CSE 2321: Homework 7 Solutions

1.

```c
find_max1(A, n)
/* A is an array of positive integers, n is the length of A */
max = 0;
for i ← 1 to n do
    if A[i] > max then
        max = A[i];
end
return max;
```

2.

```c
find_max2(A, n)
if n == 1 then
    return A[1];
end
v1 = A[1];
v2 = find_max2(A, n - 1);
if v1 > v2 then
    return v1;
else
    return v2;
end
```

3.

a) Yes. The input for both algorithms is a finite array of positive numbers whose length is n. The output for both is the maximum in the array.

b) Yes. Array A is of length n, find_max1 terminates after visiting all n elements. find_max2 terminates when n is equal to 1.

c) Yes. In find_max1, the loop from line 3 to 7 searches through the array and assign any value larger than max to max. In find_max2, max(A[i, n]) = max(A[i], max(A[i+1, n])) can be proven by mathematical induction.