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INSTITUTE OF TECHNOLOGY

DHULE (M.S.)

DEPARTMENT OF COMPUTER ENGINEERING

Subject : Competitive Programming Lab

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Title : Multiplication Problem

Remark

Signature

Language: C++

// Multiplication Problem by Meraj 32 T2

#include <iostream>

using namespace std;

int main() {

 unsigned long long n;

 cout << "Input:" << endl;

 // Read each target n until end-of-file

 while (cin >> n) {

 // p is the running product, stanTurn indicates whose move it is

 unsigned long long p = 1;

 bool stanTurn = true; // Stan always starts

 // Play the game: Stan multiplies by 9, Ollie by 2, alternating

 while (p < n) {

 if (stanTurn) {

 p *= 9; // Stan chooses the maximum multiplier (2..9) to play optimally

 } else {

 p *= 2; // Ollie chooses the minimum multiplier to slow Stan down

 }

 stanTurn = !stanTurn; // switch turns

 }

```

// After the loop, the player who just moved reached p >= n
cout << "Output:" << endl;
if (!stanTurn) {
    // We flipped turn after the winning move, so stanTurn==false means Stan just
    played
    cout << "Stan wins." << endl;
} else {
    cout << "Ollie wins." << endl;
}

// Separate results if there are multiple inputs
cout << endl;
}

return 0;
}

```

Output :

The screenshot shows a C++ IDE with the following code in the editor:

```

1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     unsigned long long n;
6
7     cout << "Input:" << endl;
8     // Read each target n until end-of-file
9     while (cin >> n) {
10        // p is the running product, stanTurn indicates whose move
11        unsigned long long p = 1;
12        bool stanTurn = true; // Stan always starts
13
14        // Play the game: Stan multiplies by 9, Ollie by 2, alternates
15        while (p < n) {
16            if (stanTurn) {
17                p *= 9; // Stan chooses the maximum multiplier
18            } else {
19                p *= 2; // Ollie chooses the minimum multiplier
20            }
21            stanTurn = !stanTurn; // switch turns
22        }
23
24        // After the loop, the player who just moved reached p >= n
25        cout << "Output:" << endl;
26        if (!stanTurn) {
27            // We flipped turn after the winning move, so stanTurn==false means Stan just
28            // played
29            cout << "Stan wins." << endl;
30        } else {
31            cout << "Ollie wins." << endl;
32        }
33
34        // Separate results if there are multiple inputs
35        cout << endl;
36    }
37
38    return 0;
39 }

```

The output window shows the following results:

```

Input:
162
Output:
Stan wins.

17
Output:
34012226
Output:
Stan wins.

```

The IDE interface includes a menu bar (File, Edit, View, Search, Project, Build, Debug, Fortran, wxSmith, Tools, Tools+, Plugins, DoxyBlocks, Settings, Help), a toolbar, and a status bar at the bottom showing the file path, language (C/C++), and window settings.