

```
1  /* Problem5.1: How would you go about computing the parity
2  of a very large number of 64-bit nonnegative integers? */
3
4  /* Parity of a squence of bits is 1 if the number of 1's in the
5  sequence is odd, otherwise it's 0 */
6
7
8  /* Size of long long int on my system is 8 Bytes = 8*8 = 64 bits. */
9
10 #include<iostream>
11 using namespace std;
12
13 int main()
14 {
15     ios_base::sync_with_stdio(false); // I/O optimization
16     int n;
17     int long long x;
18     int bit_counter;
19     cin >> x;
20     bit_counter = 0;
21
22     //Counts the number of set bits in a number.
23     while(x>0)
24     {
25         x = x & (x-1);
26         bit_counter++;
27     }
28     //cout << bit_counter << "\n";
29
30     if(bit_counter & 1)
31         cout << "Parity is 1\n";
32     else
33         cout << "Parity is 0\n";
34 }
```