CS2302 - Data Structures - Spring 2020

Exercise - Recursion

1. Write a recursive function that receives a list of integers and returns the sum of its elements.
2. Write a recursive function that receives a list of integers A and an integer a and determines if a is in A.
3. Write a recursive function that receives a list of integers and returns the smallest element in the list.
4. Write a recursive function that receives a positive integer and returns a string containing its binary representation.
5. Write a recursive function that receives two lists of integers and determines if they are identical (that is, they have the same elements in the same order).
6. Write a recursive function that receives a list of integers and returns that list in reverse, without changing the original list.
7. Write a recursive function that receives a list of integers and inverts the order of its contents. That is if the input list is $A = \{1, 2, 3, 4\}$, after execution you should have $A = \{4, 3, 2, 1\}$.
8. Write a recursive function that receives a list of integers and determines if it is sorted in ascending order.
9. Write a recursive function that receives an integer n and prints all binary numbers that have n bits.
10. Write a recursive function that receives a string s and prints all possible permutations of the characters in s.
11. A restaurant offers 3-course meals as follows. The starter plate can be salad, soup, or pasta, the main dish can be steak, fish, or lasagna, and dessert can be cake or ice cream. Write a recursive function to generate all possible meal combinations one can have at that restaurant.