

```
from operator import itemgetter
```

```
class Teacher:
```

```
    def __init__(self, id, fio, sal, course_id):
        self.id = id
        self.fio = fio
        self.sal = sal
        self.course_id = course_id
```

```
class Course:
```

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

```
class TC:
```

```
    def __init__(self, course_id, teacher_id):
        self.course_id = course_id
        self.teacher_id = teacher_id
```

```
courses = [Course(1, "Мат. анализ"),
            Course(2, "Ораторское мастерство"),
            Course(3, "Линейная алгебра"),
            Course(4, "Прикладная ритуалистика и оккультные технологии")]
```

```
teachers = [Teacher(1, "Гжегож Бженчишчикевич", 30000, 2),
            Teacher(2, "Жак Ле-Вак", 15000, 1),
            Teacher(3, "GORUDA SUMITH", 999999, 4)]
```

```
tc = [TC(1, 2),
      TC(2, 1),
      TC(3, 2),
      TC(4, 3)]
```

```
def main():
```

```
    otm = [(t.fio, t.sal, c.name)
           for t in teachers
           for c in courses
           if t.course_id==c.id]
```

```
    mtm_temp = [(c.name, _.course_id, _.teacher_id)
                 for c in courses
                 for _ in tc
                 if c.id==_.course_id]
```

```
    mtm = [(t.fio, t.sal, course_name)
```

```
for course_name, course_id, teacher_id in mtm_temp
for t in teachers if t.id==teacher_id]
```

```
print('Задание E1')
word = 'н'
result1 = [c.name for c in courses if word in c.name]
result2 = [t[0] for t in otm if t[2] in result1]
print(result1, result2)
```

```
print('\nЗадание E2')
result = []
for c in courses:
    sals = [s[1] for s in otm if s[2] == c.name]
    if sals:
        avsal = round(sum(sals)/len(sals), 2)
    else:
        avsal = 0
    result.append((c.name, avsal))
print(sorted(result, key=itemgetter(1), reverse=True))
```

```
print('\nЗадание E3')
char3 = "Ж"
print([(t.fio,[m[2] for m in mtm if m[0]==t.fio]) for t in teachers if t.fio[0] ==
char3])
```

```
if __name__ == '__main__':
    main()
```

```
Задание E1
['Мат. анализ', 'Линейная алгебра', 'Прикладная ритуалистика и оккультные те
хнологии'] ['Жак Ле-Вак', 'GORUDA SUMITH']

Задание E2
[('Прикладная ритуалистика и оккультные технологии', 999999.0), ('Ораторское
мастерство', 30000.0), ('Мат. анализ', 15000.0), ('Линейная алгебра', 0)]

Задание E3
[('Жак Ле-Вак', ['Мат. анализ', 'Линейная алгебра'])]
```