Problem Set 1

Name: Your Name

Collaborators: None

Problem 1-1.

(a) f_5, f_3, f_4, f_1, f_2

(b) $\{f_1, f_2\}, f_5, \{f_3, f_4\}$

(c) $f_2 = \frac{n!}{n!6!} = 1/(6!)$
$f_4 = \frac{n!}{(n/6)!(5n/6)!}$
$f_2, f_5, \{f_3, f_4\}, f_1$

(d) $f_5, f_2, f_4, \{f_1, f_3\}$

Problem 1-2.

(a) For j equals i to $i + k/2$, do insert_at(j, delete_at(2*i+k-j-1)).

(b) For j equals 0 to $k - 1$, do insert_at(j, delete_at(i+j)).

Problem 1-3.

Problem 1-4.

"$\rightarrow$" means point to

(a) insert_first(x): $x.next \rightarrow L.head, L.head.prev \rightarrow x, x.prev = null, L.head \rightarrow x$
insert_last(x): $x.prev \rightarrow L.tail, x.next = null, L.tail.next \rightarrow x, L.tail \rightarrow x$
delete_first(): $L.head.next.prev = null, L.head \rightarrow L.head.next$
delete_last(): $L.tail.prev.next = null, L.tail \rightarrow L.tail.prev$

(b) $L'.head \rightarrow x_1, L'.tail \rightarrow x_2$
$x_1.prev.next \rightarrow x_2.next, x_2.next.prev \rightarrow x_1.prev$
$x_1.prev = null, x_2.next = null$

(c) $L_2.tail.next \rightarrow x.next$ $x.next.prev \rightarrow L_2.tail$ $L_2.head.prev \rightarrow x$ $x.next \rightarrow L_2.head$

(d) Submit your implementation to alg.mit.edu.