

Assignment - 1

// Q1

```
#include<bits/stdc++.h>

using namespace std;

int main()
{
    int x1,x2;

    cout<<"Enter the 2 numbers: "<<endl;
    cin>>x1>>x2;


    int a,b;

    // a is the largest number out of the two
    if(x1>x2){
        a = x1;
        b = x2;
    }else{
        a = x2;
        b = x1;
    }


    int r = a%b;
    int q = a/b;
    while(r!=0){
        a = b;
        b = r;
        q = a/b;
        r = a%b;
    }
```

```
    cout<<"GCD of the numbers is: "<<b<<endl;

}
```

// Q2

```
#include<bits/stdc++.h>

using namespace std;

int main()
{
    int x1,x2;

    cout<<"Enter the 2 numbers: "<<endl;
    cin>>x1>>x2;


    int r1,r2;

    // a is the largest number out of the two
    if(r1>r2){
        r1 = x1;
        r2 = x2;
        x1 = r1;
        x2 = r2;
    }else{
        r1 = x2;
        r2 = x1;
        x1 = r2;
        x2 = r1;
    }


    int r = r1%r2;

    int q = r1/r2;
```

```

int t1 = 1, t2 = 0, s1 = 0, s2 = 1;

int t = t1 - (q*t2);

int s = s1 - (q*s2);

while(r!=0){

    r1 = r2;

    r2 = r;

    t1 = t2;

    t2 = t;

    s1 = s2;

    s2 = s;

    q = r1/r2;

    r = r1%r2;

    t = t1 - (q*t2);

    s = s1 - (q*s2);

}

cout<<s2<<" "<<t2<<endl;

cout<<"GCD of the two numbers is: "<<r2<<endl;

cout<<"The GCD can be represented as: "<<x1<<"*"<<t2<<"+ "<<x2<<"*"<<s2<< "="<<r2;

}

```

// Q3

```

#include<bits/stdc++.h>

using namespace std;

int main()

{

    int x1,x2;

```

```

cout<<"Enter the 2 numbers: "<<endl;

cin>>x1>>x2;

int n = x2;


int r1,r2;

// a is the largest number out of the two
if(r1>r2){
    r1 = x1;
    r2 = x2;
    x1 = r1;
    x2 = r2;
}else{
    r1 = x2;
    r2 = x1;
    x1 = r2;
    x2 = r1;
}


int r = r1%r2;

int q = r1/r2;

int t1 = 1, t2 = 0, s1 = 0, s2 = 1;

int t = t1 - (q*t2);

int s = s1 - (q*s2);


while(r!=0){
    r1 = r2;
    r2 = r;

    t1 = t2;
    t2 = t;

```

```

s1 = s2;

s2 = s;

q = r1/r2;
r = r1%r2;
t = t1 - (q*t2);
s = s1 - (q*s2);
}

if(s2 > 0){
    cout<<"M.I is: "<<s2<<endl;
}else{
    cout<<"M.I is: "<<s2+n<<endl;
}
}

```

// Q4

```

#include<bits/stdc++.h>

using namespace std;

int main()
{
    int x1,x2;

    cout<<"Enter a number: "<<endl;
    cin>>x1;
    cout<<"Enter the value of n: "<<endl;
    cin>>x2;

    bool x = false;

```

```

int c = 1;
while(x != true){
    if((x1*c)%x2 == 1){
        cout<<"M.I of "<<x1<<" is "<<c<<endl;
        x = true;
    }else{
        c++;
    }
}
}

```

// Q5

```

#include<bits/stdc++.h>
using namespace std;
int main()
{
    int n;
    cout<<"Enter the value of Z: "<<endl;
    cin>>n;

    cout<<"The set of Additive inverse consists of: "<<endl;
    cout<<"("<<0<<","<<0<<"),";
    for(int i=1;i<=n/2;i++){
        cout<<"("<<i<<","<<n-i<<"),";
    }
}

```