

## Instructions

Pick at least one set of 4 problems to do. There are 3 sets of problems, try to make sure at least one person does each problem so you can share later! **For each problem, you should:**

1. Write an algorithm for the task in English or pseudocode;
2. Draw a high-level flowchart of how your program will operate;
3. Write a program to complete the task.

**If a program takes user input, make sure to test it on a variety of inputs to ensure it is working correctly!**

## Set 1

### Problem 1

Write a program to print out all of the even numbers between 0 and 80 (inclusive). Use a for loop that looks like this: `for(int i=0; i<=80; i++)`. Use an if statement inside the loop to check every i to see if it is even, then if so print it out. (There is a more efficient way to do this, but do it this way for now.)

### Problem 2

Write a program to read in an integer from the user, then print out all of the numbers between 0 and that number (inclusive) that are divisible by 3. If the user enters a negative number, an error message should be printed instead.

### Problem 3

Write a program to read in an integer from the user, then print out the first 12 multiples of that number (for example, if the user enters 5, you should print out 5 10 15 20 25 30 35 40 45 50 55 60).

### Problem 4

Write a program to print out the letters a-y in a 5 by 5 grid. Use a loop inside a loop. Output should look like this:

```
a b c d e
f g h i j
k l m n o
p q r s t
u v w x y
```

## Set 2

### Problem 1

Write a program to print out all of the even numbers between 0 and 110 (inclusive). You may **not** use any if statements in this program.

### Problem 2

Write a program to read in an integer from the user, then print out all of the numbers between that number and 100 (inclusive) that are divisible by 4. There are two cases to consider - when the user enters a number less than or equal to 100 (100 is the upper end of the range), and when the user enters a number greater than 100 (100 is the lower end of the range).

### Problem 3

Write a program to read in an integer from the user, then print out all of the factors of that number (all the numbers between 1 and the number, inclusive, that the number is divisible by). If 0 is entered, the program should print out 0. If a negative number is entered, an error message should be printed.

### Problem 4

Write a program to read in an integer from the user, then print out that many rows of numbers. Row *i* should print out the number *i i* times. For example, if the user enters 4, your program should print out:

```
1
2 2
3 3 3
4 4 4 4
```

## Set 3

### Problem 1

Write a program to print out all of the odd numbers between 0 and 86 (inclusive).

### Problem 2

Write a program to read in an integer from the user, then print out all of the numbers between 0 and that number that are divisible by 2 but **not** 4.

### Problem 3

Write a program to read in an integer from the user, then print out all of the numbers between 0 and that number that are divisible by 4 and 3 but **not** 2.

### Problem 4

Write a program to print out the letters A-T in a 5 by 4 grid (5 rows and 4 columns). Use a loop inside a loop. (*Hint: Characters in Java are just numbers! You may also need to use casting.*)

```
A B C D
E F G H
I J K L
M N O P
Q R S T
```