



WORKSHEET 1

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Branch: CSE

Section: DWWC - 43

1. Fire and Ice

Program Code:

```
#include <stdio.h> #include <inttypes.h> void
multiply(uint64_t F[2][2], uint64_t M[2][2], uint64_t k); void
power(uint64_t F[2][2], uint64_t n,uint64_t k); uint64_t
fib(uint64_t n,uint64_t k)
 uint64_t F[2][2] = \{\{1,1\},\{1,0\}\};
 if (n == 0)
return 0; power(F,
n-1,k); return
F[0][0];
}
void power(uint64_t F[2][2], uint64_t n,uint64_t k)
 if( n == 0 || n == 1)
   return;
 uint64_t M[2][2] = \{\{1,1\},\{1,0\}\};
power(F, n/2,k); multiply(F, F,k); if
              multiply(F, M, k);
(n\%2!=0)
void multiply(uint64_t F[2][2], uint64_t M[2][2], uint64_t k)
{ uint64_t x = (F[0][0]*M[0][0] +
F[0][1]*M[1][0])%k; uint64_t y = (F[0][0]*M[0][1] +
```





```
F[0][1]*M[1][1])%k; uint64_t z = (F[1][0]*M[0][0] +
F[1][1]*M[1][0])\%k; uint64_t w = (F[1][0]*M[0][1]
+ F[1][1]*M[1][1])%k;
 F[0][0] = x;
 F[0][1] = y;
 F[1][0] = z;
 F[1][1] = w;
int main()
{ uint64_t n,k,t;
scanf("%llu",&t);
 while(t--)
 {
 scanf("%llu",&n);
scanf("%llu",&k);
 printf("%llu\n", (2*fib(n,k))%k);
return 0;
}
```

Output:







2. Gold Mining

Program Code:

```
#include <iostream> using
namespace std; int main()
{
int t;
scanf("%d", &t); while(t--)
   int n, x, y;
   scanf("%d %d %d", &n, &x, &y);
   int sum = 0;
for(int i=0; i<=n; i++)
sum+=y;
   }
   if(sum<x)
printf("NO\n");
else
     printf("YES\n");
 } return
0;
```

Output







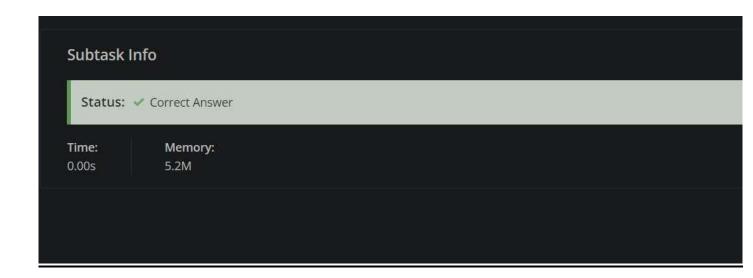
3. The Lead Game

Program Code:

```
#include<bits/stdc++.h>
using namespace std;
typedef long long int lli; int
main(){
          int t,S=0,T=0;
cin>>t;
          vector<int> v;
while(t--){
               int s,t;
    cin>>s>>t;
S+=s; T+=t;
    v.push_back(S-T);
  int max=-1,win;
for(int i:v){
if(abs(i)>max){
                    if(i>0)
max=abs(i);
win = 1;
else win = 2;
  cout<<win<<' '<<max;
```







4. Sums in a triangle

4) Binod and Chocolate:-

```
#include<bits/stdc++.h
> using namespace std;
int main(){
   int i,j,t,n; cin>>t;
while(t--){ cin>>n; int
a[n][n]; for(int
i=0;i<n;i++){
for(j=0;j<=i;j++){
   cin>>a[i][j];
     }
for(int i=n-2;i>=0;i--){
```





```
\begin{split} \text{for}(j=0;j<=i;j++)\{\\ & \quad if((a[i][j]+a[i+1][j])>(a[i][j]+a[i+1][j+1]))\\ & \quad a[i][j]=a[i][j]+a[i+1][j];\\ \text{else}\\ & \quad a[i][j]=a[i][j]+a[i+1][j+1]; \end{split}
```

Output

```
Status: ✓ Correct Answer

Time: Memory:
0.11s 5M
```

```
}
cout<<a[0][0]<<endl;
}
return 0;
}</pre>
```





5. Small Factorials

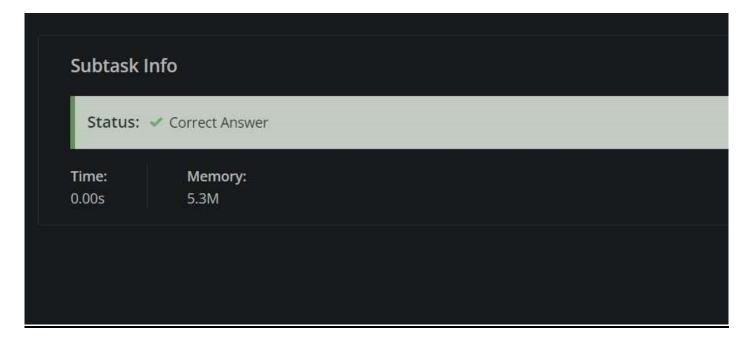
Program Code:

```
#include <bits/stdc++.h>
#include
<boost/multiprecision/cpp_int.hpp>
#include <iostream> using namespace std;
using namespace boost::multiprecision;
int main() { // your
code goes here
int t; cin>>t;
while(t--)
int
            n;
cin>>n;
cpp_int
fact=1;
for(int
i=n;i>0;i--)
fact=fact*i;
cout<<fact<<endl;
}
return 0;
};
```





Output







```
#include <iostream>
 2
    using namespace std;
4
    int main() {
        int n,i;
        int a,b;
6
        cin>>a>>b;
8
9
10
        if(a==0 and (b==0 or (b==1))){
             cout<<"https://www.codechef.com/practice"<<endl;}</pre>
11
        else if(a==1 and b==0){
12
             cout<<"https://www.codechef.com/contests"<<endl;}</pre>
13
14
        else{
             cout<<"https://discuss.codechef.com"<<endl;}</pre>
15
16
17
        return 0;
18
19
```

