Problem 1:

Write an assembly program that involves a subroutine to calculate the equation (A+B) – (C+D), given that A, B, C and D are four different numbers stored in the memory and passed to the subroutine as parameters. The subroutine should return a value and then the main program multiplies it by 2.

Problem 2:

Write an assembly program that involves a subroutine to calculate the 2's complement of a value and store its complement back in memory. Your parameter should be first read from memory and the complemented value must be stored in the memory.

Problem 3:

Write an assembly program that involves a subroutine to sum up an array of elements. Your subroutine has 2 parameters. The first parameter is the array's length, and the second is the array. The summation must be stored in a memory location.

Problem 4:

Write an assembly program that involves a subroutine to search an array of elements for a specific number. Your subroutine has 3 parameters. The first parameter is the length of the array, the second parameter is the element to search for and the third parameter is the array. If the element is found, your subroutine should store the value 1 in register $s5, and if not found, the value in $s5 is -1.

Problem 5:

Write an assembly program which calls two subroutines, the first one to calculate the minimum element in array, the second subroutine is to get the maximum element of the same array, then the main program should calculate the difference between maximum and minimum and stores it in the memory. (Assume initially that the initial value of minimum is 1000, and the initial value of maximum is zero).