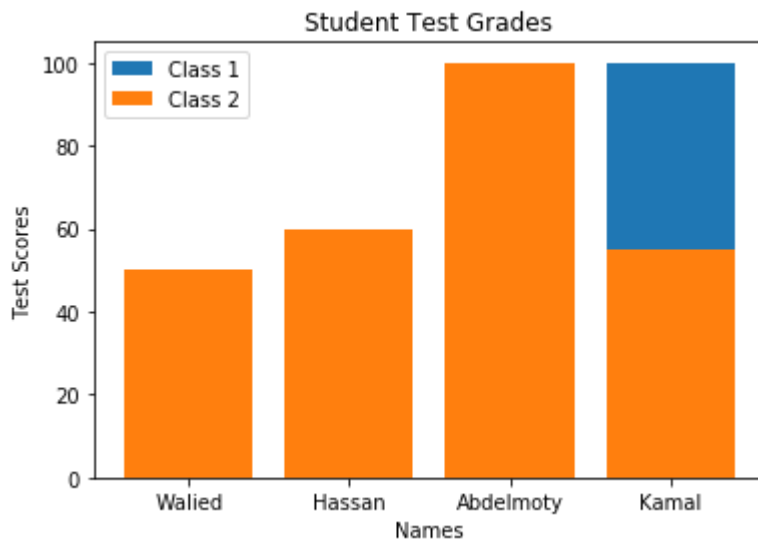
```
In [86]: import matplotlib.pyplot as plt
x = ['Walied', 'Hassan', 'Abdelmoty', 'Kamal']
y = [10, 17, 38, 10.5]
plt.plot(x,y)
plt.show()
```



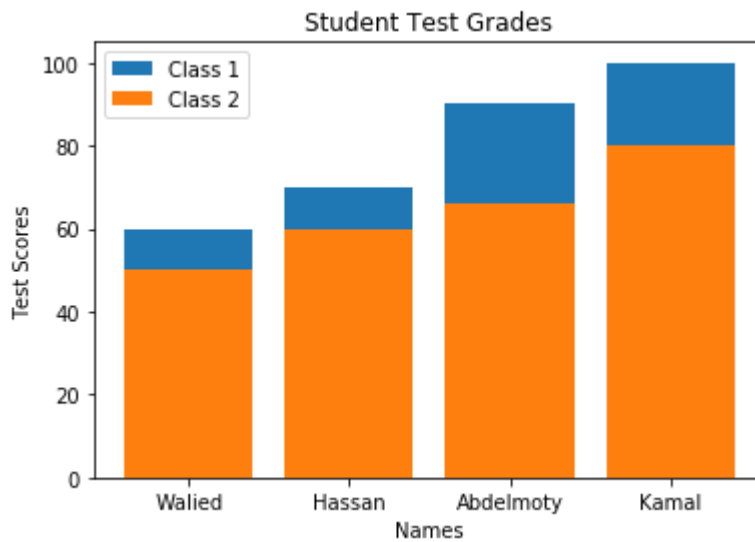
```
In [88]: import matplotlib.pyplot as plt
x = ['Walied', 'Hassan', 'Abdelmoty', 'Kamal']
y = [10, 17, 38, 10.5]
plt.bar(x,y)
#matplotlib.pyplot.bar(pos, (4,8,12,3,17,6), align="center", color="red")
plt.show()
```



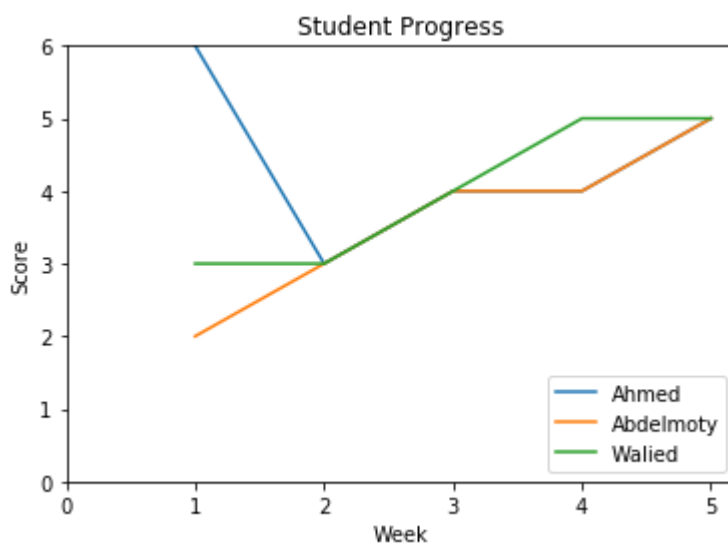
```
In [20]: import matplotlib.pyplot as plt
x = ['Walied', 'Hassan', 'Abdelmoty', 'Kamal']
y_class1 = [88, 90, 38, 100]
z_class2 = [50, 60, 100, 55]
plt.bar(x, y, label='Class 1')
plt.bar(x, z, label='Class 2')
#matplotlib.pyplot.bar(pos, (4,8,12,3,17,6), align="center", color="red")
plt.title('Student Test Grades')
plt.xlabel('Names')
plt.ylabel('Test Scores')
plt.legend()
plt.show()
```



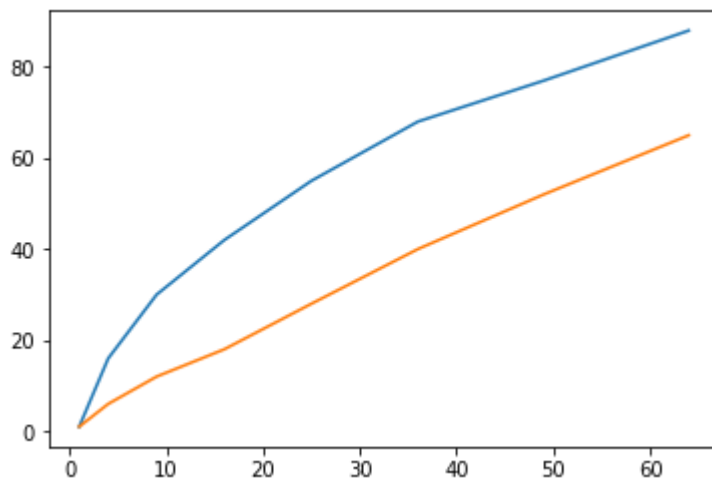
```
In [3]: import matplotlib.pyplot as plt
x = ['Walied', 'Hassan', 'Abdelmoty', 'Kamal']
y_class1 = [60, 70, 90, 100]
z_class2 = [50, 60, 66, 80]
plt.bar(x, y_class1, label='Class 1')
plt.bar(x, z_class2, label='Class 2')
#matplotlib.pyplot.bar(pos, (4,8,12,3,17,6), align="center", color="red")
plt.title('Student Test Grades')
plt.xlabel('Names')
plt.ylabel('Test Scores')
plt.legend()
plt.show()
```




```
In [4]: import matplotlib.pyplot as plt
weeks = range(1,6)
ahmed = [6, 3, 4, 4, 5]
abdelmoty = [2, 3, 4, 4, 5]
walied = [3, 3, 4, 5, 5]
plt.figure()
plt.plot(weeks, ahmed, label='Ahmed')
plt.plot(weeks, abdelmoty, label='Abdelmoty')
plt.plot(weeks, walied, label='Walied')
plt.title('Student Progress')
plt.ylabel('Score')
plt.xlabel('Week')
plt.xticks(range(6))
plt.ylim(0, 6)
plt.legend(loc='lower right')
plt.show()
```

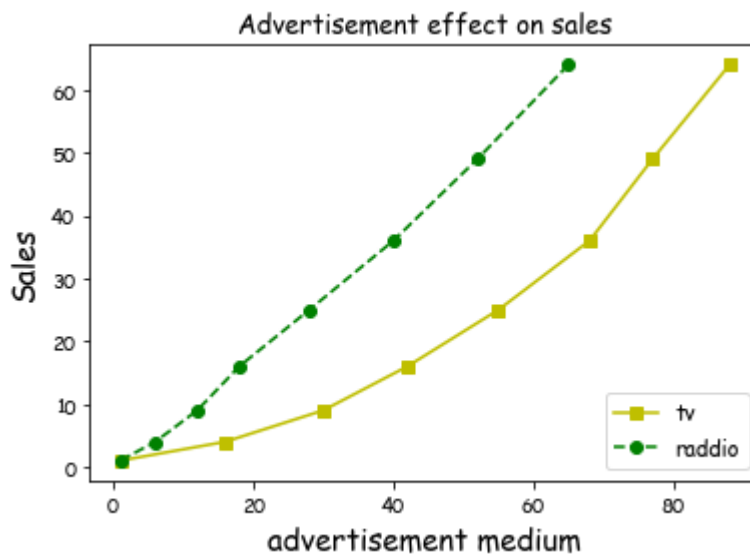


```
In [12]: import matplotlib.pyplot as plt
y = [1, 4, 9, 16, 25, 36, 49, 64]
x1 = [1, 16, 30, 42, 55, 68, 77, 88]
x2 = [1, 6, 12, 18, 28, 40, 52, 65]
plt.plot(y, x1)
plt.plot(y, x2)
plt.show()
```



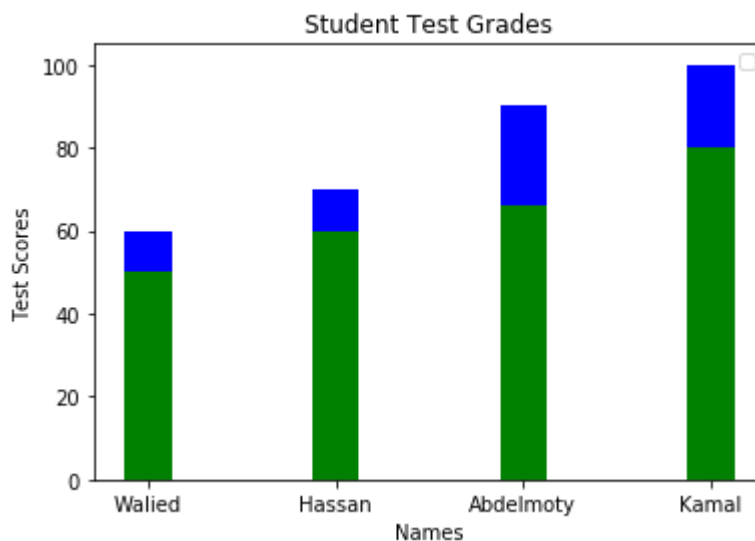
```
In [13]: import matplotlib as mpl
plt.rcParams['font.size'] = 11.
plt.rcParams['font.family'] = 'Comic Sans MS'
plt.rcParams['axes.labelsize'] = 15.
plt.rcParams['xtick.labelsize'] = 10.
plt.rcParams['ytick.labelsize'] = 10.

y = [1, 4, 9, 16, 25, 36, 49, 64]
x1 = [1, 16, 30, 42, 55, 68, 77, 88]
x2 = [1, 6, 12, 18, 28, 40, 52, 65]
plt.plot(x1, y, marker='s', linestyle='--', color='y', label='tv')
plt.plot(x2, y, marker='o', linestyle='--', color='g', label='raddio')
plt.xlabel('advertisement medium')
plt.ylabel('Sales')
plt.title('Advertisement effect on sales')
plt.legend(loc='lower right')
plt.show()
```



```
In [6]: import matplotlib.pyplot as plt
x1 = ['Walied','Hassan','Abdelmoty','Kamal']
y_class1 = [60,70,90,100]
z_class2 = [50, 60, 66, 80]
plt.bar(x1,y_class1, width=0.25, color='blue')
plt.bar(x1,z_class2, width=0.25, color='green')
#plt.bar(x, y_class1,Label='Class 1')
#plt.bar(x, z_class2,Label='Class 2')
#matplotlib.pyplot.bar(pos, (4,8,12,3,17,6),align="center",color="red")
plt.title('Student Test Grades')
plt.xlabel('Names')
plt.ylabel('Test Scores')
plt.legend()
plt.show()
```

No handles with labels found to put in legend.



```
In [7]: from Tkinter import *
root=Tk()
root.title('Abdelmoty GUI')
root.geometry("200*100")
root.mainloop()
```

```
-----
ModuleNotFoundError                                Traceback (most recent call last)
<ipython-input-7-7804d2f9e3bc> in <module>()
----> 1 from Tkinter import *
      2 root=Tk()
      3 root.title('Abdelmoty GUI')
      4 root.geometry("200*100")
      5 root.mainloop()
```

ModuleNotFoundError: No module named 'Tkinter'

```
In [21]: n=int(input('enter rhe numbers of rows'))
        for i in range(1,n+1):
            for j in range (1,i+1):
                print(i,end="")
            print()
```

```
enter rhe numbers of rows5
1
22
333
4444
55555
```

```
In [22]: n=int(input('enter rhe numbers of rows'))
        for i in range(1,n+1):
            for j in range (1,i+1):
                print(j,end="")
            print()
```

```
enter rhe numbers of rows5
1
12
123
1234
12345
```