Problem 1:

Write an ARM7 assembly program that involves a subroutine to subtract two numbers in two ways:

a) In the first way, assume that the operands are in the memory however your subroutine should pass its parameters via registers, and the subroutine should store the result back in the memory location just after the two operands.

b) In the second way, pass the parameters via memory and store the returned value back in the first memory location available just after the call.

Problem 2:

Write an ARM7 assembly program that involves a subroutine to complement (1's complement) a value and store its complement back in memory. Your parameter must be passed via memory and the returned complemented value must be stored in the first available memory location after the call.

Problem 3:

Write an ARM7 assembly program that involves a subroutine to sum up an array of elements. Your subroutine have 2 parameters that are passed via memory. The first parameter is the length of the array and the second parameter is the array. The summation returned must be stored in the first available memory location after the call.

Problem 4:

Write an ARM7 assembly program that involves a subroutine to search an array of elements for a specific number. Your subroutine have 3 parameters that are passed via memory. 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 R5, and if not found, the value in R5 is zero.

Problem 5:

Write an ARM7 assembly program to evaluate the following equation $a \times b + c \times d$. Your program should involve two subroutines, one responsible for multiplying two numbers, and one responsible for addition of two numbers.

The multiplication subroutine should get its two parameters via memory, and the returned result should be stored in the first memory location available after the call, whereas the addition subroutine should store its returned value in the memory location after the call.