



⇒ **Problem 1**

Write a program that takes an input integer  $n$  (assume  $1 \leq n \leq 20$ ), then takes an input array of  $n$  integer values:  $a[0], a[1], \dots, a[n - 1]$ , then takes an input value  $b$ . The program should output the number of occurrences of  $b$  in the array  $a$ . For example, if the user inputs 3 5 2 5 5 which means that  $n = 3, a = \{5, 2, 5\}, b = 5$ , the program should output 2 which is the number of occurrences of 5 in the array  $a$  (because  $a[0] = 5$  and  $a[2] = 5$ ). If  $a$  does not contain the value  $b$  print "None". If the user inputs  $n \leq 0$  or  $n \geq 21$  print "Error".

Input: 3	Input: 7	Input: 4	Input: 2	Input: -3	Input: 25
5 2 5	4 6 7 7 6 6 8	9 8 8 9	3 4		
5	6	8	7		
Output: 2	Output: 3	Output: 2	Output: None	Output: Error	Output: Error

```
1 #include <iostream>
2 using namespace std;
3
4 int main()
5 {
6     int i, n, b;
7     int a[20];
8     cin>>n;
9     if(n<=0 || n>=21) {cout<<"Error"<<endl; return 0;}
10    for(i=0; i<n; i++) cin>>a[i];
11    cin>>b;
12
13    int cnt=0;
14    for(i=0; i<n; i++)
15    {
16        if(a[i]==b) cnt++;
17    }
18    if(cnt>0) cout<<cnt<<endl;
19    else cout<<"None"<<endl;
20
21    return 0;
22 }
```

⇒ **Problem 2**

Write a program that takes an input integer  $n$  (assume  $1 \leq n \leq 20$ ), then takes an input array of  $n$  integer values:  $a[0], a[1], \dots, a[n-1]$ , then takes an input value  $b$ . The program should output all the indexes of occurrences of  $b$  in the array  $a$ . For example, if the user inputs 3 5 2 5 5 which means that  $n = 3, a = \{5, 2, 5\}, b = 5$ , the program should output 0 2 which are the indexes of  $a$  containing the value 5 (because  $a[0] = 5$  and  $a[2] = 5$ ). If  $a$  does not contain the value  $b$  print "None". If the user inputs  $n \leq 0$  or  $n \geq 21$  print "Error".

Input: 3	Input: 7	Input: 4	Input: 2	Input: -3	Input: 25
5 2 5	4 6 7 7 6 6 8	9 8 8 9	3 4		
5	6	8	7		
Output: 0 2	Output: 1 4 5	Output: 1 2	Output: None	Output: Error	Output: Error

```

1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int i, n;
7      int a[20], b;
8      cin>>n;
9      if(n<=0 || n>=21) {cout<<"Error"<<endl; return 0;}
10     for(i=0; i<n; i++) cin>>a[i];
11     cin>>b;
12
13     bool found=false;
14     for(i=0; i<n; i++)
15     {
16         if(a[i]==b)
17         {
18             cout<<i<<" ";
19             found=true;
20         }
21     }
22     if(!found) cout<<"None"<<endl;
23
24     return 0;
25 }

```

⇒ **Problem 3**

Write a program that takes an input integer  $n$  (assume  $1 \leq n \leq 20$ ), then takes an input array of  $n$  integer values:  $a[0], a[1], \dots, a[n-1]$ , then takes an input value  $b$ . The program should output the number of integers of  $a$  which do not equal  $b$ . For example, if the user inputs 3 5 4 5 4 which means that  $n = 3, a = \{5, 4, 5\}, b = 4$ , the program should output 2 which is the number of integers of  $a$  which do not equal to 4 (because  $a[0] = 5$  and  $a[2] = 5$ ). If  $a$  does not contain any value other than  $b$  print "None". If the user inputs  $n \leq 0$  or  $n \geq 21$  print "Error".

Input: 3	Input: 7	Input: 4	Input: 2	Input: -3	Input: 25
5 4 5	4 6 7 7 6 6 8	9 8 8 9	7 7		
4	6	8	7		
Output: 2	Output: 4	Output: 2	Output: None	Output: Error	Output: Error

```

1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int i, n;
7      int a[20], b;
8      cin>>n;
9      if(n<=0 || n>=21) {cout<<"Error"<<endl; return 0;}
10     for(i=0; i<n; i++) cin>>a[i];
11     cin>>b;
12
13     int cnt=0;
14     for(i=0; i<n; i++)
15     {
16         if(a[i]!=b) cnt++;
17     }
18
19     if(cnt>0) cout<<cnt<<endl;
20     else cout<<"None"<<endl;
21
22     return 0;
23 }

```

⇒ **Problem 4**

Write a program that takes an input integer  $n$  (assume  $1 \leq n \leq 20$ ), then takes an input array of  $n$  integer values:  $a[0], a[1], \dots, a[n-1]$ , then takes an input value  $b$ . The program should output all values of  $a$  which do not equal to  $b$ . For example, if the user inputs 3 5 2 4 2 which means that  $n = 3, a = \{5, 2, 4\}, b = 2$ , the program should output 5 4 which are the values of  $a$  not equal to 2 (because  $a[0] = 5$  and  $a[2] = 4$ ). If  $a$  does not contain any value other than  $b$  print "None". If the user inputs  $n \leq 0$  or  $n \geq 21$  print "Error".

Input: 3	Input: 7	Input: 4	Input: 2	Input: -3	Input: 25
5 2 4	4 6 7 7 6 6 8	9 8 8 9	7 7		
2	6	8	7		
Output: 5 4	Output: 4 7 7 8	Output: 9 9	Output: None	Output: Error	Output: Error

```

1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int i, n;
7      int a[20], b;
8      cin>>n;
9      if(n<=0 || n>=21) {cout<<"Error"<<endl; return 0;}
10     for(i=0; i<n; i++) cin>>a[i];
11     cin>>b;
12
13     bool found=false;
14     for(i=0; i<n; i++)
15     {
16         if(a[i]!=b)
17         {
18             cout<<a[i]<<" ";
19             found=true;
20         }
21     }
22     if(!found) cout<<"None"<<endl;
23
24     return 0;
25 }

```

⇒ **Problem 5**

Write a program that takes an input integer  $n$  (assume  $1 \leq n \leq 20$ ), then takes an input array of  $n$  integer values:  $a[0], a[1], \dots, a[n-1]$ , then takes an input value  $b$ . The program should output all values of  $a$  which are less than  $b$ . For example, if the user inputs 4 4 5 2 4 5 which means that  $n = 4, a = \{4, 5, 2, 4\}, b = 5$ , the program should output 4 2 4 which are the values of  $a$  less than 5 (because  $a[0] = 4, a[2] = 2$ , and  $a[3] = 4$ ). If  $a$  does not contain any value less than  $b$  print "None". If the user inputs  $n \leq 0$  or  $n \geq 21$  print "Error".

Input: 4	Input: 7	Input: 4	Input: 2	Input: -3	Input: 25
4 5 2 4	4 6 7 7 6 6 8	9 8 8 9	3 4		
5	7	9	3		
Output: 4 2 4	Output: 4 6 6 6	Output: 8 8	Output: None	Output: Error	Output: Error

```

1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int i, n;
7      int a[20], b;
8      cin>>n;
9      if(n<=0 || n>=21) {cout<<"Error"<<endl; return 0;}
10     for(i=0; i<n; i++) cin>>a[i];
11     cin>>b;
12
13     bool found=false;
14     for(i=0; i<n; i++)
15     {
16         if(a[i]<b)
17         {
18             cout<<a[i]<<" ";
19             found=true;
20         }
21     }
22     if(!found) cout<<"None"<<endl;
23
24     return 0;
25 }

```

⇒ **Problem 6**

Write a program that takes an input integer  $n$  (assume  $1 \leq n \leq 20$ ), then takes an input array of  $n$  integer values:  $a[0], a[1], \dots, a[n - 1]$ , then takes an input value  $b$ . The program should output all values of  $a$  which are greater than  $b$ . For example, if the user inputs 4 4 5 2 4 2 which means that  $n = 4, a = \{4, 5, 2, 4\}, b = 2$ , the program should output 4 5 4 which are the values of  $a$  greater than 2 (because  $a[0] = 4, a[1] = 5$ , and  $a[3] = 4$ ). If  $a$  does not contain any value greater than  $b$  print "None". If the user inputs  $n \leq 0$  or  $n \geq 21$  print "Error".

Input: 4	Input: 7	Input: 4	Input: 2	Input: -3	Input: 25
4 5 2 4	4 6 7 7 6 6 8	9 8 8 9	3 4		
2	6	8	5		
Output: 4 5 4	Output: 7 7 8	Output: 9 9	Output: None	Output: Error	Output: Error

```

1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int i, n;
7      int a[20], b;
8      cin>>n;
9      if(n<=0 || n>=21) {cout<<"Error"<<endl; return 0;}
10     for(i=0; i<n; i++) cin>>a[i];
11     cin>>b;
12
13     bool found=false;
14     for(i=0; i<n; i++)
15     {
16         if(a[i]>b)
17         {
18             cout<<a[i]<<" ";
19             found=true;
20         }
21     }
22     if(!found) cout<<"None"<<endl;
23
24     return 0;
25 }

```

⇒ **Problem 7**

Write a program that takes an input integer  $n$  (assume  $1 \leq n \leq 20$ ), then takes an input array of  $n$  integer values:  $a[0], a[1], \dots, a[n-1]$ . The program should output all unique (not repeated) values of  $a$ . For example, if the user inputs 7 4 8 2 4 2 5 2 which means that  $n = 7, a = \{4, 8, 2, 4, 2, 5, 2\}$ , the program should output 8 5 which are the unique (not repeated) values of  $a$ . If  $a$  does not contain any unique value print "None". If the user inputs  $n \leq 0$  or  $n \geq 21$  print "Error".

Input: 7	Input: 5	Input: 6	Input: 4	Input: -3	Input: 25
4 8 2 4 2 5 2	4 6 6 7 6	9 8 2 8 9 9	3 6 6 3		
Output: 8 5	Output: 4 7	Output: 2	Output: None	Output: Error	Output: Error

```

1 #include <iostream>
2 using namespace std;
3
4 int main()
5 {
6     int i, j, n;
7     int a[20];
8     cin>>n;
9     if(n<=0 || n>=21) {cout<<"Error"<<endl; return 0;}
10    for(i=0; i<n; i++) cin>>a[i];
11
12    bool found=false;
13    for(i=0; i<n; i++)
14    {
15        bool unique=true;
16        for(j=0; j<n; j++)
17        {
18            if(i!=j && a[i]==a[j]) unique=false;
19        }
20        if(unique)
21        {
22            cout<<a[i]<<" ";
23            found=true;
24        }
25    }
26    if(!found) cout<<"None"<<endl;
27
28    return 0;
29 }

```

⇒ **Problem 8**

Write a C++ program that takes two input integers  $n$  and  $m$  (assume  $1 \leq n \leq 20$  and  $1 \leq m \leq 20$ ), then takes an input array  $a$  of  $n$  integer values:  $a[0], a[1], \dots, a[n - 1]$ , then takes another input array  $b$  of  $m$  integer values:  $b[0], b[1], \dots, b[m - 1]$ . The program should output all values which exist in both arrays  $a$  and  $b$ . For example, if the user inputs 3 4 5 2 6 6 4 3 2 which means that  $n = 3, m = 4, a = \{5, 2, 6\}, b = \{6, 4, 3, 2\}$ , the program should output 2 6 which are the values which exist in both arrays  $a$  and  $b$ . If no value exists in both arrays  $a$  and  $b$  print "None". If the user inputs  $n \leq 0$  or  $n \geq 21$  print "Error". If the user inputs  $m \leq 0$  or  $m \geq 21$  print "Error".

Input: 3 4	Input: 4 3	Input: 4 5	Input: 5 2	Input: 5 4	Input: 3 -4	Input: 25 5
5 2 6	6 4 3 2	1 2 3 4	8 6 7 2 1	1 2 3 4 5		
6 4 3 2	5 2 6	2 4 6 8 10	3 6	6 7 8 9		
Output: 2 6	Output: 6 2	Output: 2 4	Output: 6	Output: None	Output: Error	Output: Error

```

1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int i, j, n, m;
7      int a[20], b[20];
8      cin>>n>>m;
9      if(n<=0 || n>=21) {cout<<"Error"<<endl; return 0;}
10     if(m<=0 || m>=21) {cout<<"Error"<<endl; return 0;}
11     for(i=0; i<n; i++) cin>>a[i];
12     for(i=0; i<m; i++) cin>>b[i];
13
14     bool found=false;
15     for(i=0; i<n; i++)
16     {
17         bool exist=false;
18         for(j=0; j<m; j++)
19         {
20             if(a[i]==b[j]) {exist=true; break;}
21         }
22         if(exist) {cout<<a[i]<<" "; found=true;}
23     }
24     if(!found) cout<<"None"<<endl;
25
26     return 0;
27 }
```



⇒ **Problem 9**

Write a C++ program that takes two input integers  $n$  and  $m$  (assume  $1 \leq n \leq 20$  and  $1 \leq m \leq 20$ ), then takes an input array  $a$  of  $n$  integer values:  $a[0], a[1], \dots, a[n - 1]$ , then takes another input array  $b$  of  $m$  integer values:  $b[0], b[1], \dots, b[m - 1]$ . The program should output all values which exist in array  $a$  and do not exist in array  $b$ . For example, if the user inputs 3 4 5 2 6 7 4 3 2 which means that  $n = 3, m = 4, a = \{5, 2, 6\}, b = \{7, 4, 3, 2\}$ , the program should output 5 6 which are the values which exist in array  $a$  and do not exist in array  $b$ . If all values in array  $a$  exist in array  $b$  print "None". If the user inputs  $n \leq 0$  or  $n \geq 21$  print "Error". If the user inputs  $m \leq 0$  or  $m \geq 21$  print "Error".

Input: 3 4	Input: 4 3	Input: 4 5	Input: 2 5	Input: 3 4	Input: 3 -4	Input: 25 5
5 2 6	6 4 3 2	1 2 3 4	3 6	1 2 3		
7 4 3 2	5 2 6	2 4 6 8 10	8 6 7 2 1	4 3 2 1		
Output: 5 6	Output: 4 3	Output: 1 3	Output: 3	Output: None	Output: Error	Output: Error

```

1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int i, j, n, m;
7      int a[20], b[20];
8      cin>>n>>m;
9      if(n<=0 || n>=21) {cout<<"Error"<<endl; return 0;}
10     if(m<=0 || m>=21) {cout<<"Error"<<endl; return 0;}
11     for(i=0; i<n; i++) cin>>a[i];
12     for(i=0; i<m; i++) cin>>b[i];
13
14     bool found=false;
15     for(i=0; i<n; i++)
16     {
17         bool exist=false;
18         for(j=0; j<m; j++)
19         {
20             if(a[i]==b[j]) {exist=true; break;}
21         }
22         if(!exist) {cout<<a[i]<<" "; found=true;}
23     }
24     if(!found) cout<<"None"<<endl;
25
26     return 0;
27 }
```