

Текст программы:

Файл Detail.py

```
class Detail():  
    def __init__(self, id, name, price, manID):  
        self.id = id  
        self.name = name  
        self.price = price  
        self.manID = manID
```

Файл Manufacturer.py

```
class Manufacturer():  
    def __init__(self, id, name):  
        self.id = id  
        self.name = name
```

Файл DetMan.py

```
class DetMan():  
    def __init__(self, detailID, manID):  
        self.detailID = detailID  
        self.manID = manID
```

Файл main.py

```
from operator import itemgetter  
  
from DetMan import DetMan  
from Detail import Detail  
from Manufacturer import Manufacturer  
# Производители  
manufacturers = [  
    Manufacturer(1, 'Lmi'),  
    Manufacturer(2, 'Lucas'),  
    Manufacturer(3, 'Hella'),  
    Manufacturer(11, 'не Lmi'),  
    Manufacturer(22, 'не Lucas'),  
    Manufacturer(33, 'не Hella')  
]  
  
# Детали  
details = [  
    Detail(1, "ny0jsa", 100, 1),  
    Detail(2, "hainfb", 213, 2),  
    Detail(3, "shcbe", 123, 2),  
    Detail(4, "dnufv", 293, 3),  
    Detail(5, "djifb", 90, 3)  
]  
  
detsMans = [  
    DetMan(1, 1),  
    DetMan(2, 2),  
    DetMan(2, 3),
```

```

DetMan(3, 4),
DetMan(3, 5),

DetMan(11, 1),
DetMan(22, 2),
DetMan(22, 3),
DetMan(33, 4),
DetMan(33, 5),

]
def main():
    # один ко многим
    oneToMany = [(d.name, d.price, m.name)
                  for d in details
                  for m in manufacturers
                  if d.manID == m.id]

    # многие ко многим
    manyToManyTemp = [(m.name, dm.detailID, dm.manID)
                      for m in manufacturers
                      for dm in detsMans
                      if m.id == dm.manID]
    manyToMany = [(d.name, d.price, man_name)
                  for man_name, manID, detailID in manyToManyTemp
                  for d in details if d.id == detailID]
    print('Задание Б1')
    res_1 = sorted(oneToMany, key=itemgetter(0))
    print(res_1)
    print('Задание Б2')
    res_2 = []
    for i in range(3):
        count_details = list(filter(lambda j: j[2] == manufacturers[i].name, oneToMany))
        res_2.append((manufacturers[i].name, len(count_details)))
    res_2 = sorted(res_2, key=itemgetter(1), reverse=True)
    print(res_2)
    print('Задание Б3')
    res_3 = []
    for i in manyToMany:
        if (i[0][-2:] == 'fb'):
            res_3.append(i)
    print(res_3)

if __name__ == '__main__':
    main()

```

Результат работы:

Задание Б1

```
[('djifb', 90, 'Hella'), ('dnufv', 293, 'Hella'), ('hainfb', 213, 'Lucas'), ('ny0jsa', 100, 'Lmi'), ('shcbe', 123, 'Lucas')]
```

Задание Б2

```
[('Lucas', 2), ('Hella', 2), ('Lmi', 1)]
```

Задание Б3

```
[('hainfb', 213, 'Lucas'), ('hainfb', 213, 'Lucas')]
```