

WEEK 6[SESSION 1]

Question 1

Correct

Marked out of
1.00

Flag question

Objective

In this challenge, we're going to use loops to help us do some simple math. Check out the Tutorial tab to learn more.

Task

Given an integer, n , print its first **10** multiples. Each multiple $n \times i$ (where $1 \leq i \leq 10$) should be printed on a new line in the form: $n \times i = \text{result}$.

```
1 #include<stdio.h>
2 int main(){
3     int n;
4     scanf("%d",&n);
5     for(int i=1;i<=10;i++){
6         printf("%d x %d = %d\n",n,i,n*i);
7     }
8 }
```

	Input	Expected	Got	
✓	2	2 x 1 = 2 2 x 2 = 4 2 x 3 = 6 2 x 4 = 8 2 x 5 = 10 2 x 6 = 12 2 x 7 = 14 2 x 8 = 16 2 x 9 = 18 2 x 10 = 20	2 x 1 = 2 2 x 2 = 4 2 x 3 = 6 2 x 4 = 8 2 x 5 = 10 2 x 6 = 12 2 x 7 = 14 2 x 8 = 16 2 x 9 = 18 2 x 10 = 20	✓

Passed all tests! ✓

Question 2
Correct
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A nutritionist is labeling all the best power foods in the market. Every food item arranged in a single line, will have a value beginning from 1 and increasing by 1 for each, until all items have a value associated with them. An item's value is the same as the number of macronutrients it has. For example, food item with value 1 has 1 macronutrient, food item with value 2 has 2 macronutrients, and incrementing in this fashion.

The nutritionist has to recommend the best combination to patients, i.e. maximum total of macronutrients. However, the nutritionist must avoid prescribing a particular sum of macronutrients (an 'unhealthy' number), and this sum is known. The nutritionist chooses food items in the increasing order of their value. Compute the highest total of macronutrients that can be prescribed to a patient, without the sum matching the given 'unhealthy' number.

Here's an illustration:

Given 4 food items (hence value: 1,2,3 and 4), and the unhealthy sum being 6 macronutrients, on choosing items 1, 2, 3 -> the sum is 6, which matches the 'unhealthy' sum. Hence, one of the three needs to be skipped. Thus, the best combination is from among:

- $2 + 3 + 4 = 9$
- $1 + 3 + 4 = 8$
- $1 + 2 + 4 = 7$

Since $2 + 3 + 4 = 9$, allows for maximum number of macronutrients, 9 is the right answer.

```
1 #include<stdio.h>
2 int main(){
3     int a,n;
4     long long sum=0;
5     scanf("%d",&a);
6     scanf("%d",&n);
7     for(int i=1;i<=a;i++){
8         sum+=i;
9         if(sum==n){
10             sum-=i;
11         }
12     }
13     printf("%lld",sum%1000000007);
14 }
```

	Input	Expected	Got	
✓	2 2	3	3	✓
✓	2 1	2	2	✓

Question 3

Correct

Marked out of 1.00

Flag question

Determine all positive integer values that evenly divide into a number, its factors. Return the p^{th} element of your list, sorted ascending. If there is no p^{th} element, return 0.

For example, given the number $n = 20$, its factors are $\{1, 2, 4, 5, 10, 20\}$. Using **1-based indexing** if $p = 3$, return 4. If $p > 6$, return 0.

Complete the code in the editor below. The function should return a long integer value of the p^{th} integer factor of n .

Answer: (penalty regime: 0 %)

```
1 #include<stdio.h>
2 int main(){
3     int n;
4     scanf("%d",&n);
5     int p;
6     scanf("%d",&p);
7     int arr[n],e=0;
8     for(int i=1;i<=n;i++){
9         if(n%i==0){
10             arr[e]=i;
11             e++;
12         }
13     }
14     if(p>e){
15         printf("0");
16     }else{
17         printf("%d",arr[p-1]);
18     }
19 }
```

	Input	Expected	Got	
✓	10 3	5	5	✓
✓	10 5	0	0	✓

WEEK 6[SESSION 2]

Question 1

Correct

Marked out of

Given an array A of sorted integers and another non negative integer k, find if there exists 2 indices i and j such that $A[i] - A[j] = k$, $i \neq j$.

Answer: (penalty regime: 0 %)

```
1 #include<stdio.h>
2 int main(){
3     int t;
4     scanf("%d",&t);
5
6     while(t-->0){
7         int n;
8         scanf("%d",&n);
9         int a[n];
10        for(int i=0;i<n;i++){
11            scanf("%d",&a[i]);
12        }
13        int k,valid=0;
14        scanf("%d",&k);
15        for(int i=0;i<n;i++){
16            for(int j=i+1;j<n;j++){
17                if(a[i]-a[j]==k||a[j]-a[i]==k){
18                    valid=1;
19                    break;
20                }
21            }
22        }
23        if(valid==1){
24            printf("1");
25            printf("\n");
26        }else{
27            printf("0");
28            printf("\n");
29        }
30    }
31 }
32 return 0;
33 }
```

	Input	Expected	Got	
✓	1 3 1 3 5 4	1	1	✓
✓	1 3 1 3 5 99	0	0	✓

Passed all tests! ✓

Question 2

Correct

Marked out of 5.00

Flag question

Sam loves chocolates and starts buying them on the 1st day of the year. Each day of the year, x , is numbered from 1 to Y . On days when x is odd, Sam will buy x chocolates; on days when x is even, Sam will not purchase any chocolates.

Complete the code in the editor so that for each day N_i (where $1 \leq x \leq N \leq Y$) in array arr , the number of chocolates Sam purchased (during days 1 through N) is printed on a new line. This is a function-only challenge, so input is handled for you by the locked stub code in the editor.

Answer: (penalty regime: 0 %)

```
1 #include<stdio.h>
2 int main(){
3     int t;
4     scanf("%d",&t);
5     int a[t];
6     for(int i=0;i<t;i++){
7         scanf("%d",&a[i]);
8     }
9
10    for(int j=0;j<t;j++){
11        int sum=0;
12        for(int k=1;k<=a[j];k++){
13            if(k%2==1){
14                sum+=k;
15            }
16        }
17        printf("%d\n",sum);
18    }
19    return 0;
20 }
21 }
```

	Input	Expected	Got	
✓	3	1	1	✓
	1	1	1	
	2	4	4	
	3			

Question **3**

Correct

Marked out of
7.00

Flag question

The number of goals achieved by two football teams in matches in a league is given in the form of two lists. Consider:

- Football team A, has played three matches, and has scored { 1 , 2 , 3 } goals in each match respectively.
- Football team B, has played two matches, and has scored { 2, 4 } goals in each match respectively.
- Your task is to compute, for each match of team B, the total number of matches of team A, where team A has scored less than or equal to the number of goals scored by team B in that match.
- In the above case:
- For 2 goals scored by team B in its first match, team A has 2 matches with scores 1 and 2.
- For 4 goals scored by team B in its second match, team A has 3 matches with scores 1, 2 and 3.

Hence, the answer: {2, 3}.

Answer: (penalty regime: 0 %)

```
1 #include<stdio.h>
2 int main(){
3     int t;
4     scanf("%d",&t);
5     int a[t];
6     for(int i=0;i<t;i++){
7         scanf("%d",&a[i]);
8     }
9     int k;
10    scanf("%d",&k);
11    int b[k];
12    for(int i=0;i<k;i++){
13        scanf("%d",&b[i]);
14    }
15    for(int j=0;j<k;j++){
16        int count=0;
17        for(int m=0;m<t;m++){
18            if(b[j]>=a[m]){
19                count++;
20            }
21        }
22        printf("%d\n",count);
23    }
24    return 0;
25 }
```

	Input	Expected	Got	
✓	4 1 4 2 4 2 3 5	2 4	2 4	✓
✓	5 2 10 5 4 8 4 3 1 7 8	1 0 3 4	1 0 3 4	✓

Passed all tests! ✓

WEEK 6[SESSION 3]

Question 1
Correct

Given an array of numbers and a window of size k. Print the maximum of numbers inside the window for each step as the window moves from the beginning of the array.

Answer: (penalty regime: 0 %)

```
1 #include<stdio.h>
2 int main(){
3     int n;
4     scanf("%d",&n);
5     int a[n];
6     for(int i=0;i<n;i++){
7         scanf("%d",&a[i]);
8     }
9     int k;
10    scanf("%d",&k);
11    int m=k-1;
12
13    for(int i=0;i<n-m;i++){
14        int max=a[i];
15        for(int j=i+1;j<=i+m;j++){
16
17            if(max<a[j]){
18                max=a[j];
19            }
20        }
21        printf("%d ",max);
22    }
23 }
24 }
```

	Input	Expected	Got	
✓	8 1 3 5 2 1 8 6 9 3	5 5 5 8 8 9	5 5 5 8 8 9	✓
✓	10 3 7 5 1 2 9 8 5 3 2 3	7 7 5 9 9 9 8 5	7 7 5 9 9 9 8 5	✓

Passed all tests! ✓

Question 2

Correct

Marked out of
1.00

Flag question

Given an array and a threshold value find the output.

Input: {5,8,10,13,6,2}

Threshold = 3

Output count = 17

Explanation:

Number	Parts	Counts
5	{3,2}	2
8	{3,3,2}	3
10	{3,3,3,1}	4
13	{3,3,3,3,1}	5
6	{3,3}	2
2	{2}	1

Answer: (penalty regime: 0 %)

```
1 #include<stdio.h>
2 int main(){
3     int n;
4     scanf("%d",&n);
5     int a[n];
6     for(int i=0;i<n;i++){
7         scanf("%d",&a[i]);
8     }
9     int k;
10    scanf("%d",&k);
11    int sum=0;
12    for(int i=0;i<n;i++){
13        int count=0;
14        int m=a[i]/k;
15        count+=m;
16        if(a[i]%k!=0){
17            count++;
18        }
19        sum+=count;
20    }
21    printf("%d",sum);
22 }
```

	Input	Expected	Got	
✓	6 5 8 10 13 6 2 3	17	17	✓

Question 3
Correct
Marked out of 1.00
[Flag question](#)

Output is a merged array without duplicates.

Input Format

N1 - no of elements in array 1

Array elements for array 1

N2 - no of elements in array 2

Array elements for array2

Output Format

Answer: (penalty regime: 0 %)

```
1 #include<stdio.h>
2 int main(){
3     int n;
4     scanf("%d",&n);
5     int a[n];
6     for(int i=0;i<n;i++){
7         scanf("%d",&a[i]);
8     }
9     int m;
10    scanf("%d",&m);
11    int b[m];
12    for(int i=0;i<m;i++){
13        scanf("%d",&b[i]);
14    }
15    int e=0;
16    int count=0;
17    for(int i=0;i<n;i++){
18        for(int j=0;j<m;j++){
19            if(a[i]==b[j]){
20                b[j]=0;
21                count++;
22            }
23        }
24    }
25    int k=(m-count)+n;
26    int c[k];
27    for(int i=0;i<n;i++){
28        c[e]=a[i];
29        e++;
30    }
31    for(int i=0;i<m;i++){
32        if(b[i]!=0){
33            c[e]=b[i];
34            e++;
35        }
36    }
37    for(int i=0;i<k-1;i++){
38        for(int j=i+1;j<k;j++){
39            if(c[i]>c[j]){
40                int temp=c[i];
41                c[i]=c[j];
42                c[j]=temp;
43            }
44        }
45    }
46    for(int i=0;i<k;i++){
47        printf("%d ",c[i]);
48    }
49 }
```

	Input	Expected	Got	
✓	5 1 2 3 6 9 4 2 4 5 10	1 2 3 4 5 6 9 10	1 2 3 4 5 6 9 10	✓

Passed all tests! ✓

