



Problem

Result



## Shubham and Tea

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Shubham loves drinking tea very much and is even famous among his friends for making his own special tea. But unfortunately today he is not in a mood to make it himself as well as tired, so he goes to tea stalls to have tea.

Shubham is at his home initially, and to move to the first shop it shall cost him one Red Bull. He goes serially from his home to first stall, from first to second and third and so on.

There are 'S' shops in a line. Travelling from one shop to the next shop cost one Red Bull of his current available stock of Red Bulls. He can request the stall owner to give him some Red Bulls. The stall owner admits to give him Red Bulls but with a condition that he can't have tea from that shop.

So, at each stall, Shubham has one choice either to take Red Bulls or have tea from the stall. Each stall has different amount of Red Bulls and Tea Cups. So, from each stall, Shubham is allowed to take only either the entire amount of Red Bulls or the entire amount of tea cups and not none or both.

By following this rule, what is the maximum number of tea cups Shubham can have, always having number of Red Bulls greater than or equal to zero?

```
1 #include<bits/stdc++.h>
2 using namespace std;
3 int main() {
4
5     // Write your code here
6 }
```

C++ (g++ 5.4)

```
1
2 #include<bits/stdc++.h>
3 #define ll long long
4 using namespace std;
5 ll solve(ll s, ll x, ll r, ll* A, ll* B, ll C[][1006]) {
6     if(s>x) {
7         return 0;
8     }
9     if(r==0) {
10        return 0;
11    }
12    if(C[s][r]!=-1) {
13        return C[s][r];
14    }
15    ll t1, t2;
16    if(r+B[s]>1005) {
17        t2=1005;
18    }
19    else {
20        t2=r+B[s];
21    }
22    C[s][r]= max(A[s]+solve(s+1, x, r-1, A, B, C), solve(s+1, x, t2-1, A, B, C));
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C++ (g++ 5.4)

```
1 #include<bits/stdc++.h>
2 using namespace std;
3 int main() {
4
5     // Write your code here
6 }
22 C[s][r]= max(A[s]+solve(s+1,x,r-1,A,B,C), solve(s+1,x,t2-1,A,B,C));
23 return C[s][r];
24 }
25 int main()
26 {
27     ios::sync_with_stdio(false);
28     cin.tie(0);
29     int tc;
30     cin>>tc;
31     while(tc--){
32         ll s,r;
33         cin>>s>>r;
34         ll A[s+1],B[s+1];
35         for(int i=1;i<=s;i++){
36             cin>>B[i];
37         }
38         for(int i=1;i<=s;i++){
39             cin>>A[i];
40         }
41         ll C[1006][1006];
42         for(int i=0;i<1006;i++){
43             for(int j=0;j<1006;j++){
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C++ (g++ 5.4)

```
1 #include<bits/stdc++.h>
2 using namespace std;
3 int main() {
4
5     // Write your code here
6 }
34 ll A[s+1],B[s+1];
35 for(int i=1;i<=s;i++) {
36     cin>>B[i];
37 }
38 for(int i=1;i<=s;i++) {
39     cin>>A[i];
40 }
41 ll C[1006][1006];
42 for(int i=0;i<1006;i++) {
43     for(int j=0;j<1006;j++) {
44         C[i][j]=-1;
45     }
46 }
47 if(r>1005) {
48     r=1005;
49 }
50 ll ans=solve(1,s,r,A,B,C);
51 cout<<ans<<endl;
52 }
53 return 0;
54 }
55
```