# COMP10001 Foundations of Computing
# Semester 1, 2019

### Tutorial Questions: Week 10

— VERSION: 1474, DATE: MAY 8, 2019 —

## Discussion

1. What is "recursion"? What makes a function recursive?
2. What are the two key parts of a recursive function?
3. In what cases is recursion useful? Where should it be used with caution?

   **Now try Exercise 1**

4. Today we'll try playing Comp10001-Go. This is a card game which uses a standard deck of playing cards. Discuss some ways of representing a playing card in Python. In Project 3, we'll use a string consisting of a character for the value and one for the suit.

   **Now play Comp10001-Go**

## Exercises

1. Study the following mysterious functions. For each one, answer the following questions:

   - Which part is the base case?
   - Which part is the recursive case?
   - What does the function do?

   (a)
```
def mystery(x):
    if len(x) == 1:
        return x[0]
    else:
        y = mystery(x[1:])
        if x[0] > y:
            return x[0]
        else:
            return y
```

   (b)
```
def mistero(x):
    a = len(x)
    if a == 1:
        return x[0]
    else:
        y = mistero(x[a//2:])
        z = mistero(x[:a//2])
        if z > y:
            return z
        else:
            return y
```