```cpp
#include <bits/stdc++.h>
#include <ext/pb_ds/assoc_container.hpp>
#include <ext/pb_ds/tree_policy.hpp>
#define ff first
#define se second
#define pb push_back
#define nn 20
#define mt make_tuple
#define mp make_pair
#define ll long long int
#define db double
#define ldb long double
#define inf 1000000000000000000ll
#define logn 20
#define mod 1000000007ll
#define mod1 mod
#define mod2 100000009ll
#define sqr(a) a*1ll*a
#define nullp mp(-1,-1)
#define set0(a) memset(a,0,sizeof a)
#define init(a) memset(a,-1,sizeof a)
#define cmp 1e-16

using namespace std;
using namespace __gnu_pbds;

typedef pair<int,int> pii;
```

```
typedef pair<ll,int> pli;
typedef pair<int,ll> pil;
typedef pair<ll,ll> pll;
typedef pair<long double,long double> pdd;
template<class T>
using max_pq = priority_queue<T>;
template<class T>
using min_pq = priority_queue<T,vector<T>,greater<T>>;
typedef tree<int, null_type, less<int>, rb_tree_tag,
tree_order_statistics_node_update> OST;

ll toint(const string &s) {stringstream ss; ss << s; ll x; ss
 >> x; return x;}
string tostring ( ll number ){stringstream ss; ss<< number; r
eturn ss.str();}
template<class T> T gcd(T a,T b){return (b==0)? a:gcd(b,a%b);
 }
ll pow(ll a,ll p,ll m=mod)
{ll res=1;while(p>0){if(p&1)res = (res*a)%m;a=(a*a)%m;p>>=1;}
return res;}

const ldb pi=3.14159265358979323846264338 3;

int ans;
int n,m;
int l[nn],r[nn];
string s[nn];
```

```
void bitmask(bool tight,int pos,int val)
{
    if(pos==n-1)
    {
        if(tight)
            ans=min(ans,val+r[pos]);
        else
            ans=min(ans,val+l[pos]);
        return;
    }
    if(tight)
    {
        bitmask(0,pos+1,val+m+2);
        bitmask(1,pos+1,val+2*r[pos]+1);
    }
    else
    {
        bitmask(0,pos+1,val+2*l[pos]+1);
        bitmask(1,pos+1,val+m+2);
    }
}

int main()
{
    ios_base::sync_with_stdio(0);
    cin.tie(0);
    cout.tie(0);
    #ifndef ONLINE_JUDGE
```

```
    freopen("input.txt","r",stdin);
    freopen("out.txt","w",stdout);
    #endif
    cin>>n>>m;
    for(int i=n-1;i>=0;i--)
    {
        cin>>s[i];
    }
    int tmp=-1;
    for(int i=0;i<n;i++)
    {
        for(int j=0;j<s[i].length();j++)
        {
            if(s[i][j]=='1')
                l[i]=max(j,l[i]);
            if(s[i][m+1-j]=='1')
                r[i]=max(r[i],j);
        }
        if(l[i])
            tmp=i;
    }
    n=tmp+1;
    if(n==0)
    {
        cout<<0<<endl;
        return 0;
    }
    if(n==1)
```

```
    {
        cout<<l[0]<<endl;
        return 0;
    }
    ans=INT_MAX;
    bitmask(0,1,2*l[0]+1);
    bitmask(1,1,m+2);
    cout<<ans<<endl;
    return 0;
}
```