



Python Basics: Syntax, Primitive Types, Variables, Basic Operators, Decision Making, Loops, the concept of mutable and immutable objects in Python.

1. Run the following commands in Python:

```
a_str = "acd"  
print(a_str[1])
```

```
a_str = "acd"  
a_str[1] = 'b'  
print(a_str)
```

```
a_list = [1,3,2,4]  
a_list[1] = 2  
print(a_list)
```

What do you observe when you run the commands above? Explain the reason.

2. The following code attempts to construct a table containing the first three rows of the periodic table. Run the following commands in Python:

```
row1=["H", "He"]  
row2=["Li", "Be", "F", "Ar"]  
row3=["Na", "Mg", "Cl", "Ne"]  
ptable=row1  
ptable.extend(row2)  
ptable.extend(row3)
```

- a. What is the value of ptable now?
- b. What is the value of row1 now? Is this what you expected?
- c. Correct the error in row2 (Ar should be Ne) by executing a command of the form row2[?] = ?. What happens to ptable as a result of this assignment?
- d. Correct the error in row3 (Ne should be Ar) by executing a command of the form ptable[?] = ?. What happens to row3 as a result of this assignment?

3. The following code attempts to construct a table containing the first three rows of the periodic table. Run the following commands in Python:

```
row1 = ["H", "He"]
row2 = ["Li", "Be", "F", "Ar"]
row3 = ["Na", "Mg", "Cl", "Ne"]
ptable = [row1]
ptable.append(row2)
ptable.append(row3)
```

- a. What is the value of ptable now? How does this differ from what you had in Exercise 2?
 - b. What is the value of row1 now? How does it differ from what you had in Exercise 2?
 - c. Correct the error in row 2 (Ar should be Ne) by executing a command of the form row2[?] = ?. Does this also change ptable?
 - d. Correct the error in row 3 (Ne should be Ar) by executing a command of the form ptable[?][?] = ?. Does this change row3?
4. Two words "interlock" if taking alternating letters from each forms a new word. For example, "shoe" and "cold" interlock to form "schooled". Write a program which takes two words from the user and interlocks them.

Reference:

This worksheet is adapted from the lab worksheet from an undergraduate course offered by the Research School of Computer Science at Australian National University (Programming for Scientists).