Name: Saurabh Kumar

UID: 20BCS7474

Class: DWWC-43

Subject: DSA

Domain Winning Camp Worksheet (Practice Questions)

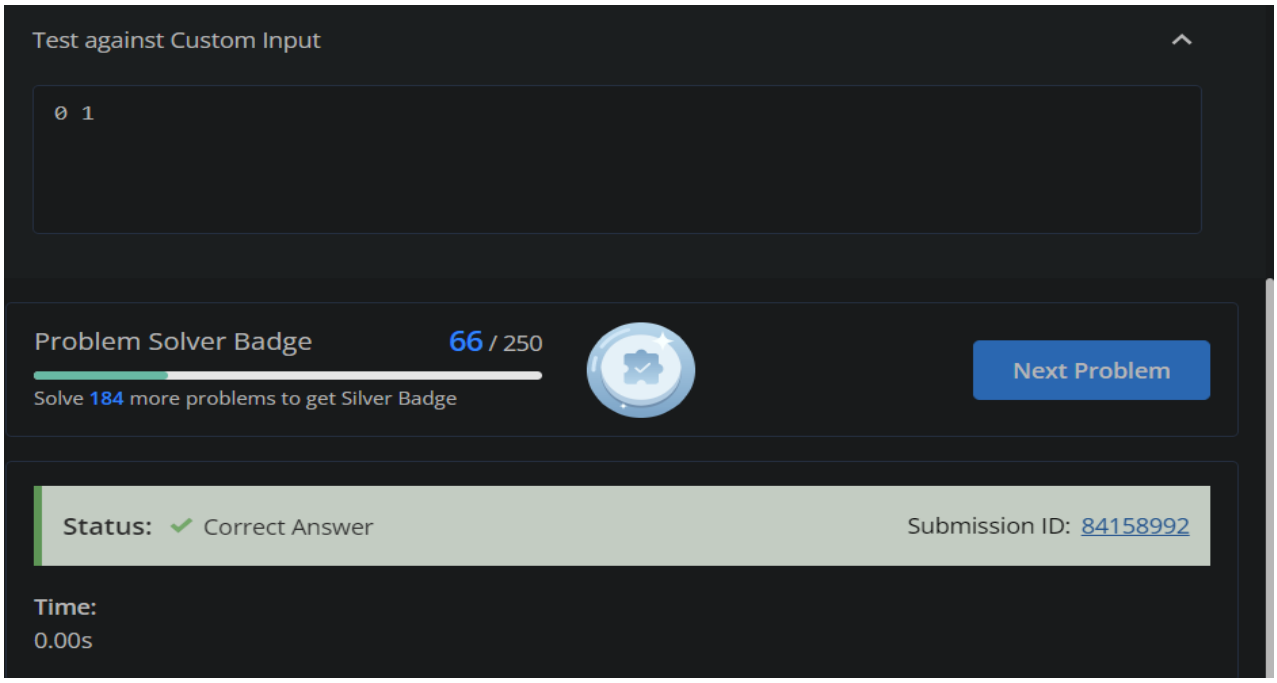
Subject: IT Skills Day 1:

QUESTION-1: Important Page

CODE:

```
#include <iostream>
using namespace std;
int main() {
	// your code goes here
	    int a,b;
	    cin>>a>>b;
	    if(a==0)
	    cout<<"https://www.codechef.com/practice"<<endl;
	    else if(a==1&&b==0)
	    cout<<"https://www.codechef.com/contests"<<endl;
	    else{
	        cout<<"https://discuss.codechef.com"<<endl;
	    }
	return 0;
}
```

OUTPUT:



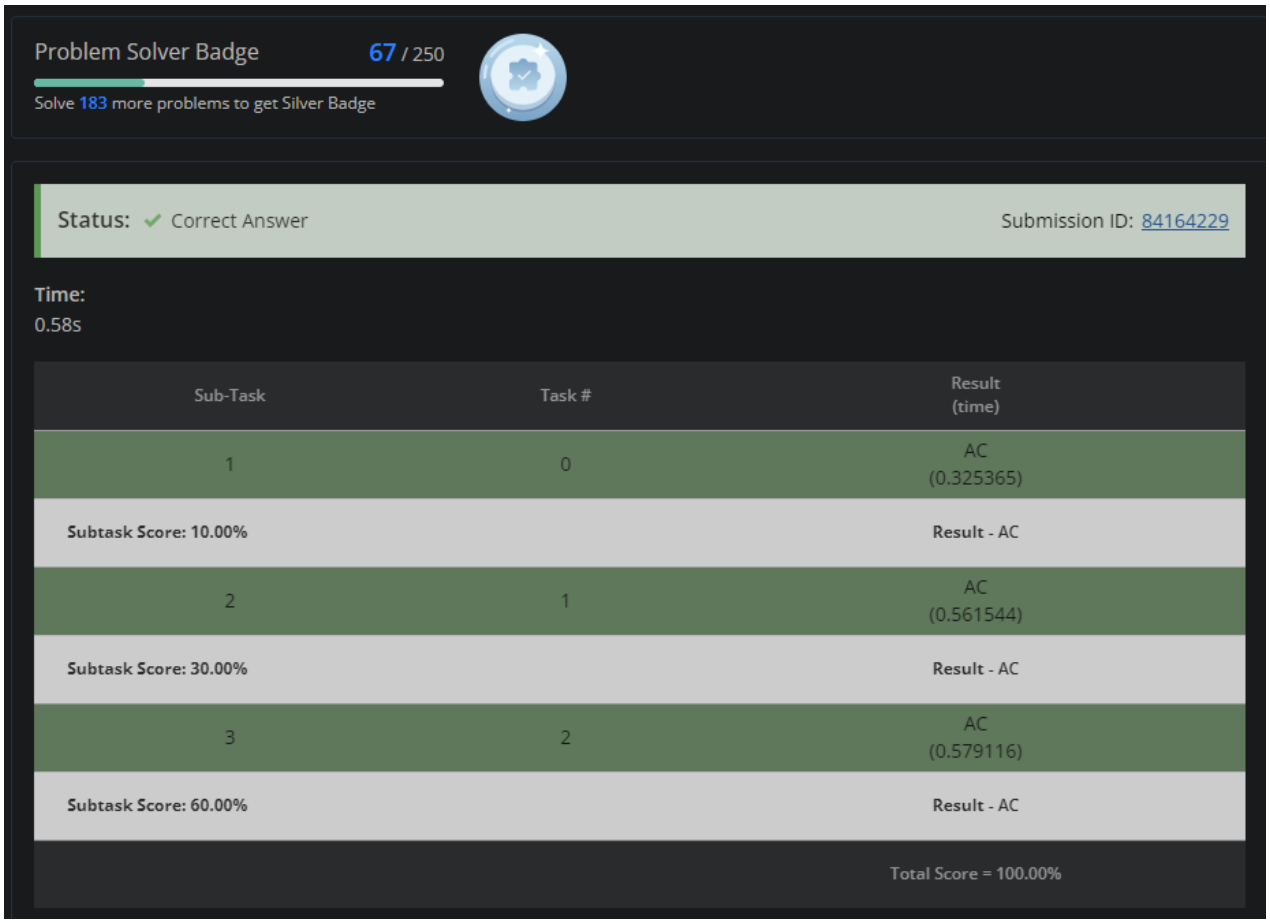
QUESTION-2: Kingdom of Fire and Ice

CODE:

```
#include <stdio.h>
#include<inttypes.h>

/* Anubhav Tyagi */
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 (n%2 != 0)
     multiply(F, M, k);
}

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:



QUESTION-3: Mixtures

CODE:

```
#include <stdio.h>
int main()
{
   int m[100][100],n,i,j,k,q,l;
   while(scanf("%d",&n)!=EOF)
   {
      for(i = 0;i < n;i++) scanf("%d",&m[i][i]);
      if(n==1)
      {
         printf ("%d\n",0);
         continue;
      }
      for(i = 0;i < n-1;i++)
```

```
        {
            j = i+1;
            m[i][j] = (m[j][j] * m[i][i]) ;
            m[j][i] = (m[j][j] + m[i][i])% 100;
        }
        for(l = 3;l <= n;l++)
        {
            for( i = 0;i <= n-l;i++)
            {
                j = i+l-1;
                k = i;
                m[i][j] = m[k+1][j] + m[k][k]*m[j][k+1];
                for(k = i+1 ;k < j-1;k++) {
                q = m[i][k]+m[k+1][j] + m[k][i]*m[j][k+1];
                if(q < m[i][j]) m[i][j] = q;
            }
            k = j - 1;
            q = m[i][k] + m[k][i] * m[j][j];
            if(q < m[i][j]) m[i][j] = q;
            m[j][i] = (m[j][j] + m[j-1][i])%100;
        }
    }
    printf ("%d\n",m[0][n-1]);
    }
    return 0;
}
```

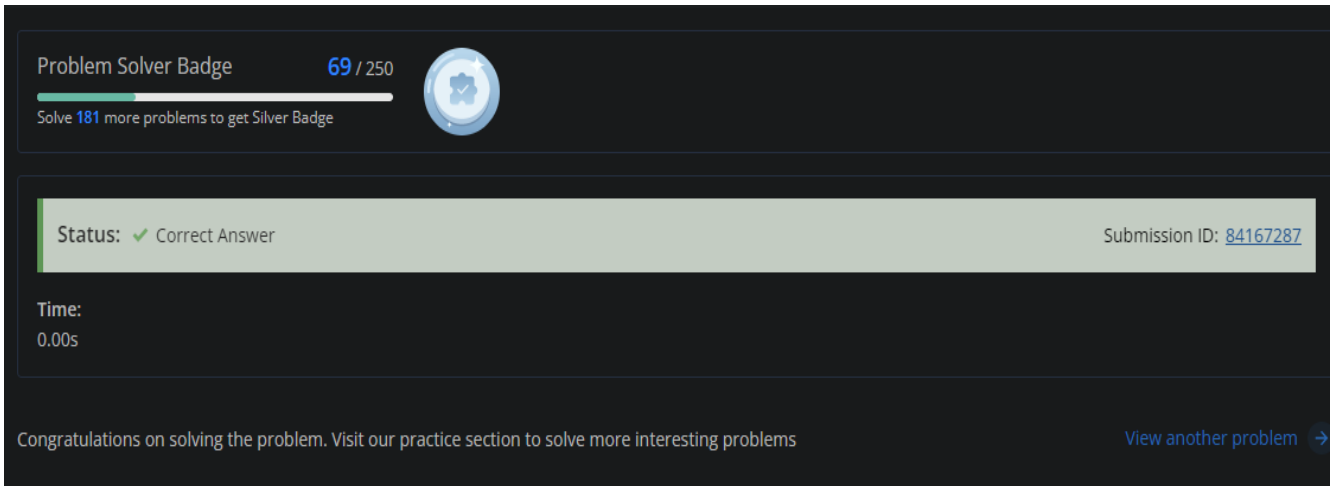
OUTPUT:

QUESTION-4: Binod and Chocolates

CODE:

```
#include<iostream>
using namespace std;
int main()
{
   int T;
   cin>>T;
   while(T--)
   {
      int A,B;
      cin>>A>>B;
      if(A%3 == 0 || B%3 == 0 || (A+B)%3 == 0)
      {
         cout<<"YES"<<endl;
      }
      else
      {
         cout<<"NO"<<endl;
      }
   }
   return 0;
}
```

OUTPUT:



QUESTION-5: SPECIAL FIBONACCI

CODE:

```
#include <iostream>
using namespace std;
long CalXor(long a,long b,long n){
    if(n==0){
        return a;
    }
    if(n==1){
        return b;
    }
    if(n==2){
        return a^b;
    }
    return CalXor(a,b,n%3);
}
int main() {
int t;
cin>>t;
while(t--){
    long a,b,n;
    cin>>a>>b>>n;
    cout<<CalXor(a,b,n)<<endl;
}
return 0;
}
```

OUTPUT: