Document Shortcut:

tinyurl.com/BirkelCodeWars

Sign Up Lab:
Sign up for CodeWars through this link
www.codewars.com/r/683Jzg

*****Ask Birkel what our current clan is*****

Getting Started article:
https://dev.to/barbaralaw/i-want-to-do-codewars-uh-how-do-i-do-that-1pf0

*** Most problems can be done in multiple other languages, such as python. Not all problems are available to all languages, so there may be some below that aren't available in python, but most should be.

***Highlighted problems are the ones you're being graded on completing.
During the last 6 weeks of class we'll be attacking problems from labs 1 through 8.
Students who really want to be prepared for CS2 should also try labs 9 through 11.

Lab #1: Basic Java & Math

Complete the following Katas

- Multiply
- You Can't Code Under Pressure
- Function 1 Hello World
- Grasshopper - Messi Goals Function
- Returning Strings
- Beginner Series #1: School Paperwork
- Function 2 - Squaring an Argument

Lab #2: Conversions & Scanners

- Convert boolean values to Strings "Yes" or "No"
- Convert a Number to a String
- Get character from ASCII
- Convert a String to a Number
- Parse nice int from char problem
- Extra:
    - A+B (Data Types)
    - Binary Addition (Integer.toBinaryString)
- Beginner Series #4: Cockroach

Lab #3: Equations/Algebra & Math Class

All these problems should be solvable with minimal lines of code - usually 1. If you're using if statements or loops, ask yourself if there's a way to solve this as a single equation.

- Get Nth Even Number
- Maximum Multiple
- Grasshopper - Terminal Game Move Function
- Third angle of a Triangle
- Count Odd Numbers Below N
- Return Negative
- Twice as Old
- Grasshopper - Check for Factor
- Quarter of the Year
- Thinkful - Number Drills: Blue and red marbles
- Clock (Beginners Series #2)
- Simple Fun #2: Circle of Numbers
- Opposite Number
- Keep Hydrated!
- Volume of a Cuboid
- Area of a Square
- Sum of odd numbers (This looks more complicated than it actually is. Look at the sums of each row and find a pattern)
- Holiday VIII - Duty Free
- Simple Fun #1: Seats in Theater (+1 to # to columns…)
- Expressions Matter (Solve with Math.max, not if statements)
- Triangular Treasure (Does requires 1 simple if statement in addition to the equation that solves the problem)

Lab #4 - Conditions (ifs)

- Training JS #7: if..else and ternary operator
- BMI Calculator
- Area or Perimeter
- Plural
- Switch it Up!
- Convert a boolean to a String
- Jenny's Secret Message
- Even or Odd
- Is it even?
- Keep up the hoop
- Switch it up
- Opposites Attract
- Is n divisible by x and y?
- Basic Mathematical Operations

- Grasshopper - Gradebook
- Simple Multiplication
- Century from Year
- Cat Years, Dog Years
- Rock Paper Scissors
- Happy Birthday, Darling!
- You're a Square
    - Hint: a # is square if the squareroot of the # and the integerized squareroot of the # are the same.
- Leap Year (Can't currently solve in CodeWars Java).
- Human Readable Time
- Roman Numerals Encoder
- Find the next perfect square
- Watermelon
-
- Grasshopper - Debug
- Will there be enough space?
- RGB to HEX Conversion (Integer.toHexString)

Lab #4b - Boolean Conditionals (returns true/false)

- Exclusive "OR" (XOR) Logical Operators
- L1: SetAlarm
- Thinkful - Number Drills: Pixel Art Planning

Lab #5 - For Loops

- Multiples of 3 or 5
    - Hint: % by 3 AND % by 5
- Grasshopper Summation
- Unfinished Loop - Bug fix #1 (uses concepts we haven't learned yet, but focus on what we do know, not what we don't).
- If you can't sleep, Just count Sheep

Lab #6 - While Loops

- Training on Zeros for Heros
- Growing Plant
- Sum of the first nth term of series
- Money, Money, Money
- Reverse A Number
- Growth of a Population
- Deodorant Evaporator
- Build a pile of cubes (Long data type)

Lab #7: Basic Strings

- The Wide-Mouthed frog!
- Grasshopper - Debug sayHello
-
- makeUpperCase
- Remove Exclamation Marks
- Thinkful - Logic Drills: Traffic Lights
- Vowel Count
- Grasshopper - Personalized Message
- Remove String Spaces
- Abbreviate a Two Word name
- Stringy Strings
- DNA to RNA Conversion
- Are You Playing Banjo?
- Fake Binary
- Printer Errors
- Remove First and Last Character
- Get the Middle Character
- String Ends With?
- The Feast of Many Beasts
    - You can't compare Strings with (str1 == str2)
    - Instead, use (str1.equals(str2))
- Bumps in the Road
- Break camelCase

Lab #7b: Looping Strings

- Multiplication Table for number
- Anagram Detection
- All Star Code Challenge #18
- Simple Fun #176: Reverse Letter
- Not Very Secure

Lab #8: Intermediate Conditions, Loops, and Strings

- I love you, a little, a lot, passionately … not at all
- Shortest Word - Pay attention to length [arrays] vs length() [Strings]
- Complementary DNA
- Reverse String
- Reverse Words
- ~~Scramblies~~ (This problem is no longer solvable with beginner code under the time limit)
- Don't Give Me Five!

- Exes and Ohs
- Transportation on Vacation
- Is this a triangle?
- String Repeat
- Largest 5 digit number in series
- Isograms
- Credit Card Mask
- altERnaTIng cAsE <=> ALTerNAtiNG CaSe
- Correct the Mistakes of the Character Recognition Software
- Disemvowel Trolls
- Mumbling
- Dubstep
- Detect Pangram
- Round up to the next multiple of 5
- Gravity Flip

Lab #9: Beginners Algorithms & Nested Loops

- Write Number in Expanded Form
- Find divisors of a number
- Regex Validate Pin Code
- Does My Number Look Big In This? (narcissistic numbers / Armstrong Numbers)
- Is a Number Prime?
- The Deaf Rats of Hamelin
    - Rats of Hamelin Algorithm Help
- Playing with passphrases
- Bouncing Balls
- Find numbers which are divisible by a given number
- Collatz Conjecture Length
- Find the unique number
- Breaking Chocolate
- Primes in Numbers
- Longest_Palindrome

Lab #10: Advanced Problem Solving

- Playing with Digits
- Count the Digits
- Counting Duplicates
- Password System
- Bit Counting
- Sum of Numbers
- Valid Braces
- Valid Parentheses (similar, but different from Valid Braces)
- Give me a Diamond

Lab #11: String Advanced

- CamelCaseMethod
- Vowel Remover
- Simple Pig Latin
- Square Every Digit
- Two to One
- Decode the Morse Code 1
- Consecutive Strings
- ROT13
- Simple Encryption #1 - Alternating Split
- Sum Strings as Numbers
- Adding Big Numbers
- Reverse or Rotate?

Lab #12: Arrays (No Loops)

- Tortoise Racing
- Surface Area and Volume of a Box
- Difference of Volumes of Cuboids
- My head is at the wrong end
- N-th Power

Lab #13: Arrays (1 Loop)

- Small Enough? - Beginner
- Count By X
- What is between?
- How good are you really?
- Speed Limit
- Well of Ideas - Easy Version
- Are the numbers in order?
- Grasshopper - Array Mean
- Simple Fun #152 - Invite More Women?
- Simple Fun #37 - House Numbers Sum
- Powers of 2 (uses "long" data type)
- To Square(root) or Not to Square(root)
- Encrypt this!
- Good vs Evil
-

Lab #14: Arrays Multiple Loops (Not nested)

- Maximum Length Difference
- Sort and Star
- BuildTower
- Make the Deadfish Swim

Lab #14: Arrays Nested Loops

- Two Sum

Lab #15: Advanced Problem Solving (Arrays) (Probably Should check to see if they belong in labs 13 or 14 instead)

- Sum of Parts
- Split and then add
- Split String
- Help the Bookseller !
- Tribonacci Sequence
- Your Order, Please
- Equal Sides of an Array
- Highest Scoring Word
- Mexican Wave
- Are they the "same"
- Count the Smiley Faces
- Find the missing letter
- Duplicate Encoders
- Find the Parity Outlier
- Descending Order
- ~~Vasya - Clerk~~ (Removed problem)
- Ultimate Array Reverser
- Merging sorted integer arrays (without duplicates)
- Range Extraction
- Maximum Subarray Sum

Unorganized Array Problems

- Highest and Lowest
    - Can easily be done with String.split and then a simple search. Or even utilizing

Collections.sort to sort the array. Then the highest and lowest will be the first and last elements.

- Square(n) Sum
- Count the Monkeys!
- Beginner - Lost without a Map (Don't solve with the map hint at the bottom of the doc)
- Beginner - Reduce but Grow
- Reversed Sequence
- You only need one - Beginner
- Find the smallest integer in the array
- Find Maximum and Minimum Values of a List
    - Same problem: The Highest Profit Wins!
- Counting sheep...
- Sum of Positives
- Array Plus Array
- Odd or Even?
- Enumerable Magic # 25 - Take the first N Elements
- Get the mean of an Array
- Calculate Average
- Find the odd int
- Find the first nonconsecutive number
- Take a Ten Minute Walk
- Who Likes It?
- Create Phone Number
- Invert Values
- Count of positives/sum of negatives
- Sentence Smash
- Reversed Words
- Stop gninnipS My sdroW!
- A needle in a haystack
    - Some values are null…
- Sum without highest and lowest
- Convert a String to an Array
- Greed is Good
- Find the Stray Number
- Convert number to reversed array of digits
- Which are in
- Total Amount of Points
- Jaden-Casing-Strings
- Alphabetical Addition
- Product of Consecutive Fib Numbers (looks harder than it is)

Lab #19: Dynamic Parameters as Arrays

- Is n divisible by (...)
-

Lab #20: 2D Arrays - Basic

- Multiplication Table
- Spelling Bee (simple)
- Snail
- Make Spiral
- Welcome!

Lab #21: 2D Arrays - Advanced

- Save the Spice Harvester
- The 'Spiraling' Box

Lab #22: Object Creation

- Integers: Recreation One
- Easy Balance Checking → This one could be done without creating a new object, but it does help to compartmentalize your code when you create one… So requirement: Create a "Line" object that contains:
    - item#
    - description
    - charge
    - Balance
- Weight for Weight
- PaginationHelper (confusing sometimes, but not too hard)
- Projectile Motion (Hard to complete)

Lab #22b: Static in Objects

- Double value every next call
-

Lab # 23: Using Objects (pre-defined)

- Two Fighters, One Winner

Lab # 24: ArrayLists

- Testing 1-2-3
- Rectangle into Squares
- Number of people in the bus - ArrayList + Array
- Delete Occurrences of an Element if it Occurs More than N Times

- Ones and Zeros (Binary Conversion)
- Take a number and sum its digits raised to the con...
- Directions Reduction
- Array.diff (Way easier in Python)
- The SuperMarket Queue

Lab #25: Generic Lists

These problems take lists/arrays containing more than 1 data type and asks you to decipher what is in each position (make use of the instanceof reserved word to determine data types)

- Sum Mixed Arrays
- List Filtering

Lab # 26: Advanced Problem Solving (Algorithms/Troubleshooting)

- Calculator
- Human Readable Duration Format
- Strip Comments - Use a scanner to scan the lines, then use String functions.
- Convert String to Camel Case
- Thirteen
- Sum of Intervals
- Twice Linear
- Pyramid Slide Down
- Recover a secret string from random triplets

Lab #27: Recursion

- Greatest Common Divisor
- Sum of Digits/Digital Root
- String Incrementer
- Collatz Conjecture Length (Do it using recursion, no counting variable)
- The Observed Pin
- Factorial
- Persistent Bugger
- Permutations
- Boggle Word Checker

Lab #28: Sorting

- Sort the Odd

Lab #29: Advanced Data Types

- Perimeter of Squares in a Rectangle (BigInteger)

Lab #30: Conditional Operator

- Make a Function that does Arithmetic! -- Try using the ? : operators

Lab #31: Advanced Data Structures

- Nodes/Linked Lists
    - Can You Get the Loop
- Maps
    - Pick Peaks (Linked Hash Maps & Linked Lists

Lab #32: Competition Prep

- Caesar Cypher 2
- Dashatize It - This is an easy problem conceptually, but the specific cases that are tested make this a really difficult problem to solve (negative #'s & 0's)
- Roman Numerals Helper
- Sports League Table Rankings
- Common Denominators
- Matching and Substituting
- Next Bigger Number with the Same Digits
- String Mix
- Number of trailing zeros of N! - simple algorithm; not obvious
- Prize Draw
- Decimal to Factorial and Back
- Sudoku Solution Validator
- Sum By Factors
- Number of Proper Fractions with Denominator d
  Decode the Morse Code - Advanced
- Find the Unknown Digit
- Path Finding:
    - Path Finder #1 - Can you Exit?
    - Path Finder #2 - Shortest Path
    - Path Finder #3 - Alpinist

- Matrix Determinant (Recursion)
- Catching Car Mileage Numbers

Python (Not Java) Problems
Rot13 (Advanced String or Arrays)