Блок 1

10) . В последовательности B(100) определить максимальное число членов подряд идущих, у которых чередуются знаки.

```
import random
list_b = [random.randint(-10, 10) for i in range(100)]
print(list_b)
result = 0
current_num = "break"
max_value = 0
for i in list_b:
    if i > 0:
        if current_num == "negative":
            current_num = "positive"
            max_value += 1
            if max_value > result: result = max_value
        elif current_num == "positive":
            max_value = 1
        else:
            max_value = 1
            current_num = "positive"

    elif i < 0:
        if current_num == "positive":
            current_num = "negative"
            max_value += 1
            if max_value > result: result = max_value
        elif current_num == "negative":
            max_value = 1
        else:
            max_value = 1
            current_num = "negative"

    else:
        current_num = "break"
        max_value = 0

print(result)
```

Результат работы:

```
[-2, -8, -2, 8, -3, 4, -6, 1, 6, -2, -1, 1, 10, 10, -10, 6, 0, 2, -10, 6, -2, 8, 2, -4,
    0, 8, -7, 7, 4, 0, 9, 5, -4, -8, 5, -10, 6, 7, -2, 4, -8, 10, -1, -9, 1, 8, -9, 1,
    -8, 6, -4, -9, 3, -8, 6, 9, 9, 4, -10, -6, -9, 2, -4, 6, 2, -2, -2, -10, 0, -8, 0,
    9, -10, 7, -5, -9, -4, -2, 0, 4, -8, 2, 6, -1, 3, -6, -3, 7, 5, 4, 8, -6, -7, -2,
    -4, -1, 4, 4, 9, 5]
6
```

Блок 2

10. Дана матрица D(16,14). В каждой строке матрицы определить количество элементов, превышающих среднее арифметическое значение положительных элементов главной диагонали матрицы.

Код программы:

```
import random

matrix = []
res = []
mainSum = 0
countValues = 0
mainAverage = 0

for i in range(14) :
    li = []
    for j in range(16) :
        li.append(random.randint(-100, 100))
    matrix.append(li)
    if matrix[i][i] > 0:
        countValues += 1
        mainSum += matrix[i][i]
        mainAverage = mainSum / countValues

for i in matrix :
    print(i)

print("Average of main diagonal: ", mainAverage)

for i in range(14) :
    count = 0
    for j in range(16) :
        if matrix[i][j] > mainAverage:
            count += 1
    print("The number of values larger than mainAverage in row ", i + 1, ": ", count)
```

Результат работы:

```
[-68, -13, -77, -75, -3, -6, 66, 67, -83, 80, 34, 29, 38, 69, -9, -21]
[-58, -88, 27, -29, -45, -17, 28, -10, 61, 96, 44, -43, 25, 29, -88, 91]
[73, -57, -79, -24, 80, -70, 12, -35, 84, 61, -33, 47, 49, -78, 56, -38]
[80, -17, -83, 53, -70, 38, 33, -94, -87, 71, 23, -3, -67, 78, -1, 27]
[98, -20, 46, -33, -46, 69, 18, 79, 58, -73, -86, 82, 14, 33, -11, -48]
[-48, 43, -12, -4, -89, -43, -6, -51, -37, -90, -73, 74, 42, 8, 6, 27]
[-91, -53, -74, -12, -4, 62, 4, -68, 100, -81, 69, 56, -99, -4, -28, -94]
[-79, 42, -44, 93, -52, -1, 99, -69, -22, -34, -85, -10, -19, -38, 82, -93]
[-45, 43, -56, -13, -37, 77, 57, -92, -6, -45, -77, -53, -86, -57, 24, 7]
[-62, 48, -57, 58, 67, -35, 32, 60, -31, 19, -11, -51, -45, -69, 71, -52]
[2, 83, -93, -12, -25, 23, 41, 38, -91, -92, -35, -63, -96, 95, -64, 14]
[-23, 81, -93, -74, -88, 30, 96, -43, 68, -84, -2, 42, 83, -41, -71, -62]
[87, 48, 9, -50, 44, 81, 88, -33, 59, 40, -57, 75, 12, 79, -46, -41]
[90, 91, -66, -81, -46, -2, 100, 81, 0, 7, -93, 19, 46, 79, -81, 52]
Average of main diagonal:  34.833333333333336
The number of values larger than mainAverage in row  1 :  5
The number of values larger than mainAverage in row  2 :  4
The number of values larger than mainAverage in row  3 :  7
The number of values larger than mainAverage in row  4 :  5
The number of values larger than mainAverage in row  5 :  6
The number of values larger than mainAverage in row  6 :  3
The number of values larger than mainAverage in row  7 :  4
The number of values larger than mainAverage in row  8 :  4
The number of values larger than mainAverage in row  9 :  3
The number of values larger than mainAverage in row  10 :  5
The number of values larger than mainAverage in row  11 :  4
The number of values larger than mainAverage in row  12 :  5
```