

## Текст программы

```
class Group:
    def __init__(self, id, name, sem, count_students):
        self.id = id
        self.name = name
        self.sem = sem
        self.count_students = count_students

class Course:
    def __init__(self, id, id_group, title):
        self.id = id
        self.title = title
        self.id_group = id_group

class Group_Course:
    def __init__(self, id_group, id_course):
        self.id_group = id_group
        self.id_course = id_course

courses = [
    Course(1, 1, "Курс 1"),
    Course(1, 2, "Курс 1"),
    Course(1, 3, "Курс 1"),
    Course(2, 4, "Курс 2"),
    Course(2, 5, "Курс 2"),
    Course(2, 6, "Курс 2"),
    Course(3, 7, "Курс 3"),
    Course(4, 8, "Курс 4"),
    Course(5, 9, "Курс 5")
]

groups = [
    Group(1, "ИУ5", 2, 23),
    Group(2, "ИУ5", 1, 22),
    Group(3, "ИУ5", 1, 21),
    Group(4, "ИУ5", 3, 25),
    Group(5, "ИУ5", 4, 21),
    Group(6, "ФН3", 3, 24),
    Group(7, "СТН3", 5, 24),
    Group(8, "ИБМ5", 7, 21),
    Group(9, "РК6", 9, 26)
]

groups_courses = [
    Group_Course(1, 1),
    Group_Course(1, 2),
    Group_Course(1, 4),
    Group_Course(2, 1),
    Group_Course(3, 2),
    Group_Course(4, 4),
    Group_Course(5, 5),
    Group_Course(9, 3)
]

def main():
    print("Запрос № 1")
    data = [(c, g) for c in courses for g in groups if c.id_group == g.id and
c.title.startswith("Курс")]
```

```

for (c, g) in data:
    print(c.title, g.name, g.count_students)
print()
print("Запрос № 2")
data = [(c, g) for c in courses for g in groups if c.id_group == g.id]
sorted_data = sorted(data, key=lambda x: x[1].count_students,
reverse=True)
for (c, g) in sorted_data:
    print(c.title, g.id, g.name, g.count_students)
print()
print("Запрос № 3")
letter = 'P'
filtered_data = [(g, c, gc) for gc in groups_courses for g in groups for
c in courses if
                    gc.id_group == g.id and gc.id_course == c.id and letter
in g.name]

filtered_data.sort(key=lambda x: x[0].name)
for (g, c, _) in filtered_data:
    print(g.name, c.title)

if __name__ == "__main__":
    main()

```

## Результаты

### Запрос № 1

Курс 1 ИУ5 23  
 Курс 1 ИУ5 22  
 Курс 1 ИУ5 21  
 Курс 2 ИУ5 25  
 Курс 2 ИУ5 21  
 Курс 2 ФНЗ 24  
 Курс 3 СГНЗ 24  
 Курс 4 ИБМ5 21  
 Курс 5 РК6 26

### Запрос № 2

Курс 5 9 РК6 26  
 Курс 2 4 ИУ5 25  
 Курс 2 6 ФНЗ 24  
 Курс 3 7 СГНЗ 24  
 Курс 1 1 ИУ5 23  
 Курс 1 2 ИУ5 22  
 Курс 1 3 ИУ5 21  
 Курс 2 5 ИУ5 21  
 Курс 4 8 ИБМ5 21

### Запрос № 3

РК6 Курс 3