CS 395 Homework 8

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Due April 23rd, 2012

Grade: _____

PROBLEMS

5.2-1

$P = \frac{1}{n}$

5.2-2

$P = \frac{1}{n!}$

5.3-1

RANDOMIZE_IN_PLACE(A)

```
1  n = length(A)
2  swap(A[1], A[RANDOM(1,n)]
3
4  for i in 2 to n
5          swap(A[i], A[RANDOM(i,n)])
```

Loop Invariant

Just before $i = 2$, the array $A[1...i-1]$ maintains the initial loop invariant. For the remaining iterations, the maintenance and termination loop invariants are upheld.

5.3-2

It would, except at some point, $i = n$, so the random functions is called as $RANDOM(n+1, n)$. I don't know what to expect out of the function with these values, but my guess would be an error. Besides this issue, it is simular to the $RANDOM\_IN\_PLACE()$ function I wrote in 5.3-1. Instead, Kelp should right the iteration range as $iin1..n-1$. The result would be:

```
1
2  PERMUTE_WITHOUT_IDENTITY(A)
```

```
1  n = length(A)
2
3  for i in 1 to n - 1
4          swap(A[i], A[RANDOM(i+1,n)])
```