

```
C:\Users\mlm\PycharmProjects\BIBIN\venv\Scripts\python.exe C:\Users\mlm\PycharmProjects\BIBIN\numpy_package.py
[[ 1  2  3  4]
 [ 5  6  7  8]
 [ 9 10 11 12]
 [13 14 15 16]]
display all elements excluding first row:
[[ 5  6  7  8]
 [ 9 10 11 12]
 [13 14 15 16]]
display all elements excluding last column:
[[ 1  2  3]
 [ 5  6  7]
 [ 9 10 11]
 [13 14 15]]
display all elements 1st and 2nd column in 2nd and 3rd row:
[[ 5  6]
 [ 9 10]]
display all elements 2st and 3rd column
[[ 2  3]
 [ 6  7]
 [10 11]
 [14 15]]
display elements 2nd and 3rd element of 1 row:
[[2 3]]
```

1) Process finished with exit code 0

Act
Go t

```
C:\Users\mlm\PycharmProjects\BIBIN\venv\Scripts\python.exe C:\Users\mlm\PycharmProjects\BIBIN\arrAMDSTD.py
[[1 2]
 [5 6]]
[[2 1]
 [6 5]]
Matrix Addition
[[ 3  3]
 [11 11]]
Matrix Subtraction
[[-1  1]
 [-1  1]]
Matrix multiplication
[[ 2  2]
 [30 30]]
Matrix Division
[[0.5      2.      ]
 [0.83333333 1.2      ]]
Matrix Multiplication
[[14 11]
 [46 35]]
Matrix Transpose
[[1 5]
 [2 6]]
Sum of diagonal Matrix
7
```

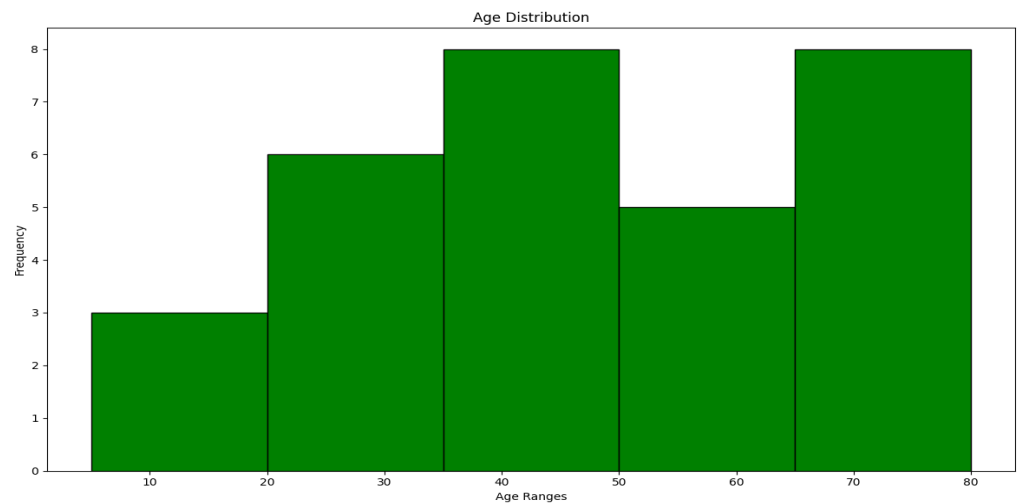
2) Process finished with exit code 0

```
C:\Users\mlm\PycharmProjects\BIBIN\venv\Scripts\python.exe C:\Users\mlm\PycharmProjects\BIBIN\randomarray.py
[[6 3]
 [8 5]]
determinant
6.0
inverse
[[ 0.83333333 -0.5      ]
 [-1.33333333  1.      ]]
matrix Rank
2
Transpose as 1-dimensional array:
[6 8 3 5]
```

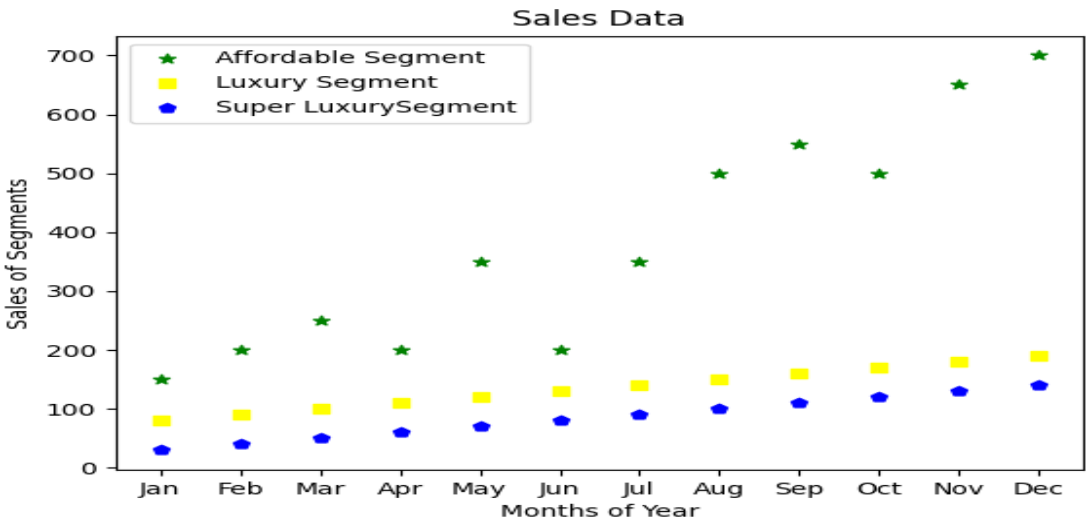
3) Process finished with exit code 0

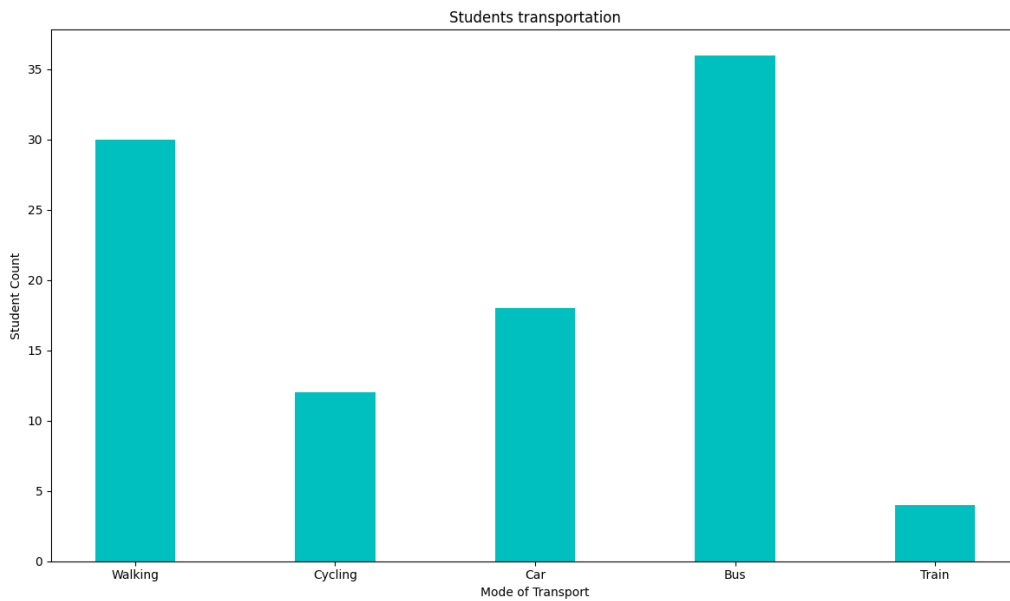
```
C:\Users\m1m\PycharmProjects\BIBIN\venv\Scripts\python.exe C:\Users\m1m\PycharmProjects\BIBIN\svd.py
[[1 2]
 [3 4]]
Left Singular Matrix
[[-0.40455358 -0.9145143 ]
 [-0.9145143  0.40455358]]
Singular Matrix
[5.4649857  0.36596619]
Right Singular Matrix
[[-0.57604844 -0.81741556]
 [ 0.81741556 -0.57604844]]
Reconstructed Matrix:
[[1. 2.]
 [3. 4.]]
```

4) Process finished with exit code 0



5)





6)

```
C:\Users\mlm\PycharmProjects\pythonProject1\.venv\Scripts\python.exe C:\Users\mlm\PycharmProjects\BIBIN\7.py
Shape of the Data set : (150, 5)
```

First five rows

	sepal_length	sepal_width	petal_length	petal_width	variety
0	5.1	3.5	1.4	0.2	Setosa
1	4.9	3.0	1.4	0.2	Setosa
2	4.7	3.2	1.3	0.2	Setosa
3	4.6	3.1	1.5	0.2	Setosa
4	5.0	3.6	1.4	0.2	Setosa

Last five rows

	sepal_length	sepal_width	petal_length	petal_width	variety
145	6.7	3.0	5.2	2.3	Virginica
146	6.3	2.5	5.0	1.9	Virginica
147	6.5	3.0	5.2	2.0	Virginica
148	6.2	3.4	5.4	2.3	Virginica
149	5.9	3.0	5.1	1.8	Virginica

Size of the Data Set : 750

Number of samples available for each Variety

variety

Versicolor 54

Virginica 50

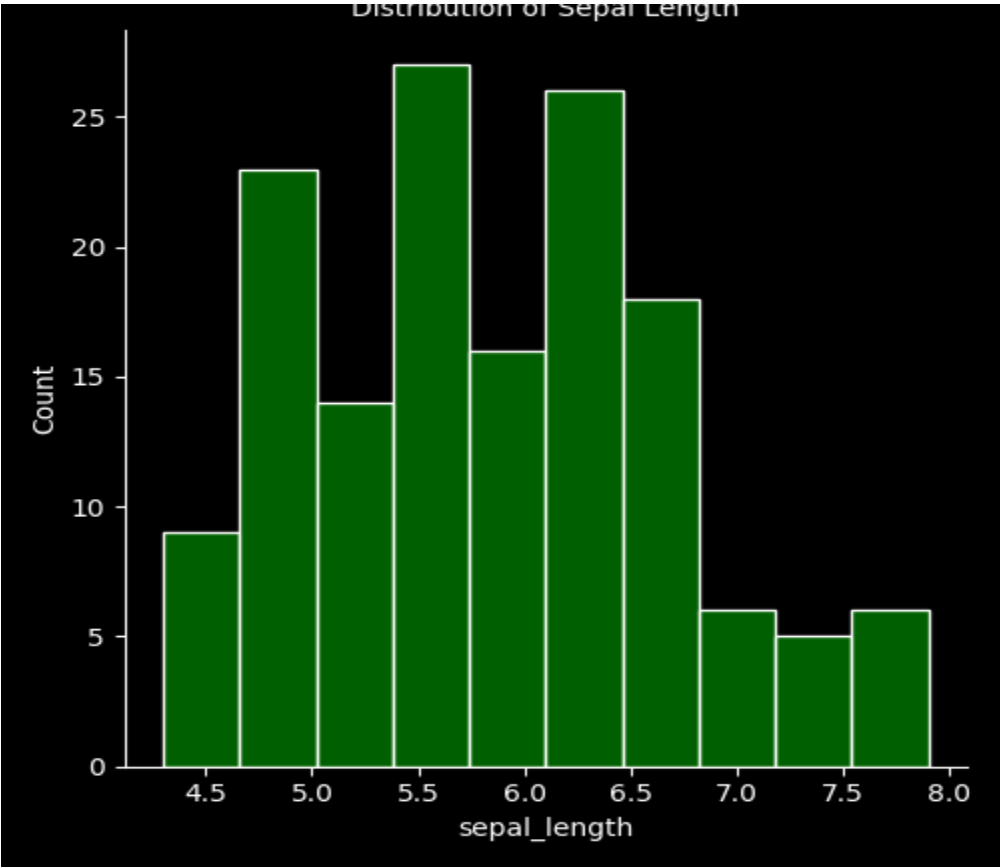
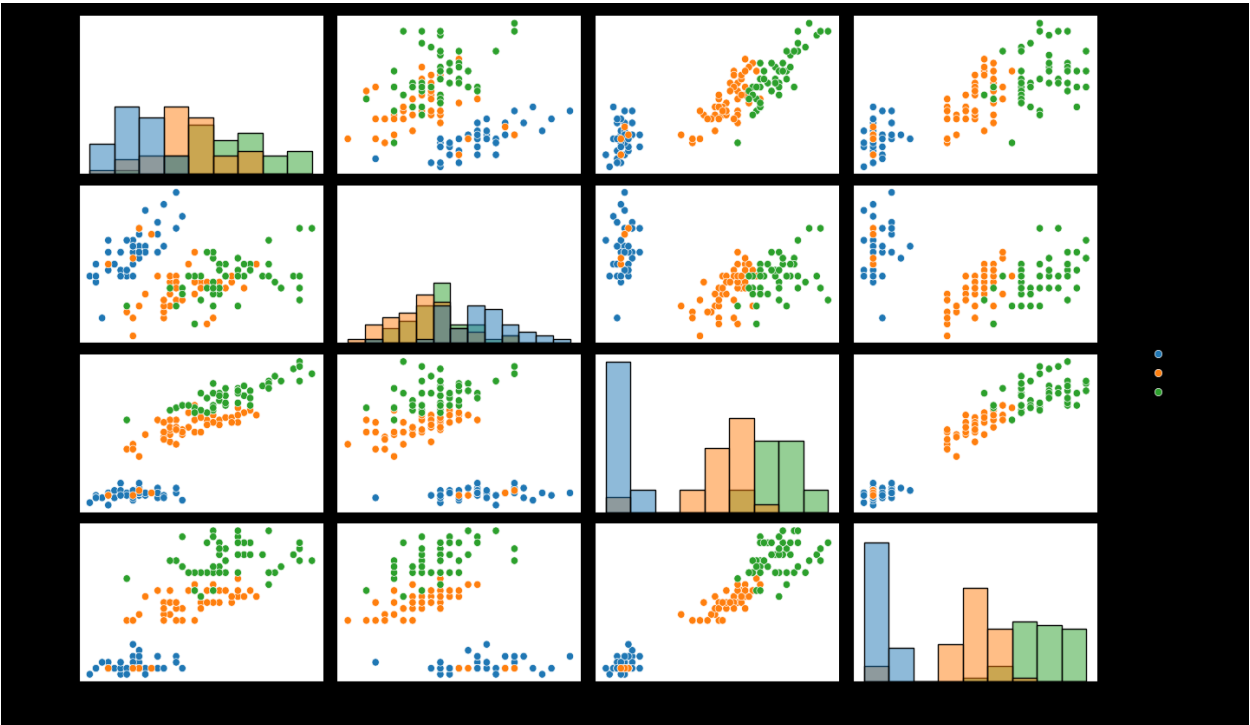
Setosa 46

Name: count, dtype: int64

Description of the data set

	sepal_length	sepal_width	petal_length	petal_width
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.057333	3.758000	1.199333

7)



output

=====

C:\Users\mlm\PycharmProjects\BIBIN\venv\Scripts\python.exe C:\Users\mlm\PycharmProjects\BIBIN\venv\knn.py

	precision	recall	f1-score	support
Setosa	1.00	1.00	1.00	10
Versicolor	1.00	1.00	1.00	10
Virginica	1.00	1.00	1.00	10
accuracy			1.00	30
macro avg	1.00	1.00	1.00	30
weighted avg	1.00	1.00	1.00	30

Accuracy : 1.0

Real Values Predicted Values

0	Setosa	Setosa
1	Versicolor	Versicolor
2	Versicolor	Versicolor
3	Versicolor	Versicolor
4	Setosa	Setosa
5	Virginica	Virginica
6	Virginica	Virginica
7	Setosa	Setosa
8	Setosa	Setosa
9	Versicolor	Versicolor
10	Setosa	Setosa

8)

9)

C:\Users\mlm\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\mlm\PycharmProjects\pythonProje

Mean Absolute Error: 5.20013529602771

Mean Squared Error: 31.284284402577875

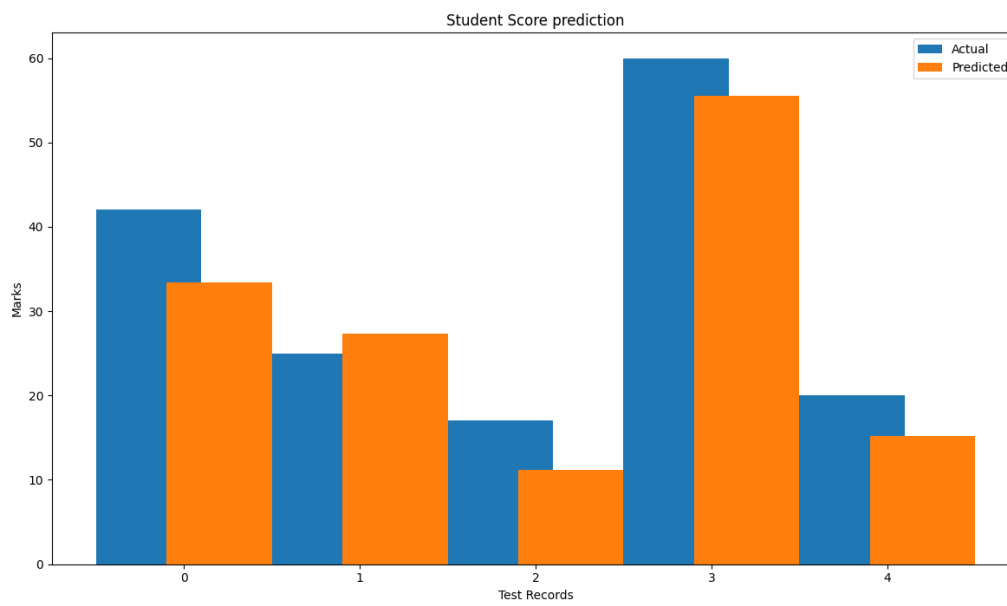
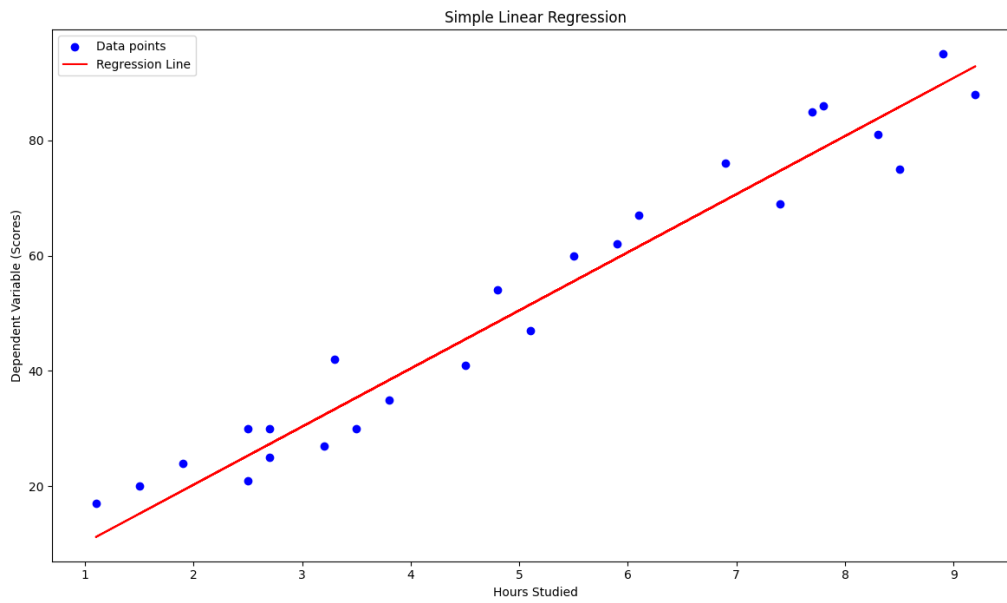
Root Mean Squared Error: 5.593235593337534

Process finished with exit code 0

two plotted graph are given in the names

1)simple linear regresion

2)simple linear regresion2



```
C:\Users\mlm\PycharmProjects\pythonProject1\.venv\Scripts\python.exe C:\Users\mlm\PycharmProjects\BIBIN\mult
```

	TV	Radio	Newspaper	Sales
0	230.1	37.8	69.2	22.1
1	44.5	39.3	45.1	10.4
2	17.2	45.9	69.3	12.0
3	151.5	41.3	58.5	16.5
4	180.8	10.8	58.4	17.9

Mean Squared Error: 3.562686377102421

R-squared: 0.8484372382624404

Coefficients: [0.05323974 0.12099215 -0.00557407]

Intercept: 4.682857108397286

Actual value : 15.0 Predicted value : 17.30978223003696

Number of mislabeled points from test data set : 40

Actual value : 18.0 Predicted value : 19.364242727795762

Number of mislabeled points from test data set : 40

Actual value : 17.0 Predicted value : 18.94760357642275

Number of mislabeled points from test data set : 40

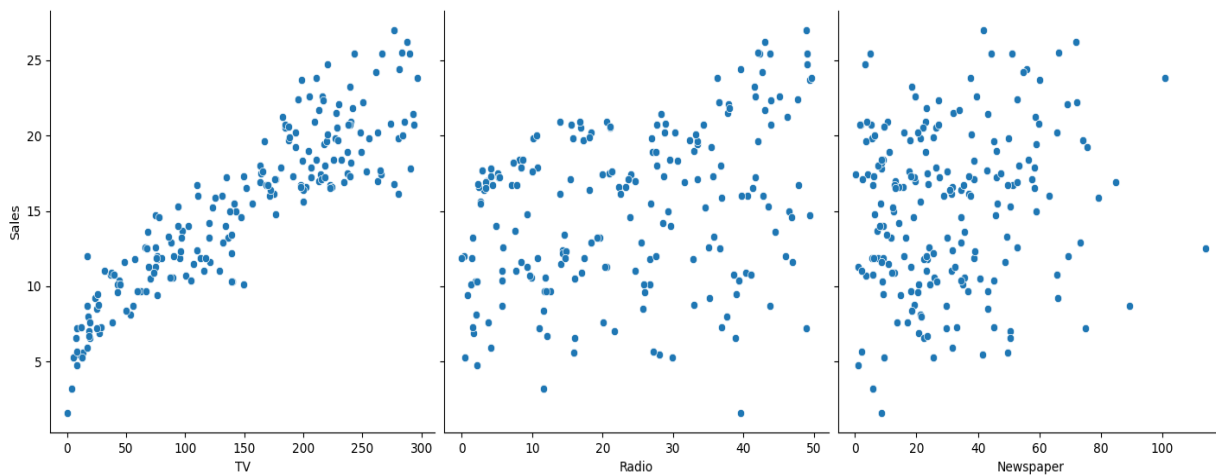
Actual value : 11.9 Predicted value : 8.90140256975679

Number of mislabeled points from test data set : 40

Actual value : 11.5 Predicted value : 12.033937588310465

Number of mislabeled points from test data set : 40

10) Actual value : 22.1 Predicted value : 21.12109798558051



```
C:\Users\mlm\PycharmProjects\pythonProject1\.venv\Scripts\python.exe C:\Users\mlm\PycharmProjects\BIBIN\
```

```
['Setosa' 'Versicolor' 'Versicolor' 'Virginica' 'Virginica' 'Setosa'  
'Setosa' 'Versicolor' 'Virginica' 'Versicolor' 'Versicolor' 'Setosa'  
'Virginica' 'Setosa' 'Setosa' 'Versicolor' 'Virginica' 'Virginica'  
'Setosa' 'Versicolor' 'Versicolor' 'Setosa' 'Virginica' 'Setosa'  
'Virginica' 'Setosa' 'Versicolor' 'Versicolor' 'Versicolor' 'Setosa']
```

Accuracy : 0.8333333333333334

Number of mislabeled points: 5 out of 30

Mismatching records (Actual vs Predicted):

Actual: Versicolor, Predicted: Virginica

Actual: Virginica, Predicted: Versicolor

Actual: Versicolor, Predicted: Setosa

Actual: Versicolor, Predicted: Virginica

Actual: Virginica, Predicted: Versicolor

Process finished with exit code 0

11)

```
C:\Users\mlm\PycharmProjects\pythonProject1\.venv\Scripts\python.exe C:\Users\mlm\PycharmProjects\BIBIN\Kmea
```

	CustomerID	Gender	Age	Annual Income (k\$)	Spending Score (1-100)
0	1	Male	19	15	39
1	2	Male	21	15	81
2	3	Female	20	16	6
3	4	Female	23	16	77
4	5	Female	31	17	40

Predicted Cluster Indexes:

```
[3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 5 3 4 3 5 3 5 3 5 3  
5 3 5 4 5 4 4 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4  
0 4 4 0 4 0 4 4 0 0 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 1 2 1 2 1 0 1 2 1 2 1 2 1 0 1  
2 1 2 1 2 1 2 1 2 1 0 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2  
1 2 1 2 1 2 1 2 1 2 1 2 1 2 1]
```

Process finished with exit code 0

12)

