

## Worksheet 2

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**Branch:** CSE

**Section/Group:**DWWC-43

**Semester:**5

**Date of**

**Performance:**04-01-  
2023

**Subject Name:**Data  
Structure

**Subject Code:**

### 1. Aim/Overview of the practical:

i) CodeChef recently revamped its [practice page](#) to make it easier for users to identify the next problems they should solve by introducing some new features:

- Recent Contest Problems - contains only problems from the last 2 contests
- Separate Un-Attempted, Attempted, and All tabs
- Problem Difficulty Rating - the Recommended dropdown menu has various difficulty ranges so that you can attempt the problems most suited to your experience
- Popular Topics and Tags

Our Chef is currently practicing on CodeChef and is a beginner. The count of 'All Problems' in the Beginner section is XX. Our Chef has already 'Attempted' YY problems among them. How many problems are yet 'Un-attempted'?

ii) Chef has two integers XX and YY. Chef wants to perform some operations to make XX and YY equal. In one operation, Chef can either:

- set  $X := X + 1$   $X := X + 1$
- or set  $Y := Y + 2$   $Y := Y + 2$

Find the minimum number of operations required to make XX and YY equal.

iii)

There is a contest containing 22 problems AA and BB.

22 strong participants PP and QQ participated in the contest and solved both the problems.

PP made AC submissions on problems AA and BB at time instants P\_AP\_A and P\_BP\_B respectively while QQ made AC submissions on problems AA and BB at time instants Q\_AQ\_A and Q\_BQ\_B.

It is given that the time penalty is the minimum time instant at which a participant has solved both the problems. Also the participant with the lower time penalty will have a better rank.

Determine which participant got the better rank or if there is a TIE.

iv)

In ChefLand, human brain speed is measured in bits per second (bps). Chef has a threshold limit of XX bits per second above which his calculations are prone to errors. If Chef is currently working at YY bits per second, is he prone to errors?

If Chef is prone to errors print YES, otherwise print NO.

v)

Chef is watching TV. The current volume of the TV is XX. Pressing the volume up button of the TV remote increases the volume by 11 while pressing the volume down button decreases the volume by 11. Chef wants to change the volume from XX to YY. Find the minimum number of button presses required to do so

## **2. Steps for experiment/practical/Code:**

**i)**

```
#include <iostream>
```

```
using namespace std;
```

```
int main() {
```

```
    // your code goes here
```

```
    int x,y;
```

```
    cin>>x>>y;
```

```
    cout<<(x-y);
```

```
    return 0;
```

```
}
```

ii)

```
#include <iostream>
using namespace std;

int main() {
    // your code goes here
    int t;
    cin>>t;
    while(t-->0)
    {
        int x,y;
        cin>>x>>y;
        int c=0;
        if(x<y)
            c=y-x;
        else if(x>y)
        {
            if((x-y)%2==0)
                c=int((x-y)/2);
            else
                c=int((x-y+1)/2)+1;
        }
        cout<<c<<endl;
    }
    return 0;
}
```

iii)

```
#include <iostream>
using namespace std;

int main() {
    int t;
    cin>>t;
    while(t-->0)
    {
        int pa,pb,qa,qb;
        cin>>pa>>pb>>qa>>qb;
        int p=max(pa,pb);
        int q=max(qa,qb);
        if(p>q)
            cout<<"Q"<<endl;
        else if(p==q)
            cout<<"TIE"<<endl;
        else
            cout<<"P"<<endl;
    }
    return 0;
}
```

iv)

```
#include <iostream>
using namespace std;

int main() {
    int x,y;
    cin>>x>>y;
    if(y>x)
        cout<<"YES"<<endl;
    else
        cout<<"NO"<<endl;
    return 0;
}
```

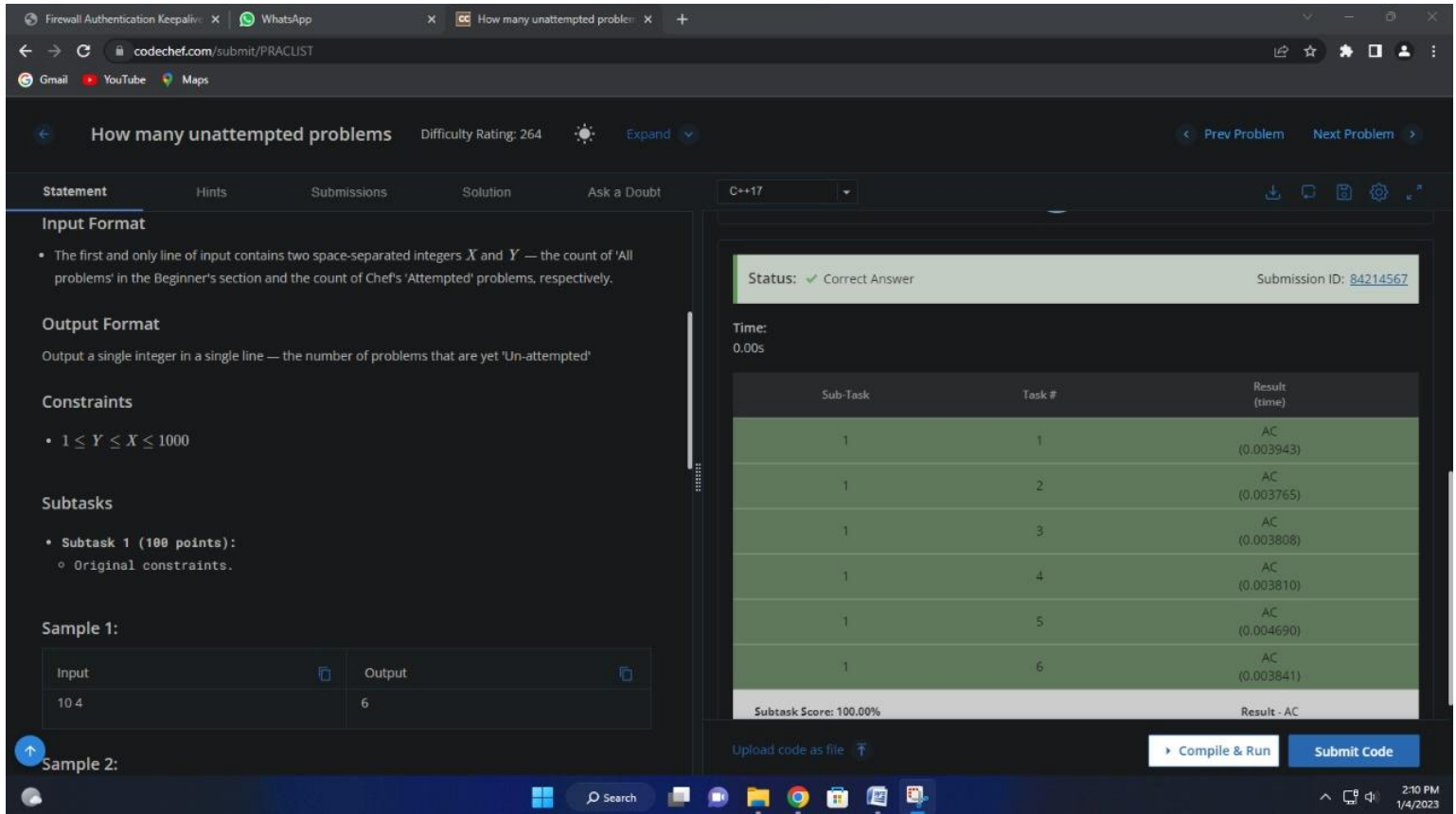
v)

```
#include <iostream>
using namespace std;
```

```
int main() {
    int t;
    cin>>t;
    while(t-->0)
    {
        int x,y;
        cin>>x>>y;
        cout<<abs(x-y)<<endl;
    }
    return 0;
}
```

### 3. Observations/Discussions/ Complexity Analysis:

i)



The screenshot shows a web browser window displaying the CodeChef problem page for "How many unattempted problems". The problem is solved in C++17. The submission status is "Correct Answer" with a submission ID of 84214567. The execution time is 0.00s. The subtask score is 100.00%.

**Input Format**

- The first and only line of input contains two space-separated integers  $X$  and  $Y$  — the count of 'All problems' in the Beginner's section and the count of Chef's 'Attempted' problems, respectively.

**Output Format**

Output a single integer in a single line — the number of problems that are yet 'Un-attempted'

**Constraints**

- $1 \leq Y \leq X \leq 1000$

**Subtasks**

- Subtask 1 (100 points):
  - Original constraints.

**Sample 1:**

Input	Output
10 4	6

**Sample 2:**

Sub-Task	Task #	Result (time)
1	1	AC (0.003943)
1	2	AC (0.003765)
1	3	AC (0.003808)
1	4	AC (0.003810)
1	5	AC (0.004690)
1	6	AC (0.003841)

Subtask Score: 100.00% Result - AC



**ii)**

**Equal Integers** Difficulty Rating: 852 Expand

Statement	Hints	Submissions	Solution	Ask a Doubt
5 3 4 5 5 7 3 5 2 7 12		1 0 2 3 5		

**Explanation:**

Let  $(x, y)$  denote the values of  $X$  and  $Y$  respectively.

**Test case 1:** Only one operation is required:  $(3, 4) \xrightarrow{X:=X+1} (4, 4)$

**Test case 2:** No operations are required since  $X$  and  $Y$  are already equal.

**Test case 3:** Two operations are required:  $(7, 3) \xrightarrow{Y:=Y+2} (7, 5) \xrightarrow{Y:=Y+2} (7, 7)$

**Test case 4:** Three operations are required. One such sequence of operations is:  $(5, 2) \xrightarrow{Y:=Y+2} (5, 4) \xrightarrow{X:=X+1} (6, 4) \xrightarrow{Y:=Y+2} (6, 6)$

Did you like the problem statement?  
3 users found this helpful

Share Pro with your friend

Status: ✓ Correct Answer Submission ID: 84215836

Time:  
0.02s

Sub-Task	Task #	Result (time)
1	0	AC (0.004035)
1	1	AC (0.024005)
Subtask Score: 100.00%		Result - AC
		Total Score = 100.00%

Congratulations on solving the problem. Visit our practice section to solve more interesting problems View another problem

Upload code as file Compile & Run Submit Code

iii)

Firewall Authentication Keepalive x (1) WhatsApp x Determine the Winner - Problem x +

codechef.com/submit/WINNERR?tab=statement

Gmail YouTube Maps

Determine the Winner Difficulty Rating: 626 Expand

Prev Problem Next Problem

Statement Hints Submissions Solution Ask a Doubt C++17

Constraints

- $1 \leq T \leq 1000$
- $1 \leq P_A, P_B, Q_A, Q_B \leq 100$

Sample 1:

Input	Output
4	P
5 10 2 12	Q
10 30 15 15	TIE
20 8 4 20	TIE
6 6 6 6	

Explanation:

Test Case 1:

- Time penalty incurred by participant  $P = 10$ .
- Time penalty incurred by participant  $Q = 12$ .

Since  $10 < 12$ ,  $P$  gets a better rank.

Test Case 2:

- Time penalty incurred by participant  $P = 30$ .
- Time penalty incurred by participant  $Q = 15$ .

Problem Solver Badge 87 / 250

Solve 163 more problems to get Silver Badge

Status: ✓ Correct Answer Submission ID: 84217841

Time: 0.01s

Sub-Task	Task #	Result (time)
1	1	AC (0.003840)
1	2	AC (0.005803)
1	3	AC (0.005930)
1	4	AC (0.005774)

Upload code as file

Compile & Run Submit Code

57°F Fog Search 2:47 PM 1/4/2023

iv)

Firewall Authentication Keepalive x (1) WhatsApp x Chef and Brain Speed - Problem x +

codechef.com/submit/CBSPEED?tab=statement

Gmail YouTube Maps

Chef and Brain Speed

Difficulty Rating: 288

Expand

Prev Problem

Next Problem

Statement

Hints

Submissions

Solution

Ask a Doubt

Chef's current brain speed of 9 bps is greater than the threshold of 7 bps, hence Chef is prone to errors.

Sample 2:

Input	Output
6 6	NO

Explanation:

Chef's current brain speed of 6 bps is not greater than the threshold of 6 bps, hence Chef is not prone to errors.

Sample 3:

Input	Output
31 53	YES

Explanation:

Chef's current brain speed of 53 bps is greater than the threshold of 31 bps, hence Chef is prone to errors.

C++17

Problem Solver Badge

87 / 250

Solve 163 more problems to get Silver Badge

Next Problem

Status: Correct Answer

Submission ID: 84218360

Time: 0.00s

Sub-Task	Task #	Result (time)
1	1	AC (0.003721)
1	2	AC (0.003717)
1	5	AC (0.003896)
1	6	AC (0.003855)
1	7	AC (0.003855)

Upload code as file

Compile & Run

Submit Code

v)

Firewall Authentication Keepalive x (1) WhatsApp x Volume Control - Problems | CodeChef x +

codechef.com/submit/VOLCONTROL?tab=statement

Gmail YouTube Maps

### Volume Control

Difficulty Rating: 409 Expand

Prev Problem Next Problem

Statement Hints Submissions Solution Ask a Doubt C++17

**Constraints**

- $1 \leq T \leq 100$
- $1 \leq X, Y \leq 100$

**Sample 1:**

Input	Output
2	4
50 54	2
12 10	

**Explanation:**

**Test Case 1:** Chef can press the volume up button 4 times to increase the volume from 50 to 54.

**Test Case 2:** Chef can press the volume down button 2 times to decrease the volume from 12 to 10.

Did you like the problem statement?  
52 users found this helpful

Share **Pro** with your friend

**Problem Solver Badge** 88 / 250  
Solve 162 more problems to get Silver Badge

**Status:** ✓ Correct Answer Submission ID: 84218821

**Time:** 0.00s

Sub-Task	Task #	Result (time)
1	0	AC (0.003787)
1	1	AC (0.004112)
1	2	AC (0.004113)
1	3	AC (0.004038)

Subtask Score: 100.00% Result - AC

Upload code as file

Compile & Run Submit Code

57°F Fog Search 2:56 PM 1/4/2023

**Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):**

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			