Министерство образования Республики Беларусь

Учреждение образования

«Брестский государственный технический университет»

Кафедра ИИТ

Лабораторная работа №4

По дисциплине: «ЯП»

Тема: «Основы языка программирования Python»

Выполнил:

Студент 2 курса

Группы ПО-7(2)

Угляница И.Н

Проверил:

Бойко Д.О.

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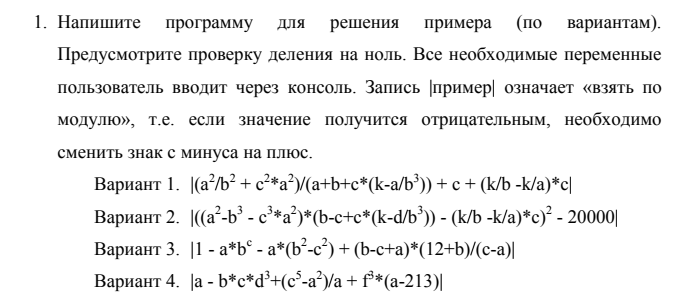
Основы языка Python

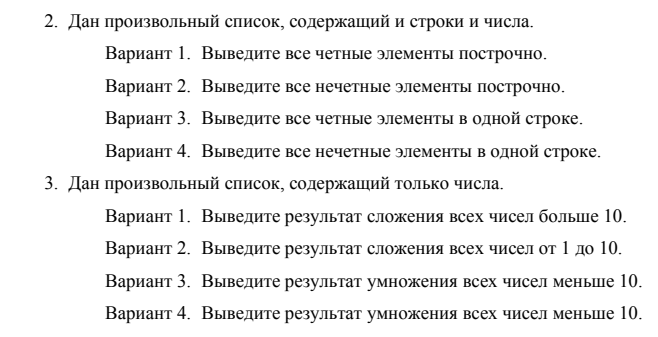
Цель работы: изучить основы языка Python.

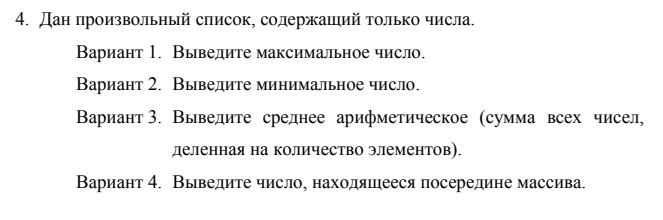
Вариант 10

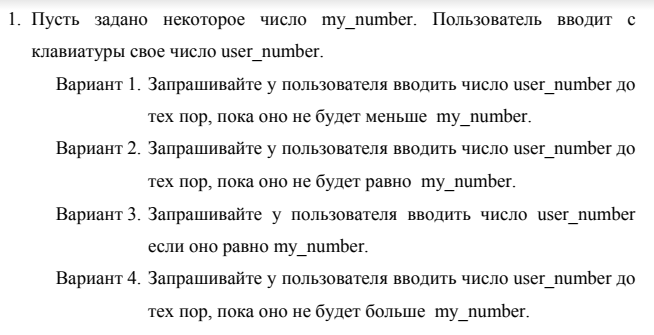
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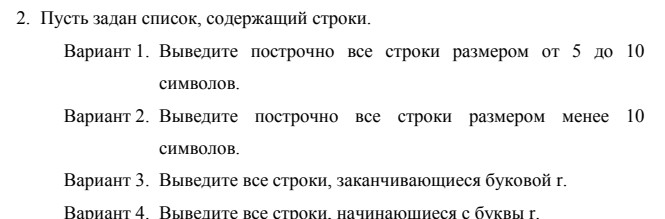
Задание:

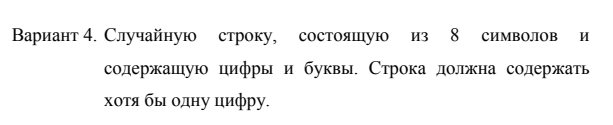


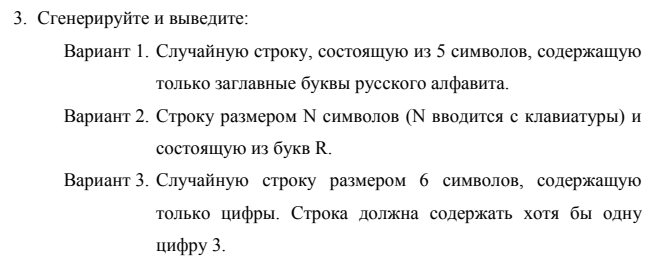


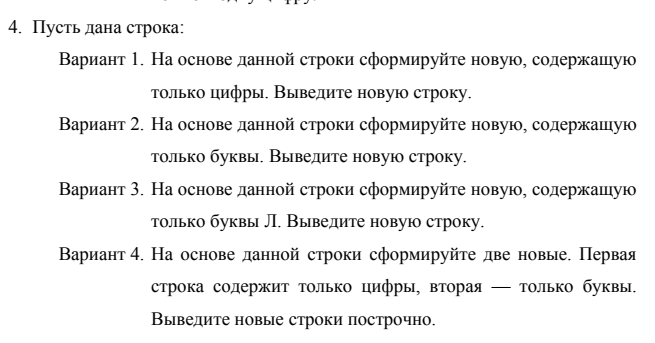


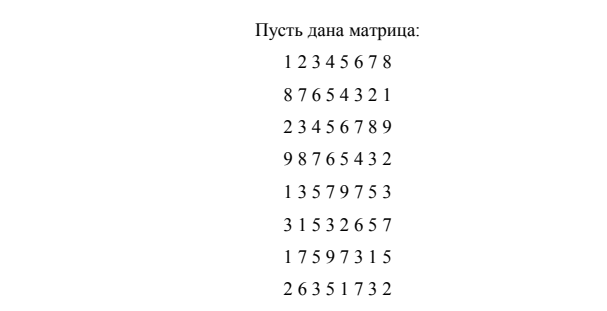


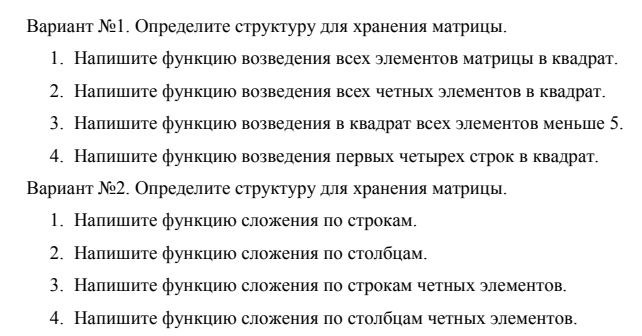


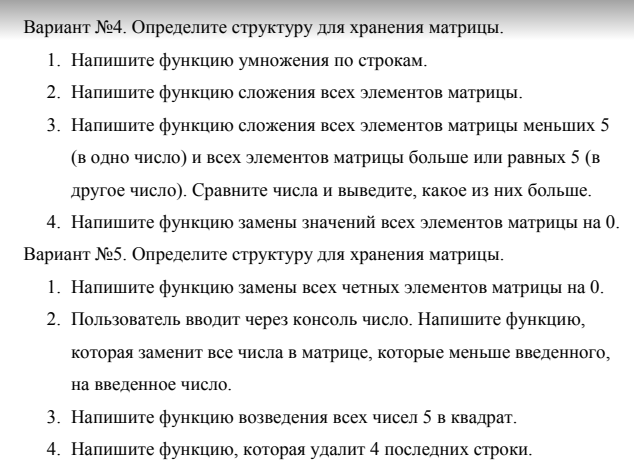


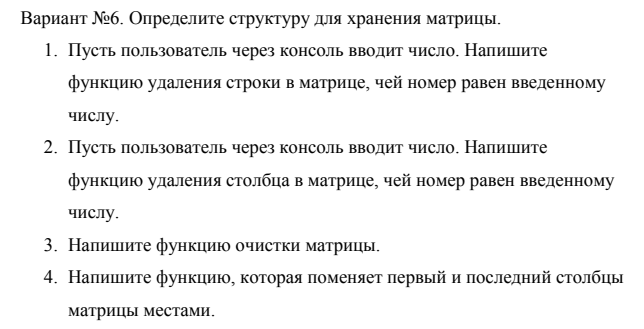


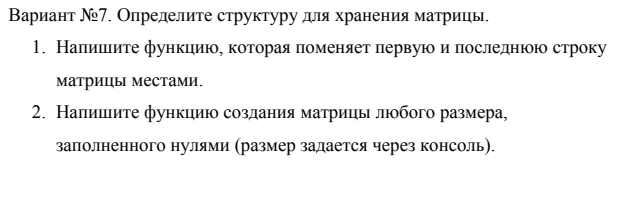


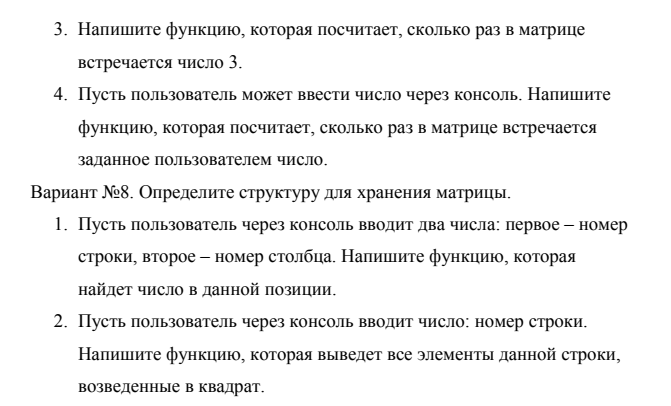


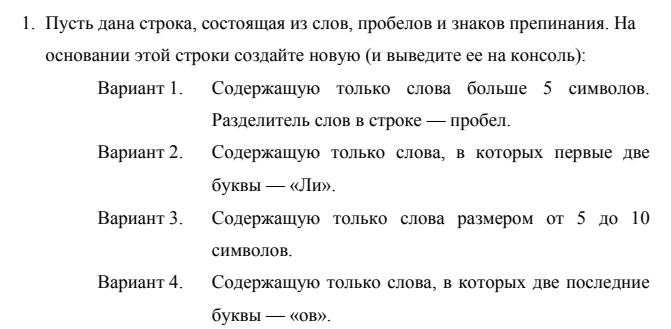


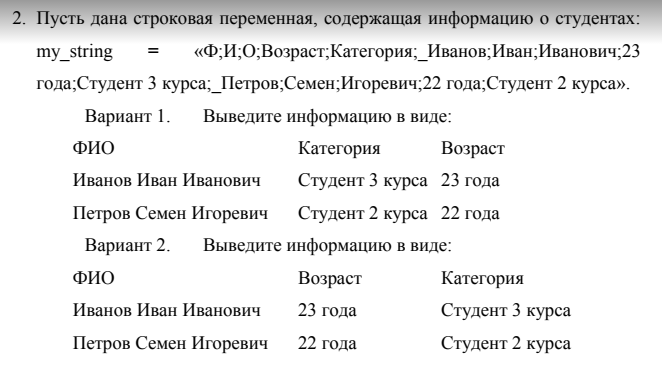


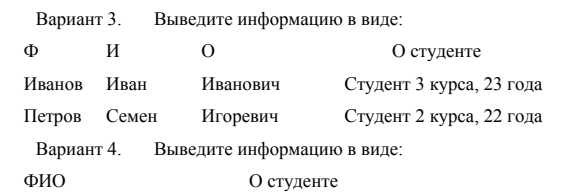


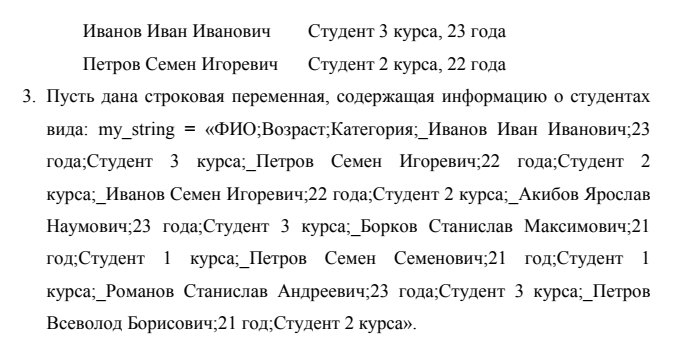


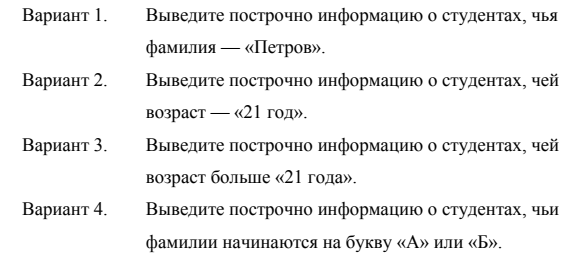


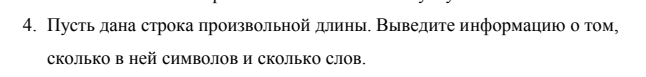


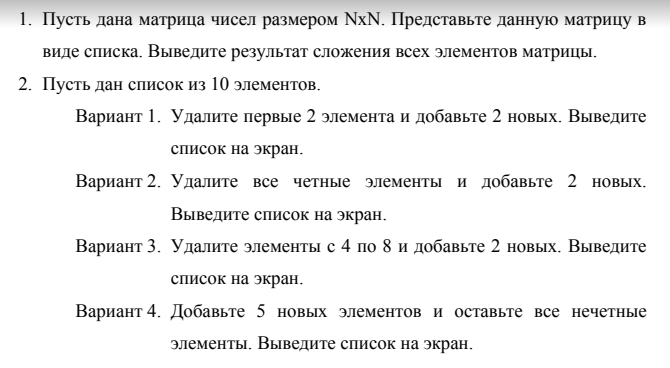


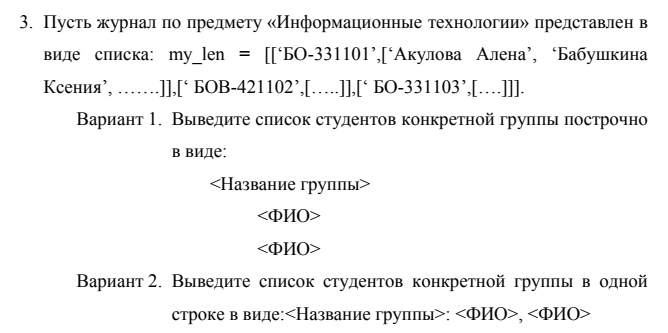


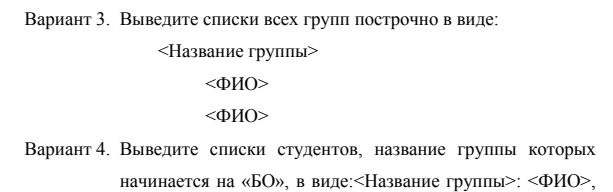


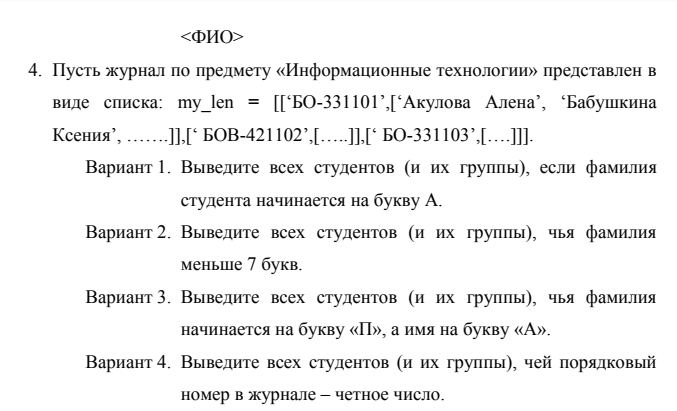












Код программы:

from string import punctuation  
from copy import deepcopy  
  
# 1 task  
def task1\_1():  
 print("enter five numbers:")  
 a, b, c, d, k = map(float, input().split())  
 try:  
 result = abs(  
 (a \*\* 2 - b \*\* 3 - c \*\* 3 \* a \*\* 2) \* (b - c + c \* ((k - d) / b \*\* 3))  
 - ((k / b - k / a) \* c) \*\* 2  
 - 20000  
 )  
 print(result)  
 except ZeroDivisionError:  
 print("Something went wrong")  
  
  
def task1\_2():  
 main\_s = [1, 2, 3, 4, 5, 6]  
 for i in main\_s:  
 if i % 2 != 0:  
 print(i)  
  
  
def task1\_3():  
 main\_s\_1 = [-1, 1, 2, -5, 3, 4, 10, 12]  
 temp = 0  
 for i in main\_s\_1:  
 if 1 <= i <= 10:  
 temp += i  
 print(temp)  
  
  
def task1\_4():  
 arr = [1, 6, 235, 7, 87, -7]  
 min\_el = arr[0]  
 for i in arr:  
 if i < min\_el:  
 min\_el = i  
 print(min\_el)  
  
  
# task 2  
def task2\_1():  
 my\_number = 7  
 print('Enter number(7)')  
 user\_number = int(input())  
 while user\_number != my\_number:  
 print("Try again")  
 user\_number = int(input())  
 if user\_number == my\_number:  
 print("success")  
  
  
def task2\_2():  
 big\_str = ["IvanUglianitsa", "map", "hello"]  
 for i in big\_str:  
 if len(i) < 10:  
 print(i)  
  
  
def task2\_3():  
 len\_str = int(input("Enter size:"))  
 print("R" \* len\_str)  
  
  
def task2\_4():  
 str\_sym\_num = "12IH8o9P"  
 new\_str = ""  
 for i in str\_sym\_num:  
 if i.isalpha():  
 new\_str += i  
 print(new\_str)  
  
  
matrix = [  
 [1, 2, 3, 4, 5, 6, 7, 8],  
 [8, 7, 6, 5, 4, 3, 2, 1],  
 [2, 3, 4, 5, 6, 7, 8, 9],  
 [9, 8, 7, 6, 5, 4, 3, 2],  
 [1, 3, 5, 7, 9, 7, 5, 3],  
 [3, 1, 5, 3, 2, 6, 5, 7],  
 [1, 7, 5, 9, 7, 3, 1, 5],  
 [2, 6, 3, 5, 1, 7, 3, 2],  
]  
# task 3  
def task3\_1():  
 copymatrix = deepcopy(matrix)  
 print("Matrix with squares of numbers")  
 for rows in range(len(copymatrix)):  
 for cols in range(len(copymatrix[rows])):  
 if copymatrix[rows][cols] % 2 == 0:  
 copymatrix[rows][cols] \*= copymatrix[rows][cols]  
 print(copymatrix[rows][cols], end=" ")  
 print()  
  
  
def task3\_2():  
 copymatrix = deepcopy(matrix)  
 new\_matrix = []  
 print("Matrix after addition(по столбцам)")  
 for rows in range(len(copymatrix)):  
 result = 0  
 for cols in range(len(copymatrix[rows])):  
 result += copymatrix[cols][rows]  
  
 new\_matrix.append(result)  
 print(new\_matrix)  
  
  
def task3\_4():  
 copymatrix = deepcopy(matrix)  
 res = 0  
 print("Result of adding all the elements")  
 for rows in range(len(copymatrix)):  
 for cols in range(len(copymatrix[rows])):  
 res += copymatrix[rows][cols]  
 print(res)  
  
  
def task3\_5():  
 copymatrix = deepcopy(matrix)  
 replace\_num = int(input("Enter number to replace"))  
 for rows in range(len(copymatrix)):  
 for cols in range(len(copymatrix[rows])):  
 if copymatrix[rows][cols] < replace\_num:  
 copymatrix[rows][cols] = replace\_num  
 print(copymatrix[rows][cols], end=" ")  
 print()  
  
  
def task3\_6():  
 copymatrix = deepcopy(matrix)  
 del\_col = int(input("enter the number of the column to delete"))  
 for row in range(len(copymatrix)):  
 del copymatrix[row][del\_col]  
 print(\*copymatrix, sep="\n")  
  
  
###  
def task3\_7():  
 new\_matrix = []  
 row = int(input("Enter row size"))  
 col = int(input("Enter column size"))  
 for i in range(row):  
 new\_matrix.append([])  
 for j in range(col):  
 new\_matrix[i].append(0)  
 print(\*new\_matrix, sep="\n")  
  
  
def task3\_8():  
 row\_sqrt = int(input("Enter column:"))  
 row\_sqrt += 1  
 copymatrix = deepcopy(matrix)  
 temp\_list = []  
 for col in range(len(copymatrix[row\_sqrt])):  
 temp\_list.append(copymatrix[row\_sqrt][col] \*\* 2)  
 print(temp\_list)  
  
  
def task4\_1():  
 main\_str = "лихо тихо , лист ."  
 temp = main\_str.split(" ")  
 temp\_end = []  
 for i in range(len(temp)):  
 if temp[i] not in punctuation and len(temp[i]) > 1:  
 if temp[i][0] == "л" and temp[i][1] == "и":  
 temp\_end.append(temp[i])  
 print(temp\_end)  
  
  
def task4\_2():  
 students\_main = (  
 "Ф;И;О;Возраст;Категория;"  
 "\_Иванов;Иван;Иванович;23 года;Студент 3 курса;"  
 "\_Петров;Семен;Игоревич;22 года;Студент 2 курса"  
 )  
 students\_res = students\_main.split(";\_")  
 data = []  
 for row in students\_res:  
 data.append(row.split(";"))  
 print(  
 "{:1}{:1}{:31}{:20}{:20}".format(  
 data[0][0], data[0][1], data[0][2], data[0][3], data[0][4]  
 )  
 )  
 for i in data[1:]:  
 print("{:7}{:6}{:20}{:20}{:20}".format(i[0], i[1], i[2], i[3], i[4]))  
  
  
def task4\_3():  
 students = (  
 "ФИО;Возраст;Категория;"  
 "\_Иванов Иван Иванович;23 года;Студент 3 курса;"  
 "\_Петров Семен Игоревич;22 года;Студент 2 курса;"  
 "\_Иванов Семен Игоревич;22 года;Студент 2 курса;"  
 "\_Акибов Ярослав Навич;23 года;Студент 3 курса;"  
 "\_Борков Станислав Максимович;21 год;Студент 1 курса;"  
 "\_Петров Семен Семенович;21 год;Студент 1 курса;"  
 )  
 students\_new = students.split(";\_")  
 data\_new = []  
 info = []  
 for row in students\_new:  
 data\_new.append(row.split(";"))  
 for i in data\_new[1:]:  
 if "21" in i[1]:  
 info.append(i)  
 for i in info:  
 print(" ".join(i))  
  
  
def task4\_4():  
 my\_str = "hello my dear friends"  
 print(f"Symbols: {len(my\_str)}")  
 print(f"Words: {len(my\_str.split(' '))}")  
  
def task6\_1():  
 matrix = [  
 [1, 2, 3],  
 [2, 4, 5]  
 ]  
 sum = 0  
 for i in matrix:  
 for j in i:  
 sum += j  
 print(sum)  
  
def task6\_2():  
 my\_list = [1, 2, 3, 5, 6, 9, 8]  
 new\_el = [0, 10]  
 index\_ = []  
 for i in my\_list:  
 if i % 2 == 0:  
 my\_list.remove(i)  
 for i in new\_el:  
 my\_list.append(i)  
 print(my\_list)  
  
def task6\_3():  
 group = [["БО-331101", ["Акулова Алена", "Пабушкина Асения"]], ["БО-402000", ["Игорь Держатель Востока", "Солевой Голем Дмитрий"]]]  
 name = 'БО-331101'  
 for i in group:  
 if name in i[0]:  
 print(f"{i[0]}:{', '.join(i[1])}")  
  
  
def task6\_4():  
 group = [["БО-331101", ["Акула Алена", "Пабушкина Асения"]],  
 ["БО-402000", ["ДержательВостока Игорь", "СолевойГолем Дмитрий"]]]  
 temp = []  
 for i in group:  
 for j in i[1]:  
 temp.append(j.split(' '))  
 for i in temp:  
 if len(i[0]) < 7:  
 print(' '.join(i))  
  
def main() -> None:  
 print('\nЗадание 1')  
 print(1.1)  
 task1\_1()  
 print(1.2)  
 task1\_2()  
 print(1.3)  
 task1\_3()  
 print(1.4)  
 task1\_4()  
 print('\nЗадание 2 «Строки и списки»')  
 print('task 2.1')  
 task2\_1()  
 print('task 2.2')  
 task2\_2()  
 print('task 2.3')  
 task2\_3()  
 print('task 2.4')  
 task2\_4()  
 print('\nЗадание 3 «Матрицы»')  
 print('task 3.1')  
 task3\_1()  
 print('task 3.2')  
 task3\_2()  
 print('task 3.4')  
 task3\_4()  
 print('task 3.5')  
 task3\_5()  
 print('task 3.6')  
 task3\_6()  
 print('task 3.7')  
 task3\_7()  
 print('task 3.8')  
 task3\_8()  
 print('\nЗадание 4 «Строки»')  
 print('task 4.1')  
 task4\_1()  
 print('task 4.2')  
 task4\_2()  
 print('task 4.3')  
 task4\_3()  
 print('task 4.4')  
 task4\_4()  
 print('\nЗадание 6 «Списки»')  
 print('task 6.1')  
 task6\_1()  
 print('task 6.2')  
 task6\_2()  
 print('task 6.3')  
 task6\_3()  
 print('task 6.4')  
 task6\_4()  
  
  
if \_\_name\_\_ == "\_\_main\_\_":  
 main()

Вывод: В ходе выполнения данной работы я изучил базовые операции языка, научился работать со строками, списками, а также функциями.