Python Programming

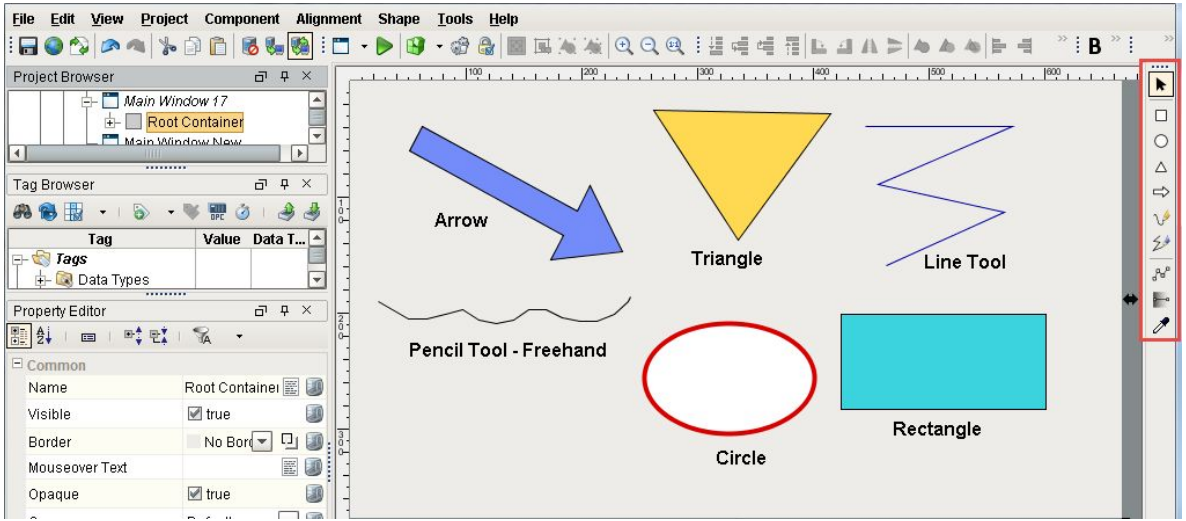
Classes Homework 1

Mostafa S. Ibrahim
Teaching, Training and Coaching since more than a decade!

Artificial Intelligence & Computer Vision Researcher
PhD from Simon Fraser University - Canada
Bachelor / Msc from Cairo University - Egypt
Ex-(Software Engineer / ICPC World Finalist)

Problem #1 - Shapes

- Think in Rectangle, Triangle, Circle in a Drawing application
  - What are common things between them? What is special in each of them?
  - Think in terms of attributes, methods **names** & **behaviour**



Img Src

Problem #2: What vs How

- 1) Task:
  - What: Sum from 1 to N in 2 ways
  - How: Explain 2 approaches to implement above task
- 2) Snapseed is an app for Image Manipulation (e.g. crop, rotate, draw, etc)
  - It is available for Android, IOS, IPAD
  - In terms of what & how: provide some insights
    - E.g. method to fill color in rectangle?
    - E.g. method to read image from device?
  - Imagine we found a bug in some function
    - Or faster way to do it
    - How to structure our app code base
      to do the minimum code changes?

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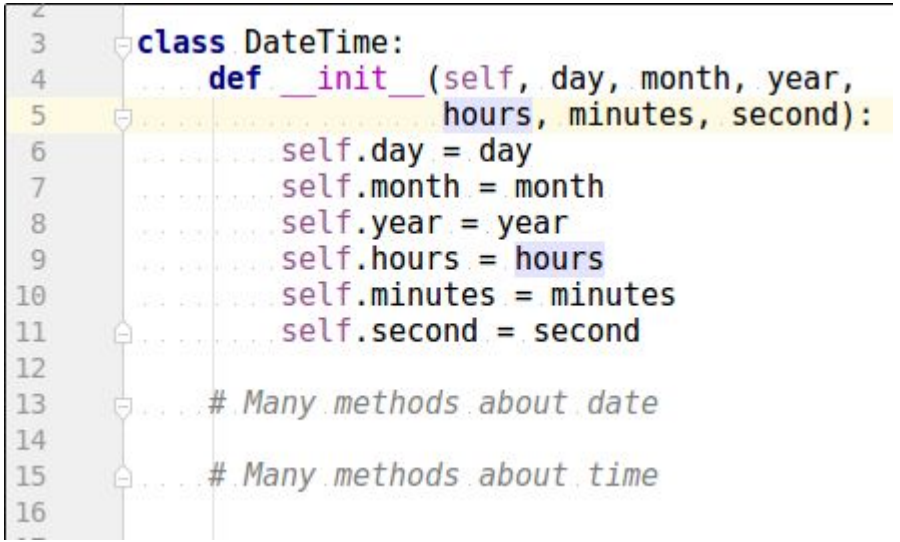
Problem #3: Datetime review

- Your college designed and implemented DateTime Class
  - Jointly supports the Date & Time
- The code passed all **unit** testings
- Think in a critical design tip
  - Provide your feedback!
- Introduce a better design



```
3   class DateTime:
4       def __init__(self, day, month, year,
5                    hours, minutes, second):
6           self.day = day
7           self.month = month
8           self.year = year
9           self.hours = hours
10          self.minutes = minutes
11          self.second = second
12
13      # Many methods about date
14
15      # Many methods about time
16
```

Problem #4: Handling Debates

- Assume in a given tasks, your colleges did not agree with your design/code
- Think in tips & thoughts how to handle technical debates

Problem #5: Future Features

- A fresh developer approached the team leader with the following suggestion
  - From an informal discussion with a customer, it seems after 6 months we will need:
    - Several printing styles & streams (file, console) for our data
    - Maintaining statistics about every used method
  - He suggests to implement these extensions now to save future time for other features
- As a leader
  - Do you accept? Or Reject? Or Suggest an alternative?
  - Why?

About Date & Time

- Although seems trivial, Date & time are source of **pain & bugs** in software
  - Learn Why & Examples
  - Learn how to properly handle
  - A lot of your future tasks will seems easy. With deep thoughts:
    - Your realize critical concerns or different trade-offs among different designs
- Year 2038 problem / Year 2000 problem
- Leap second:
  - Nearly all modern operating systems assume that 1 day = 24 × 60 × 60 = 86400 seconds in all cases. In UTC, however, about once every year or two there is an extra second, called a "leap second." The leap second is always added as the last second of the day, and always on December 31 or June 30. For example, the last minute of the year 1995 was 61 seconds long, thanks to an added leap second. Most computer clocks are not accurate enough to be able to reflect the leap-second distinction. (src)

"Acquire knowledge and impart it to the people."

"Seek knowledge from the Cradle to the Grave."