Олимпиада СПбГУ по информатике 2018/19 учебного года

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A	B	C	D	E	F	Sum
100	100	100	60	21	0	381

Task A (100)

```
n = int(input())
m = int(input())
mn = m // n
if mn * n == m and mn == 2 ** (mn.bit_length() - 1):
    print('Yes')
else:
    print('No')
```

Task B (100)

```
input()
s = input()
if 'or' in s or 'or' in s[::2] or 'or' in s[1::2] or 'ro' in s:
    print('Yes')
else:
    print('No')
```

Task C (100)

```python
n = int(input())
if n == 1:
    print(1)
else:
    g = [[] for _ in range(n + 1)]
    for _2 in range(n - 1):
        u, v = map(int, input().split())
        g[u].append(v)
        g[v].append(u)
    res = [0] * (n + 1)
    size = [0] * (n + 1)

    stack = [(1, -1)]
    sz = 0
    while stack:
        i, j = stack.pop()
        j += 1
        if len(stack) > 1 and i == stack[-2][0]:
            sz = 0
        else:
            res[i] = max(res[i], sz)
            size[i] = max(size[i], 1) + sz
            if j < len(g[i]):
                stack.append((i, j))
                stack.append((g[i][j], -1))
                sz = 0
            else:
                sz = size[i]

    sz = size[1]
    print(*(max(res[i], sz - size[i]) + 1 for i in range(1, n + 1)))
```

Task D (60)

```
def let_n(c):
    return ord(c) - ord('a')


def let(o):
    return chr(ord('a') + o % 26)


def sum_s(s1, s2):
    return ''.join((let(let_n(c1) + let_n(c2)) for c1, c2 in zip(s1, s2)))


def dif_s(s1, s2):
    return ''.join((let(let_n(c1) + 26 - let_n(c2)) for c1, c2 in zip(s1, s2)))


mode = input()
t, n, p = map(int, input().split())
for _ in range(t):
    if mode == 'split':
        pw = input()
        if n < 6:
            p1 = pw[:5]
            p2 = 'a' + pw[5:]
            r1 = 'aa' + p1
            r2 = 'bb' + p2
            r3 = 'cc' + sum_s(p1, p2)
            if n == 3:
                print(r1, r2, r3)
            else:
                print(r1, r1, r2, r2, r3)
        else:
            p1 = pw[:3]
            p2 = pw[3:6]
            p3 = p2[6:]
            print('a' + p1, 'b' + p2, 'c' + p3, 'd' + sum_s(p1, p2), 'e' + sum_s(p1, p3), 'f' +
                sum_s(p2, p3), 'g' + sum_s(p1, sum_s(p2, p3)))
    elif n < 6:
        if n == 3:
            p1, p2 = input().split()
        else:
            p1, p2, p3 = input().split()
            if p1[0] == p2[0]:
                p1 = p3
        if p1[0] == 'c' or p2[0] == 'a':
            p1, p2 = p2, p1
        if p1[0] == 'b':
            print(dif_s(p2[2:], p1[2:]) + p1[3:])
        elif p2[0] == 'b':
            print(p1[2:] + p2[3:])
        else:
            print(p1[2:] + dif_s(p2[3:], p1[3:]))
    else:
        p1, p2, p3, p4 = sorted(input().split())
        cs = p1[0] + p2[0] + p3[0] + p4[0]
        p1 = p1[1:]
        p2 = p2[1:]
        p3 = p3[1:]
        p4 = p4[1:]
        if cs <= 'abcg':
            print(p1 + p2 + p3)
        elif cs == 'abde':
            print(p1 + p2 + dif_s(p4, p1))
        elif cs == 'abdf':
            print(p1 + p2 + dif_s(p4, p2))
        elif cs == 'abdg':
            print(p1 + p2 + dif_s(p4, p3))
        elif cs <= 'abeg':
            print(p1 + p2 + dif_s(p3, p1))
```

```
elif cs == 'abfg':
    print(p1 + p2 + dif_s(p3, p2))
elif cs <= 'acdg':
    print(p1 + dif_s(p3, p1) + p2)
elif cs == 'acef':
    print(p1 + dif_s(p4, p2) + p2)
elif cs == 'aceg':
    print(p1 + dif_s(p4, p3) + p2)
elif cs == 'acfg':
    print(p1 + dif_s(p3, p2) + p2)
elif cs <= 'adeg':
    print(p1 + dif_s(p2, p1) + dif_s(p3, p1))
elif cs == 'adfg':
    print(p1 + dif_s(p2, p1) + dif_s(p4, p2))
elif cs == 'aefg':
    print(p1 + dif_s(p4, p3) + dif_s(p2, p1))
elif cs <= 'bcdg':
    print(dif_s(p3, p1) + p1 + p2)
elif cs <= 'bceg':
    print(dif_s(p3, p2) + p1 + p2)
elif cs == 'bcfg':
    print(dif_s(p4, p3) + p1 + p2)
elif cs <= 'bdeg':
    print(dif_s(p2, p1) + p1 + dif_s(p1, dif_s(p2, p3)))
elif cs == 'bdfg':
    print(dif_s(p4, p3) + p1 + dif_s(p4, p2))
elif cs == 'befg':
    print(dif_s(p4, p3) + p1 + dif_s(p3, p1))
elif cs <= 'cdeg':
    print(dif_s(p3, p1) + dif_s(p1, dif_s(p3, p2)) + p1)
elif cs <= 'cefg':
    print(dif_s(p4, p3) + dif_s(p3, p1) + p1)
else:
    print(dif_s(p4, p3) + dif_s(p4, p2) + dif_s(p4, p1))
```

Task E (21)

```
input()
x1, y1 = map(int, input().split())
x2, y2 = map(int, input().split())
xp, yp = map(int, input().split())
xq, yq = map(int, input().split())
xd, yd = xq - xp, yq - yp
d = xd * yp - yd * xp
c1 = x1 * xd + y1 * yd, abs(d + x2 * yd - xd * y2)
c2 = x2 * xd + y2 * yd, abs(d + x1 * yd - xd * y1)
if c1 < c2:
    print(2)
elif c1 > c2:
    print(1)
else:
    print('-1')
```

Task F (—)