JavaScript Structures(for Programmers)
Practice Problems

1. (*from 2019 HACC Contest*)To find a Happy Number, start by taking any positive integer n and calculate the sum of the squares of its digits. If you repeat this operation, eventually you'll either end at 1 (a happy number) or cycle between the eight values 4, 16, 37, 58, 89, 145, 42 and 20 (a sad number). For example, pick n=389. So, $3^2+8^2+9^2=154$. Next, $1^2+5^2+4^2=42$, and now we are at one of the eight special values in the sequence above (you can easily verify this loop). So, 389 is a Sad Number.
   INPUT: A single number between 1 and 1000
   OUTPUT: true for a Happy Number, false for a Sad Number.
   EXAMPLES:

Input: 19	Output: true
Input: 20	Output: false

2. (*from 2018 Code LM Advanced*) New Wave Computers has decided to slim down their selection of products to make room for new items that will be introduced next year. To do this, they want to be able to identify the best-selling product(s). To help with this process, New Wave developed a system that sends the name of each product that is sold to its central headquarters when it is sold; Every time a product is sold it is added to this list. You are to write a program that receives this list of products and returns the name of the product that has been sold the most. If more than one product has been sold the most, then you should return the name of all of these products:
   INPUT: A list of strings, comma separated; each representing one purchase of the product listed
   OUTPUT: A list of the name(s) of the products that have been sold the most. If there is more than one product that has been sold the most, each product name should be on a separate line and sorted alphabetically.
   EXAMPLES:

Input: NWPC, Universe Edge, Hard Drive, Software, NWPC, Disk Drive, Universe Edge, NPWC	Output: NWPC
Input: NWOS, Wave Phone, Ativirus, Wave Phone, NWOS, Disc Drive, Card Reader	Output: NWOS Wave Phone
Input: Wave Home, iWave, XWave 360, Wave Boy, Wave Boy, iWave, NW 1080TI, Wave Boy, New Wave Vista, iWave, Wave Home, Wave Home	Output: iWave Wave Boy Wave Home

3. (*from 2018 HACC Contest*) Write a program to take a list of problem numbers, and condense them down into a cleaner list. For example, the problem set 2, 11, 4, 5, 8, 12, 13, 14 can be ordered and condensed to 2, 4-5, 8, 11-14.
   INPUT: a space separated list of numbers in any order
   OUTPUT: a comma separated, condensed list of problem numbers in ascending order
   EXAMPLES:

Input: 5 4 3 2 1	Output: 1-5
Input: 1 2 3 6 7 9 10 12	Output: 1-3, 6-7, 9-10, 12
Input: 1 3 5 7 9	Output: 1, 3, 5, 7, 9
Input: 1 3 5 10 7 6	Output: 1, 3, 5-7, 9-10

4. *(* from 2014 Code Quest #9)*When writing a check, you need to write out the amount as digits and in full form. Write a program that converts dollar amounts from their numeric form (8.15) to their full English equivalent (eight dollars and fifteen cents). Here are a few items to keep in mind:
   - Not all inputs will have a decimal. Numbers with no decimal should be assumed to have 0 Cents.
   - There will be no more than 2 numbers after the decimal point
   - Capitalize each English word except the word "and"
   - All inputs will be less than one million
   - You should use the singular for Dollar and Cent when appropriate.

   INPUT: a number, less than one million with no more than 2 numbers after the decimal point, if there is a decimal point

   OUTPUT: The English equivalent of the number

   EXAMPLES:

Input: 143	Output: One Hundred Forty Three Dollars and 0 Cents
Input: 2.34	Output: Two Dollars and 1 Cent
Input: 1.01	Output: One Dollar and 1 Cent
Input: 1234.56	Output: One Thousand Two Hundred Thirty Four Dollars and 56 Cents