Pythoni standardteegi konteinerid

Informaatikaolümpiaadi õppesessioon 30.01.2021

Ahto Truu, ahto.truu@ut.ee

Teemad

- Jadad
  - Omistamine
  - Kahendotsing
- Hulgad
- Sõnastikud

Jadad

- Sõned
  - `s = "abcde", s = str(…)`
- Ennikud
  - `s = (1, 2, 3), s = tuple(…)`
- Loendid
  - `s = [1, 2, 3], s = list(…)`

Jadade põhioperatsioonid

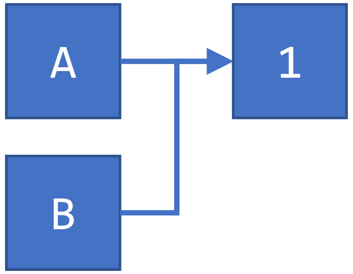
- `s[i], s[i : j], s[i : j : k]`
- `s + t, s += t, n * s, s * n, s *= n`
- `s == t`
- `len(s), min(s), max(s)`
- `x in s, x not in s`
- `s.index(x, i, j)`
- `s.count(x)`
- `for x in s:`
- `for i, x in enumerate(s):`

Loendite lisaoperatsioonid

- `s[i] = x, s[i : j] = t, s[i : j : k] = t`
- `del s[i], del s[i : j], del s[i : j : k]`
- `s.clear()`
- `s.append(x), s.insert(i, x)`
- `s.remove(x)`
- `s.extend(t)`
- `s.reverse(), t = reversed(s)`
- `s.sort(), t = sorted(s)`

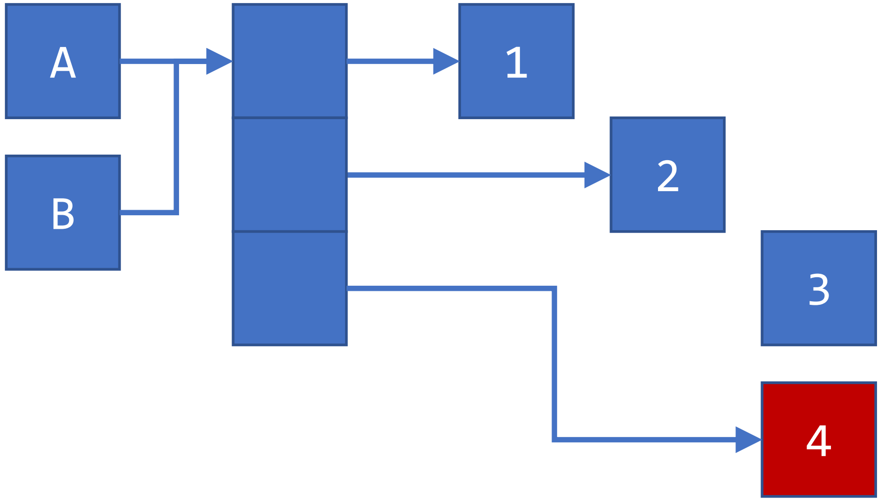
Omistamine (1)

```
A = 1
B = A
```



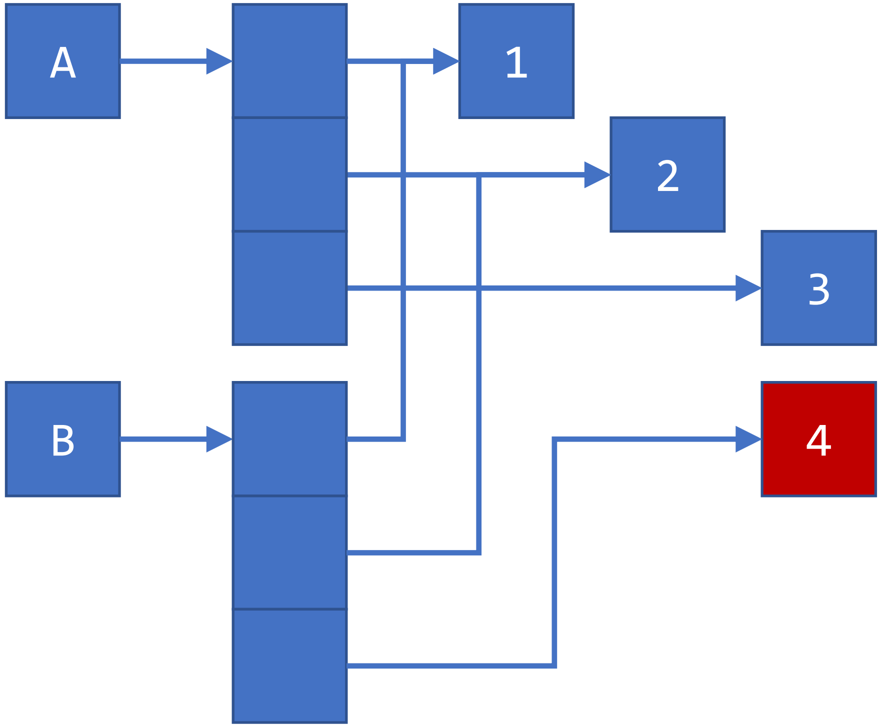
Omistamine (2)

```
A = [1, 2, 3]
B = A
B[2] = 4
print(A)
→ [1, 2, 4]
```



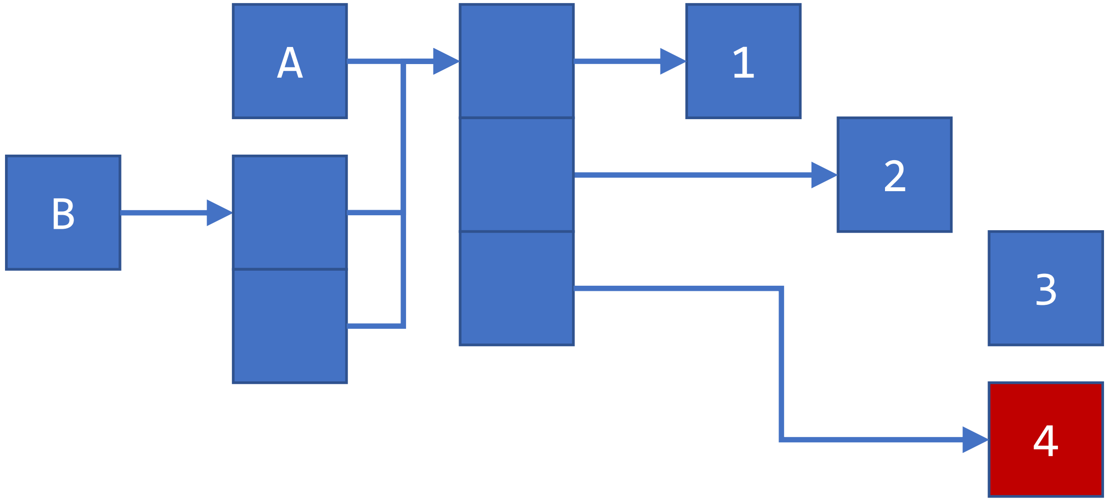
Omistamine (3)

```
A = [1, 2, 3]
B = A[:]
B[2] = 4
print(A)
→ [1, 2, 3]
```



Omistamine (4)

```
A = [1, 2, 3]
B = [A, A]
B[1][2] = 4
print(A)
→ [1, 2, 4]
print(B)
→ [[1, 2, 4], [1, 2, 4]]
```



Omistamine (5)

```
A = [1, 2, 3]
B = [A[:], A[:]]
A[1] = 4
print(B)
→ [[1, 2, 3], [1, 2, 3]]
B[1][1] = 5
print(B)
→ [[1, 2, 3], [1, 5, 3]]
```

Omistamine (6)

```
A = [1, 2, 3]
B = [A[:], A[:]]
C = B[:]
B[1][1] = 5
print(B)
→ [[1, 2, 3], [1, 5, 3]]
print(C)
→ [[1, 2, 3], [1, 5, 3]]
```

Omistamine (7)

```
A = [1, 2, 3]
B = [A[:], A[:]]
C = [x[:] for x in B]
B[1][1] = 5
print(B)
→ [[1, 2, 3], [1, 5, 3]]
print(C)
→ [[1, 2, 3], [1, 2, 3]]
```

Kahendotsing

- `import bisect`
- `bisect.bisect_left(s, x, lo, hi)`
- `bisect.bisect_right(s, x, lo, hi)`

```
bisect_left([2, 4, 6, 8], 5) → 2
bisect_right([2, 4, 6, 8], 5) → 2
bisect_left([2, 4, 5, 5, 6, 8], 5) → 2
bisect_right([2, 4, 5, 5, 6, 8], 5) → 4
```

- https://docs.python.org/3.5/library/bisect.html

Hulgad

- `s = {1, 2, 3}, s = set(…)`
- `x in s, x not in s, len(s)`
- `s.add(x), s.remove(x), s.discard(x), s.clear()`
- `s1 < s2, s1 <= s2, s1 > s2, s1 >= s2`
- `s1 | s2, s1 & s2, s1 ^ s2`
- `s.copy()`
- `for x in s:`
- `for x in sorted(s):`

Sõnastikud

- d = {'a': 1, 'b': 2, 'c': 3}, d = dict(…)
- d[x], d[x] = y
- del d[x], d.clear()
- x in d, x not in d, len(d)
- d.keys(), d.values()
- d.copy()
- for x in d:
- for x in sorted(d):

Harjutused

- https://codeforces.com/
- http://codeforces.com/group/yo3IFOZnZ1