

[There are no exam questions beyond this point. This page will **not** be marked, unless you clearly indicate the part of your work that you want us to mark.]

Python Lists “Cheat Sheet”

Assume that `x` is a python list in the following.

Operation	Explanation
<code>x.append(elt)</code>	Append <code>elt</code> to the end of <code>x</code> .
<code>x.insert(i,elt)</code>	Insert <code>elt</code> at index <code>i</code> in <code>x</code> .
<code>x.pop()</code>	Remove and return the last item in <code>x</code> .
<code>x.pop(i)</code>	Remove and return the <code>i</code> 'th item in <code>x</code> .
<code>len(x)</code>	Return the number of elements in <code>x</code> .
<code>x[i]</code>	Return the <code>i</code> 'th item in <code>x</code> .
<code>x[i:j]</code>	Slice of <code>x</code> from <code>i</code> to <code>j</code> . (Slice includes item <code>i</code> , but excludes item <code>j</code> .)
<code>x[:j]</code>	Slice of <code>x</code> from 0 to <code>j</code> .
<code>x[i:]</code>	Slice of <code>x</code> from <code>i</code> to the end of <code>x</code> .
<code>x[:]</code>	Copy of <code>x</code> .
<code>[y]*n</code>	Return a list containing <code>n</code> copies of <code>y</code> .

You may assume the following time complexities for python operations:

Operation	Time Complexity
Appending an item to the <b>end</b> of a python list.	$O(1)$
Removing an item from the <b>end</b> of a python list.	$O(1)$
Inserting an item at the <b>front</b> of a python list of length <code>n</code> .	$O(n)$
Removing an item from the <b>front</b> of a python list of length <code>n</code> .	$O(n)$
Creating a slice with <code>k</code> elements from a python list of length <code>n</code> .	$O(k)$
<code>len</code> function.	$O(1)$

[Use the space below for rough work.]