Practical 7. Functions and Algorithms

Xin Chen

Semester 2, 2018/19

7.1 Objectives

- Learn to program with the help of online references

7.2 Introduction

In this practical, you will write python codes for one problem. You may need to look for online references to complete this assignment, which is also a good practice on how to ask right questions. You are expected to use version control systems (e.g. git) to store your codes. After this practical, the tutorial session may give you an opportunity to share your codes with your peers and receive critical reviews for improvement of your codes. You may continue to make them better.

In class, your instructors are there to help. Please don't be shy about asking them. Once you have completed the assignment, you are free to leave.

7.3 Problem to solve

Game of 24 points

Problem: You have **N** cards each containing an integer from 1 to 23. You need to judge whether they could produce 24 using four operations *, / , - , +.

Then estimate algorithm complexity. wtf…

Create a "Week 7" folder in your GitHub portfolio, save your script as 24points.py. Describe your reasoning to estimate your algorithm complexity, save it as ComplexityEstimation.txt.

Input: N numbers between 1 and 23 (use a comma to separate values)

Return:

- Yes if there is at least one solution
- No if there is no answer
- The number of atom operations executed to get your answer

Example:

```
>>>Please input numbers to computer 24:(use ',' to divide them)
>>>1,24,5,6
>>>The input number must be integers from 1 to 23
>>>
>>>Please input numbers to computer 24:(use ',' to divide them)
>>>3,8,3,8
>>>Yes
>>>Recursion times: 793
```

Tips:

- try recursively picking two numbers and merging them all available operands until there is only one value left

recursively：递归的　　wtf…