Aim: Become proficient in essential programming techniques. These exercises will help you get a good understanding of string manipulation, numbers, implementing simple algorithms and object oriented concepts.
Tools: XCode on a Mac
Time commitment: 80 hrs.

1. Write the FizzBuzz in Objective-C
2. Print a table of Fahrenheit to Celsius conversions from -40 F to 100 F for every degree
3. Modify the above program to add a header to your output
4. Modify the above program to print temperatures from 100F to -40F
5. Use symbolic constants to define constants in the above program
6. Given two strings: print true if they are equal and false if they are not equal.
7. Given a string "This is a test", replace te with gho
    - Try with strings that don't contain te
8. You have an array of strings. Create a new string, which is a concatenation of all the array elements.
    - Check that the length of individual strings when added equals the length of the final string
    - Make sure your program works with an array with no elements
9. Given this string: "USA, Canada, Mexico, Bermuda, Grenada, Belize" -- create an array that contains these countries as its elements. *Note: the comma is the separator*
    - Make sure your program works when you add or remove countries from your string
    - Change your program so that the delimiter can be easily changed
10. Modify the program in 9 above so it can understand countries separated by either a comma or a space or a period. "USA. Canada, Mexico, Bermuda Grenada, Belize"
11. Change your program so that it can support any number of delimiters.
12. Read a file and store its contents in a string
13. Read an Objective-C file and count the number of lines in that program
14. Modify 11 to count the number of lines of comment marked with //
15. Modify 12 to include /* */ style of comments
16. Calculate the nth power of an integer e.g. 32 = 9
17. Use the above program to calculate the tenth power of 2 billion
18. Write a function to swap two ints
19. Modify the function above to solve the above program without a temp variable
    - Try to swap two numbers 2.1 billion and 2 billion using the above program
20. Evaluate S using n = 100 terms where S = √ (6*(1+1/2^2+1/3^2 +1/4^2 + 1/5^2 + ...))
21. Calculate the value of n above if it is given that the above sum is equal to PI to 6 decimal places.
22. Implement the bubble-sort algorithm
23. Object oriented programming
    - Write a program that creates a class for storing Names and Addresses
    - Write a program that reads names and addresses from a file and creates a new instance of the above class for each new entry
    - Identify duplicate names by using NSMutableDictionary with the above objects. Use names as keys and the objects above as values.
24. Implement a simple hash table
    - Define the interface first
    - Implement the methods
25. Test your program #22 to use your implementation of the hash table instead of NSMutableDictionary