/\*

PROG: twofour

LANG: C++

ID: hayk.sa1

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#include

#include

int n;

char d[31][21][16][31];

char solve(char a, char b, char c, char s)

{

if (a == n)

{

if (s > n-s)

return '1';

if (s < n-s)

return '2';

return '0';

}

char &it = d[a][b][c][s];

if (it)

return it;

char r;

it = '2';

// 2 -> 0

if (a && a+2\*b+3\*c-n)

{

if (s)

{

r = solve(a-1, b, c, a-s);

if (r == '2')

return it = '1';

if (r == '0')

it = '0';

}

if (a-s)

{

r = solve(a-1, b, c, a-s-1);

if (r == '2')

return it = '1';

if (r == '0')

it = '0';

}

}

// 3 -> 0

if (b && a+2\*b+3\*c-n)

{

r = solve(a+1, b-1, c, a-s);

if (r == '2')

return it = '1';

if (r == '0')

it = '0';

}

// 3 -> 1

if (b && 2\*n-2\*a-3\*b-4\*c)

{

r = solve(a+2, b-1, c, a-s);

if (r == '2')

return it = '1';

if (r == '0')

it = '0';

}

// 4 -> 0

if (c && a+2\*b+3\*c-n)

{

r = solve(a, b+1, c-1, a-s);

if (r == '2')

return it = '1';

if (r == '0')

it = '0';

}

// 4 -> 1

if (c && 2\*n-2\*a-3\*b-4\*c)

{

r = solve(a+1, b+1, c-1, a-s);

if (r == '2')

return it = '1';

if (r == '0')

it = '0';

}

// 4 -> 2

if (c && a)

{

if (s)

{

r = solve(a-1, b+2, c-1, a-s);

if (r == '2')

return it = '1';

if (r == '0')

it = '0';

}

if (a-s)

{

r = solve(a-1, b+2, c-1, a-s-1);

if (r == '2')

return it = '1';

if (r == '0')

it = '0';

}

}

return it;

}

int main()

{

freopen("twofour.in", "r", stdin);

freopen("twofour.out", "w", stdout);

int t, x, i;

char a, b, c;

scanf("%d%d", &n, &t);

while (t--)

{

a = b = c = 0;

for (i = 0; i < n; i++)

{

scanf("%d", &x);

a += (x == 2);

b += (x == 3);

c += (x == 4);

}

printf("%c\n", solve(a, b, c, a>>1));

}

return 0;

}