**ლექცია 5 – სიები list**

**სიები list**

my\_list = [1, "str", [5, 8], 2.56, True]

print(my\_list, type(my\_list), id(my\_list))

print(my\_list[0], type(my\_list[0]), id(my\_list[0]))

print(my\_list[1], type(my\_list[1]), id(my\_list[1]))

print(my\_list[2], type(my\_list[2]), id(my\_list[2]))

print(my\_list[2][0], type(my\_list[2][0]), id(my\_list[2][0]))

[1, 'str', [5, 8], 2.56, True] <class 'list'> 2016171979648

1 <class 'int'> 140723704222504

str <class 'str'> 140723702778512

[5, 8] <class 'list'> 2016170181248

5 <class 'int'> 140723704222632

**მატრიცა 3x3**

*მატრიცა არის სიაში ჩადგმული სია*

'''

my\_matrix\_3x3 = [[], [], []]

\* \* \*      []     [1, 2, 3]

\* \* \*      []     [4, 5, 6]

\* \* \*      []     [7, 8, 9]

'''

my\_matrix\_3x3 = [[1, 2, 3], [4, 5, 6], [7, 8, 9]]

print(my\_matrix\_3x3)

# დავბეჭდოთ 8

print(my\_matrix\_3x3[2])

print(my\_matrix\_3x3[2][1])

print(my\_matrix\_3x3[2][1][0]) # TypeError: 'int' object is not subscriptable

# შევქმნათ 4x4-ზე მატრიცა

# ...

[[1, 2, 3], [4, 5, 6], [7, 8, 9]]

[7, 8, 9]

8

Traceback (most recent call last):

File "d:\PyApp\2024-2025\BPWSO-16-PM\ლექცია 5 – სიები\main.py", line 135, in <module>

print(my\_matrix\_3x3[2][1][0])

~~~~~~~~~~~~~~~~~~~^^^

TypeError: 'int' object is not subscriptable

**სიის მეთოდები**

# ელემენტის ჩამატება სიაში. მეთოდები: .append(), .insert()

arr1 = [100, 2, 3, 4, 9, 11, 50]

print(arr1)

arr1.append("200")

print(arr1)

arr1.append([200, 10, "text"])

print(arr1)

arr1.insert(2, 56)

print(arr1)

arr1.insert(0, "start")

arr1.insert(-1, True)

arr1.insert(len(arr1), True)

print(arr1, "\n")

[100, 2, 3, 4, 9, 11, 50]

[100, 2, 3, 4, 9, 11, 50, '200']

[100, 2, 3, 4, 9, 11, 50, '200', [200, 10, 'text']]

[100, 2, 56, 3, 4, 9, 11, 50, '200', [200, 10, 'text']]

['start', 100, 2, 56, 3, 4, 9, 11, 50, '200', True, [200, 10, 'text'], True]

**ელემენტის წაშლა სიიდან: .remove(), .pop(), del**

arr1 = ['start', 100, 2, 56, 3, 4, 9, 11, 50, '200', True, [200, 10, 'text']]

arr1.remove(9)

print(arr1)

# წავშალოთ ელემენტი 'text'

# arr1.remove('text')  # ValueError: list.remove(x): x not in list

arr1[-1].remove('text')

print(arr1, "\n")

# .pop()

popped\_element = arr1.pop()

print(arr1)

print(popped\_element)

arr1.pop(0)

print(arr1, "\n")

# del

del arr1[5]

print(arr1)

del arr1

# print(arr1)  # NameError: name 'arr1' is not defined

['start', 100, 2, 56, 3, 4, 11, 50, '200', True, [200, 10, 'text']]

['start', 100, 2, 56, 3, 4, 11, 50, '200', True, [200, 10]]

['start', 100, 2, 56, 3, 4, 11, 50, '200', True]

[200, 10]

[100, 2, 56, 3, 4, 11, 50, '200', True]

[100, 2, 56, 3, 4, 50, '200', True]

**მაგალითი.**

ციკლის გამოყენებით წავშალოთ წინასწარ მოცემული სიიდან ქვესიის ელემენტი

['start', 100, 2, 56, 3, 4, 11, 50, '200', True, [200, 10, 'text'], 'paata']

სიიდან წავშალოთ 'text'

arr = ['start', 100, 2, 56, 3, 4, 11, 50, '200', True, [200, 10, 'text'], 'paata']

for i in arr:

  if type(i) == list:

    if 'text' in i:

      i.remove('text')

print(arr)

['start', 100, 2, 56, 3, 4, 11, 50, '200', True, [200, 10], 'paata']

**სიის დუბლირება**

arr1 = ['start', 100, 2, 56, 3, 4, 11, 50, '200', True, [200, 10, 'text'], 'paata']

arr2 = arr1

print(arr1, id(arr1))

print(arr2, id(arr2))

arr2.pop()

print(arr1)

print(arr2, "\n")

arr2 = arr1.copy() # arr2 = arr1[:]

print(arr1, id(arr1))

print(arr2, id(arr2), "\n")

arr2.pop()

print(arr1)

print(arr2)

['start', 100, 2, 56, 3, 4, 11, 50, '200', True, [200, 10, 'text'], 'paata'] 1863591064448

['start', 100, 2, 56, 3, 4, 11, 50, '200', True, [200, 10, 'text'], 'paata'] 1863591064448

['start', 100, 2, 56, 3, 4, 11, 50, '200', True, [200, 10, 'text']]

['start', 100, 2, 56, 3, 4, 11, 50, '200', True, [200, 10, 'text']]

['start', 100, 2, 56, 3, 4, 11, 50, '200', True, [200, 10, 'text']] 1863591064448

['start', 100, 2, 56, 3, 4, 11, 50, '200', True, [200, 10, 'text']] 1863590979072

['start', 100, 2, 56, 3, 4, 11, 50, '200', True, [200, 10, 'text']]

['start', 100, 2, 56, 3, 4, 11, 50, '200', True]

**.index()**

arr1 = ['start', 100, 2, 56, 3, 4, 11, 50, '200', True, [200, 10, 'text'], 'paata']

print(arr1.index(11))

print(arr1.index(True))

# print(arr1.index(False))  # ValueError: False is not in list

if False in arr1:

  print(arr1.index(False))

else:

  print("Element not found")

6

9

Element not found

**.count()**

arr = [1, 2, 3, 4, 4, 5]

print(arr.count(4))

print(arr.count(2))

print(arr.count(0))

print(arr.count("text"))

2

1

0

0

**.reverse(), reversed()**

arr = [1, 2, 3, 4, 4, 5]

arr.reverse()

print(arr, "\n")

arr = [1, 2, 3, 4, 4, 5]

print(reversed(arr))

print(\*reversed(arr))

print(list(reversed(arr)), "\n")

print(arr, "\n")

arr = list(reversed(arr))

print(arr, "\n")

arr1 = [1, 2, 3, 4, 4, 5]

arr2 = arr1[::-1]

print(arr1)

print(arr2)

[5, 4, 4, 3, 2, 1]

<list\_reverseiterator object at 0x000001F1249ABFD0>

5 4 4 3 2 1

[5, 4, 4, 3, 2, 1]

[1, 2, 3, 4, 4, 5]

[5, 4, 4, 3, 2, 1]

[1, 2, 3, 4, 4, 5]

[5, 4, 4, 3, 2, 1]

**.sort(), sorted()**

arr = [17, 12, 21, 8, 13, 4, 11, 16]

arr.sort()

print(arr)

arr.sort(reverse=True)

print(arr, "\n")

arr = [17, 12, 21, 8, 13, 4, 11, 16]

print(sorted(arr))

print(sorted(arr, reverse=True))

print(arr, "\n")

sorted\_arr = sorted(arr)

print(sorted\_arr)

print(arr)

[4, 8, 11, 12, 13, 16, 17, 21]

[21, 17, 16, 13, 12, 11, 8, 4]

[4, 8, 11, 12, 13, 16, 17, 21]

[21, 17, 16, 13, 12, 11, 8, 4]

[17, 12, 21, 8, 13, 4, 11, 16]

[4, 8, 11, 12, 13, 16, 17, 21]

[17, 12, 21, 8, 13, 4, 11, 16]

**.sort(),  sorted()  არგუმენტი key**

cars = [{"brand": "Ford", "year": 2005, 'model': 'Fujen'},

        {"brand": "BMW", "year": 2015, 'model': 'Bmw6'},

        {"brand": "Mazda", "year": 2005, 'model': 'Verisa'},

        {"brand": "Toyota", "year": 2011, 'model': 'Camry'},

        {"brand": "Toyota", "year": 2007, 'model': 'Corola'},

        {"brand": "Mazda", "year": 2005, 'model': 'Mazda 6'},

        {"brand": "Audi", "year": 2005, 'model': 'Q7'},

        {"brand": "Mercedec", "year": 2015, 'model': 'SL7'},

       ]

# print(cars, "\n")

# cars.sort(key=lambda x: x['year'])

# cars.sort(key=lambda x: (x['year'], x['brand'], x['model']))

cars.sort(key=lambda x: (x['year'], x['brand'], x['model']), reverse=True)

# print(cars)

# def test(e):

#   return e['year'], e['brand'], e['model']

# cars.sort(key=test)

for car in cars:

  print(car)

{'brand': 'Mercedec', 'year': 2015, 'model': 'SL7'}

{'brand': 'BMW', 'year': 2015, 'model': 'Bmw6'}

{'brand': 'Toyota', 'year': 2011, 'model': 'Camry'}

{'brand': 'Toyota', 'year': 2007, 'model': 'Corola'}

{'brand': 'Mazda', 'year': 2005, 'model': 'Verisa'}

{'brand': 'Mazda', 'year': 2005, 'model': 'Mazda 6'}

{'brand': 'Ford', 'year': 2005, 'model': 'Fujen'}

{'brand': 'Audi', 'year': 2005, 'model': 'Q7'}

**იგვე გავაკეთოთ sorted() ფუნქციის გამოყენებით**

sorted\_cars = sorted(cars, key=lambda x: (x['year'], x['brand'], x['model']))

for car in sorted\_cars:

  print(f"{car['year']:<8}{car['brand']:<12}{car['model']}")

print()

for car in cars:

  print(f"{car['year']:<8}{car['brand']:<12}{car['model']}")

2005 Audi Q7

2005 Ford Fujen

2005 Mazda Mazda 6

2005 Mazda Verisa

2007 Toyota Corola

2011 Toyota Camry

2015 BMW Bmw6

2015 Mercedec SL7

2005 Ford Fujen

2015 BMW Bmw6

2005 Mazda Verisa

2011 Toyota Camry

2007 Toyota Corola

2005 Mazda Mazda 6

2005 Audi Q7

2015 Mercedec SL7

**.clear()**

arr = ["Start", 45, 90, 28, 117, True, [0, 2, 3, 'Text'], "Finish"]

print(arr)

arr.clear()

print(arr)

['Start', 45, 90, 28, 117, True, [0, 2, 3, 'Text'], 'Finish']

[]

**მაგალითი.**

მოცემულია სია. კონსოლიდან შევიტანოთ რიცხვი და ტექსტი. თუ შეტანილი რიცხვი სიაშია წავშალოთ. ასევე წავშალოთ შეტანილი ტექსტი თუ იგი არის მთავარი სიის ქვესიაში.

my\_list = [14, 'text', 41, 3.67, 'Boolean type', [16, 54, 'city']]

numb = eval(input("Enter a number: "))

text = input("Enter a text: ")

for i in my\_list:

  if numb in my\_list:

    my\_list.remove(numb)

  if type(i) == list and text in i:

    i.remove(text)

print(my\_list)

Enter a number: 21

Enter a text: qwer

[14, 'text', 41, 3.67, 'Boolean type', [16, 54, 'city']]

კოდში შესაძლებელია ჩაიწეროს ასეთი კონსრუქცია...

for i in range(100):

  pass

for i in range(100):

  ...