ICS Spring 2017

Lab Exercises Week 6

Exercise 1 – Factorial(Recursion)

Write a program with recursion to find the factorial of provided non-negative integer n.

Example:

Given `n = 5`

Return `120`

Exercise 2 – Student Information(OOP)

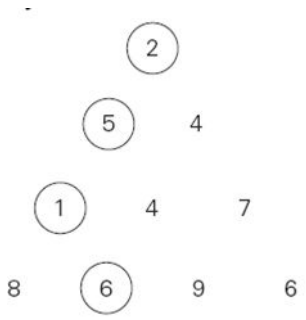
Design a class `Student` that holds the following student data: `name`, `class_of`, and `major`. Write appropriate accessor and mutator methods. When we ask for desired information, the program should deliver.

Example: we want to have the following information displayed:

James , class of 2016 , who majors in Computer Science , will graduate in 2020.

Exercise 3 – Maximum Sum Descent in OOP Style

- Positive integers in a triangle
- **Goal**: a descent from the root to the base, with the largest sum.




```
In [27]: run maxsum.py
triangle --
[17]
[15, 8]
[5, 10, 8]
[16, 6, 10, 12]
[19, 10, 5, 15, 12]

maximum sum --
[17]
[32, 25]
[37, 42, 33]
[53, 48, 52, 45]
[72, 63, 57, 67, 57]
```

Exercise 4 – Number Placement in OOP Style

- *n* numbers; *n* - 1 preset inequality sign
- **Goal**: insert the numbers so that the inequality hold

Example:

Numbers: [2, 3, 0, 1, 5]; Signs: [‘<’, ‘>’, ‘<’, ‘<’]

Solution: 0 < 5 > 1 < 2 < 3.

```
In [35]: run sign_ins.py
[1, '<', 20, '>', 9, '<', 19, '>', 16, '>', 10, '<', 13, '>', 12]
```