1

Q1. Using the format of Figure 10.6, please draw the stack usage procedure during the computation of `(51-49)*(172+205)-(17*2)`. The stack pointer is x4000 initially. Hint: you may refer the whole process sequence in Page 396 of textbook.

x3FFB	-	-			
x3FFC	-	-			
x3FFD	-	-			
x3FFE	-	-			
x3FFF	-	51			
SP	x4000	x3FFF			

51 49 - 172 205 + * 17 2 * -

x3FFB	**-**								
X3FFC	-								
x3FFD	-					205	205	205	205
x3FFE	-		49	49	172	172	377	377	17
x3FFF	-	51	51	2	2	2	2	754	754
SP	x4000	x3fff	x3ffe	x3fff	x3ffe	x3ffd	x3ffe	x3fff	x3ffe

x3FFB									
X3FFC									
x3FFD	2	2	2	2					
x3FFE	17	34	34	34					
x3FFF	754	754	720	720					
SP	x3ffd	x3ffe	x3fff	x4000					

2

Q2. There is a 4-dimensional array $A[M, N, P, Q]$, in which $M = 3$, $N = 5$, $P = 7$, $Q = 9$. Each element is a 16-bit integer and stored sequentially in LC-3's memory. The first element $A[0, 0, 0, 0]$ is stored at address x4000. The access way of this 4D array can be describe in C like:

```
int i,j,k,l;
for(i=0; i<M; i++){
    for(j=0; j<N; j++){
        for(k=0; k<P; k++){
            for(l=0; l<Q; l++){
                //access A[i,j,k,l]
            }
        }
    }
}
```

What's the address of $A[2, 4, 3, 5]$? Also show the calculation procedure of your answer.

A[2,4,3,5]

5 * 1 + 3 * 9 + 4 * 63 + 2 * 315 = 914

x4000 + 914 =x4000 + x392 = x4392