

Practice Problems

1. Write a program that asks the user to input 10 integers. After squaring the integers, print out the integers that are not divisible by 3 and 4.

2. Create an 8 by 8 board where all positions are 0, except the diagonals. Sample output:

```
1 0 0 0 0 0 0 1
0 1 0 0 0 0 1 0
0 0 1 0 0 1 0 0
0 0 0 1 1 0 0 0
0 0 0 1 1 0 0 0
0 0 1 0 0 1 0 0
0 1 0 0 0 0 1 0
1 0 0 0 0 0 0 1
```

3. Construct a program that displays a pyramid of Xs of the screen. The pyramid should look like this.

```
      X
     X X X
    X X X X X
   X X X X X X X
  X X X X X X X X
```

The number of lines should be dictated by a user input.

4. Write a program that will input an integer n, calculate the sum of the positive integers from 1 through n and output the sum

5. Given an array of 10 integers:

```
int a[10] = (15, 21, 3, 92, 48, 29, 12, 46, 34, 12);
```

- a. Write a program that will add up the values stored at the even index positions in the array (i.e. 0,2,4, ...).
 - b. Write a program that will add up the values stored at the even index positions in the array (i.e. 0,2,4, ...) but only if the value of the elements in those positions are even.
 - c. Write a program that will add up the values stored at the odd index positions in the array (i.e. 1,3,5, ...) but only if the value of the elements in those positions are even.
6. Write a program that inputs an integer n, and outputs all the numbers that divide n. For example, if n=6, output : 1,2 3. Don't output the number n itself.
 7. Read the entries of an array of 10 integers from a user. Compute x as the average of the 10 entries and then compute the average of those entries that are greater than or equal to x. Print this final average.

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8. Write a C++ program that sets up an array of integers with capacity 20. It should then generate the 20 entries randomly in turn. Each entry must be an integer between 1 and 20, however it must also be different from all previous entries in the array. Generate the entries as random numbers and repeatedly make new numbers until a legal entry value is found. The program should finish by printing the list of 20 array values that it has selected.

9. Create a 2-dimensional array with 10 rows and 10 columns. Fill the array with random 3 digit integers. Print out the column with the largest sum. (If two or more columns share the largest sum, print out one of them only.)