CIS 22C
Review: **ALGORITHM EFFICIENCY**
PSEUDOCODE

First Name Last Name

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1.

(A). If **ary** is containing the following numbers and the variable **n** represents the size of the array, 8 in this case, what would the value returned from the algorithm be? _____

50	70	90	10	90	40	95	50
0	1	2	3	4	5	6	7

(B). Big O notation: _____

```
Algorithm guess(ary, n )
Pre:     ary – has data
         n – its actual size
Post:
   k = n - 1
   i = n - 2
   loop( i >= 0 )
      if( ary[i] < ary[k] )
         k = i
      end if
      i = i - 1
   end loop
   return k
end guess
```

2.

(A). If **ary** is containing the above numbers and the variable **n** represents the size of the array, 8 in this case, what would the value returned from the algorithm be? _____

(B). Big O notation: _____

```
Algorithm guess(ary, n )
Pre:     ary – has data
         n – its actual size
Post:
   k = j = 0
   loop( j < n )
       i = 0
       loop( i < n )
           k = k + 1
           i = i + 1
       end loop
       j = j + 1
   end loop
   return k
end guess
```

3. Give the BigO notation for each of the following pseudocode fragments.

(A)
```
k = 0
loop( k < n )
   s = s + ary[k]
   k = k + 2
end loop
```

(B)
```
j = 1
k = 1
loop( k <= n )
   s = s + j
   j = j + 1
   k = k * 2
end loop
```

(C) *Show work!*
```
k = 0
loop( k < n )
   s = s + aryA[k]
   k = k + 1
end loop
j = 0
loop( j < n )
   s = s + aryB[j]
   j = j + 1
end loop
```

(D) *Show work!*
```
k = 0
loop( k < n )
   s = s + aryA[k]
   k = k + 2
end loop
j = 1
loop( j < n )
   s = s + aryB[j]
   j = j * 2
end loop
```

(E) *Show work!*
```
k = 1
loop( k < n )
   s = s + aryA[k]
   k = k * 2
end loop
j = 1
loop( j < n )
   s = s + aryB[j]
   j = j * 2
end loop
```

(F)
```
k = 1
loop( k < n )
   s = s + ary[k]
   k = k * 2
end loop
```

(G)
```
k = n - 1
loop( k >= 0 )
   s = s + ary[k]
   k = k - 1
end loop
```

(H) *Show work!*
```
k = 1
loop( k <= n )
   j = 0
   loop( j < n )
      s = s + ary[j]
      j = j + 1
   end loop
   s = s + k
   k = k + 1
end loop
```

(I) *Show work!*
```
k = 1
loop( k <= n )
   j = 0
   loop( j < n )
      s = s + ary[j]
      j = j + 1
   end loop
   s = s + k
   k = k * 2
end loop
```

(J) *Show work!*
```
k = 1
loop( k <= n )
   j = 0
   loop( j < n )
      s = s + aryA[j]
      j = j + 1
   end loop
   s = s + k
   k = k * 2
end loop
i = 0
loop( i < n )
   s = s + aryB[i]
   i = i + 3
end loop
```