



Lists

List • In many programming languages a list is implemented as an array. • This will likely be the term to look for if you are looking for a listequivalent when learning a new language. • Python lists have many of the characteristics of the arrays in other programming languages but they also have other features.

Example Problem

• Write a program that will track the percentage grades for a class of students. The program should allow the user to enter the grade for each student. Then it will display the grades for the whole class along with the average.

Why Bother With A List?

```
• Name of the example program: @classListV1.py
```

- Learning: a "how not" approach for a solution that should employ lists.

 $CLASS_SIZE = 5$

```
stu1 = float(input("Enter grade for student no. 1: "))
stu2 = float(input("Enter grade for student no. 2: "))
stu3 = float(input("Enter grade for student no. 3: "))
stu4 = float(input("Enter grade for student no. 4: "))
stu5 = float(input("Enter grade for student no. 5: "))
```





What Were The Problems With The Previous Approach?

- Redundant statements.
- Yet a loop could not be easily employed given the types of variables that you have seen so far.

What's Needed

- A composite variable that is a collection of another type.
 - The composite variable can be manipulated and passed throughout the program as a single entity.
 - -At the same time each element can be accessed individually.
- What's needed...a list!





































lames Tam



```
def start():
    aNum = 12
    aBool = True
    print("In start:", aNum,aBool)
    fun1(aNum,aBool)
    print("After fun1:", aNum,aBool)
    aNum,aBool = fun2(aNum,aBool)
    print("After fun2:", aNum,aBool)
```

start()







James Tam

After This Section You Should Now Know

- The difference between a simple vs. a composite type
- Why and when a list should be used
- How to create and initialize a list (fixed and dynamic size)
- · How to access or change the elements of a list
- The difference between the parameter passing mechanisms: pass by value vs. pass by reference
- How are lists passed as parameters