

CS240

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The Long Way to Code a For Loop

```
1 it = iter(myList)
2
3 while True:
4     try:
5         item = it.next()
6         doBodyOfLoop(item)
7     except StopIteration:
8         break
```

Example Iterator Class

```
1 class ReverseIterator(object):
2     def __init__(self, theList):
3         self._list = theList
4         self._index = len(theList)
5
6     def __iter__(self):
7         return self
8
9     def next(self):
10        self._index -= 1
11        if self._index < 0:
12            raise StopIteration()
13        return self._list[self._index]
```

Three Confusingly Related Concepts

- Abstract Data Type - Programmer-defined data type that specifies a set of operations.
 - ADT is **defined independently of its implementation**.
- Data Structure - Actual data organization that underlies the implementation of an ADT.
- Python Type (or Class) - Complete implementation of an ADT using some data structure.

We Will Be Talking About “Lists”

- Don't be confused!
- Abstract Data Type - “List ADT” specification for container types that hold a set of elements in linear order and can grow or shrink to hold an arbitrary number of items.
- Data Structure - “Linked List” refers to a data structure that organizes a collection of elements using linked nodes. *We won't talk about these for a while.*
- Python Type (or Class) - “Python List” is a Python type that implements a List ADT.