COMP 3270 Introduction to Algorithms

Homework 3

1. Use Strassen's algorithm to compute the matrix product. Show detailed procedure of your work.

$$\begin{pmatrix} 1 & 3 \\ 7 & 5 \end{pmatrix}\begin{pmatrix} 6 & 8 \\ 4 & 2 \end{pmatrix}.$$

2. Using pages 4-16 of the slides (which can be found under the file section on Canvas) of Chapter 4 as a model, illustrate the operation of PARTITION on the array A = [13, 19, 9, 5, 12, 8, 7, 4, 21, 2, 6, 11].

3. Consider the following algorithm

```
Algorithm Mystery(A: Array [i..j] of integer)
i & j are array starting and ending indexes
begin
if i=j then
   return A[i]
else
   k=i+floor((j-i)/2)
   temp1= Mystery(A[i..k])
   temp2= Mystery(A[(k+1)..j]
   if temp1<temp2 then
      return temp1 else return temp2
end
```

What does the recursive algorithm above compute?