```
from operator import itemgetter

class brau:
    def __init__(self, id, name, size, comp_id):
        self.id = id
        self.name = name
        self.size = size
        self.comp_id = comp_id

class comp:
    def __init__(self, brau_id, name):
        self.id = brau_id
        self.name = name

class combra:
    def __init__(self, comp_id, brau_id):
        self.comp_id = comp_id
        self.brau_id = brau_id

computers = [
    comp(1, 'macintosh'),
    comp(2, 'dell'),
    comp(3, 'ibm'),
    comp(4, 'toshiba'),
    comp(5, 'msi')
]

brausers = [
    brau(1, 'safari', 173, 1),
    brau(2, 'chrome', 140,  2),
    brau(3, 'mozilla', 97, 3),
    brau(4, 'Opera', 201, 4)
```

```
]

comps_braus = [
    combra(1, 1),
    combra(1, 2),
    combra(2, 2),
    combra(2, 4),
    combra(3, 3),
    combra(4, 2),
    combra(4, 4),
    combra(5, 2),
    combra(5, 3),
    combra(5, 4)
]

def main():
    one_to_many = [(b.name, b.size, c.name)
                   for b in brausers
                   for c in computers
                   if b.id == c.id
                   ]
    many_to_many_temp = [(c.name, cb.comp_id, cb.brau_id)
                         for c in computers
                         for cb in comps_braus
                         if c.id == cb.comp_id
                         ]
    many_to_many = [(b.name, b.size, comp_name)
                    for comp_name, comp_id, brau_id in many_to_many_temp
                    for b in brausers if b.id == brau_id
                    ]

    print('Задание А1')
```

```
    res_1 = sorted(one_to_many, key=itemgetter(2))
    print(res_1)

    print('Задание А2')
    res_2_unsorted = []
    for c in computers:
        c_braus = list(filter(lambda i: i[2]==c.name, one_to_many))
        if len(c_braus) > 0:
            c_sizes = [size for _,size,_ in c_braus]
            c_sizes_sum = sum(c_sizes)
            res_2_unsorted.append((c.name, c_sizes_sum))
    res_2 = sorted(res_2_unsorted, key=itemgetter(1), reverse = True)
    print(res_2)

    print('Задание А3')
    res_3 = {}
    for c in computers:
        if 'a' in c.name:
            c_braus = list(filter(lambda i: i[2]==c.name, many_to_many))
            c_braus_names = [x for x,_,_ in c_braus]
            res_3[c.name] = c_braus_names
    print(res_3)
if __name__ == '__main__':
    main()
```

ПРИМЕР ВЫПОЛНЕНИЯ ПРОГРАММЫ:

```
Задание A1
[('chrome', 140, 'dell'), ('mozilla', 97, 'ibm'), ('safari', 173, 'macintosh'), ('Opera', 201, 'toshiba')]
Задание A2
[('toshiba', 201), ('macintosh', 173), ('dell', 140), ('ibm', 97)]
Задание A3
{'macintosh': ['safari', 'chrome'], 'toshiba': ['chrome', 'Opera']}
```

Задание A1

[('chrome', 140, 'dell'), ('mozilla', 97, 'ibm'), ('safari', 173, 'macintosh'), ('Opera', 201, 'toshiba')]

Задание A2

[('toshiba', 201), ('macintosh', 173), ('dell', 140), ('ibm', 97)]

Задание A3

{'macintosh': ['safari', 'chrome'], 'toshiba': ['chrome', 'Opera']}