Experiment - 7

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Branch: BE: CSE **Section/Group:** WM-20BCS-607/A
Semester: 5th **Subject Name:** Competitive coding - I
Subject Code: 20CSP-314

(Construct the Array)

1. Aim/Overview of the practical:-

Your goal is to find the number of ways to construct an array such that consecutive positions contain different values.

2. Hardware and Software Requirements:-

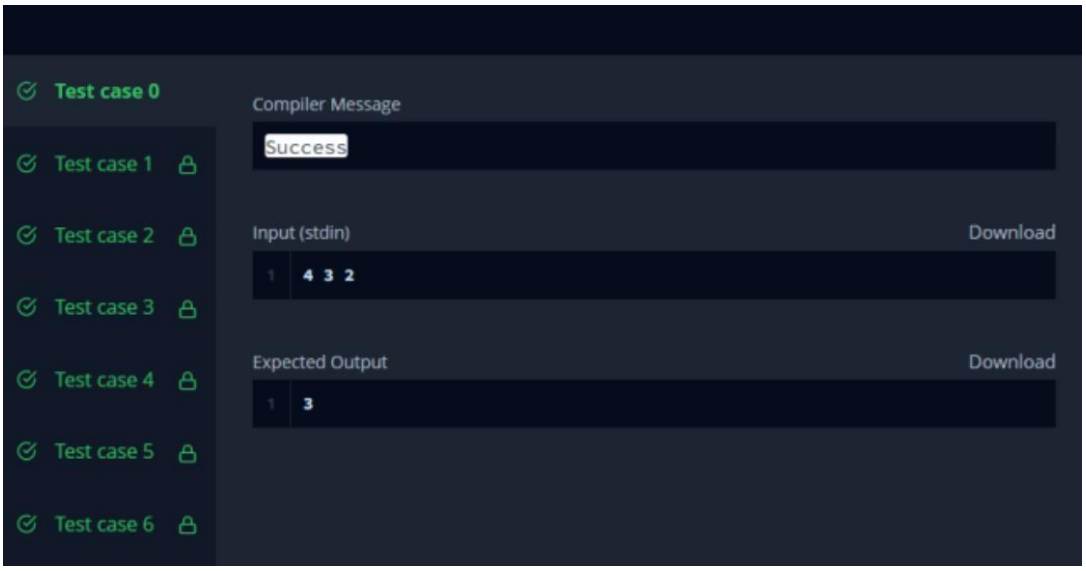
- Laptop or Desktop
- Hacker-Rank Account

3. Steps for experiment/practical/Code:-

```
public static long countArray(int n, int k, int x) { long
dp[][] = new long[n][2]; dp[0][0] = 1; dp[0][1] = 0; for
(int i=1;i<n;i++) { dp[i][0] = (dp[i-1][1] * (k-1)) %
1000000007; dp[i][1] = (dp[i-1][0] + dp[i-1][1] * (k-2)) %
1000000007;
} if (x == 1) {
return dp[n-1][0];
} else {
return dp[n-1][1];

}
}
```

4. Result/Output/Writing Summary:-



Q2. Equal.:-

1. Aim/Overview of the practical:-

Christy is interning at HackerRank. One day she has to distribute some chocolates to her colleagues. She is biased towards her friends and plans to give them more than the others. One of the program managers hears of this and tells her to make sure everyone gets the same number.
To make things difficult, she must equalize the number of chocolates in a series of operations. For each operation, she can give 1, 2 or 5 pieces to all but one colleague. Everyone who gets a piece in a round receives the same number of pieces.
Given a starting distribution, calculate the minimum number of operations needed so that every colleague has the same number of pieces.

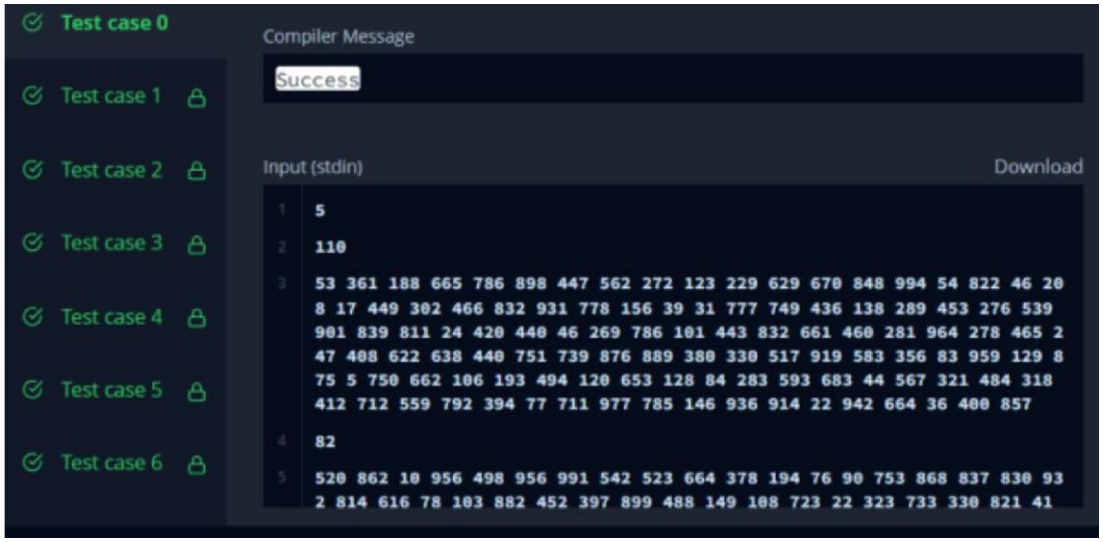
2. Steps for experiment/practical/Code:-

```
import java.util.Scanner;
public class Solution { public
```

```
static int Ch(int x){ int r =
x/5;
x%=5; r+=x/2;
x%=2;
return r+x; } public static void
main(String[] args) { // TODO Auto-
generated method stub Scanner cin =
new Scanner(System.in);
int t = cin.nextInt();
while(t-- != 0){ int
n = cin.nextInt();
int [] N = new int[n];

int x = 10000; for(int i =
0 ; i < n ; i++){ N[i] =
cin.nextInt()+5; x =
Math.min(x, N[i]);
} int r = 10000000; int s = 0;
//System.out.println(x);
for(int i = x-5 ; i < x+1; i++){
s = 0; for(int j = 0 ; j < n ;
j++) s+=Ch(N[j]-i); r =
Math.min(r,s); }
System.out.println(r);
}
}
}
```

3. Result/Output/Writing Summary:-



4. Learning outcomes (What I have learnt):-

a. Learnt the concepts of Dynamic programming.

b. Learnt about Array in Dynamic Programming.

c. Learn about the countArray and Equal concept.

5. 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.			