

Advanced Programming with Python

Tran Giang Son, tran-giang.son@usth.edu.vn

ICT Department, USTH



Course Introduction



Goals

- Remember Python syntax
- Describe OOP concepts and how they're implemented in Python
- Write programs in Python with advanced techniques
 - Reading/writing files
 - Concurrency programming
 - Process management
 - Modularity
- Improve team work and communication skill



Content

- Introduction
- OOP in Python
- File System
- Processes
- Threads
- Graphical user interface
- Advanced topics



Format

- 4 ECTS = 40 hours
- Lecture / Practical work / Project: 24h / 16h
- Prerequisites: Object Oriented Programming, Algorithms and Data Structures, Computer Architecture
- Environment: Linux/Mac (Windows is NOT used)
- Assessment:
 - Attendance / Project / Final Exam
 - 10% / 40% / 50%



Course Assessment



Attendance

- Minimum 80% (32h) is required
- Less:
 - No final exam
 - Have to retake
- Why?



Attendance

- Minimum 80% (32h) is required
- Less:
 - No final exam
 - Have to retake
- Why?
 - Slide is not for you to learn yourself
 - For illustrating concepts of the lecture



Assignment

- Several Python Programs
 - Understand what you learnt
 - Show your ability to apply it to new problems
- Compilable on Linux/Mac
- Don't copy paste. I have checker tools.
- Should be well organized and well written

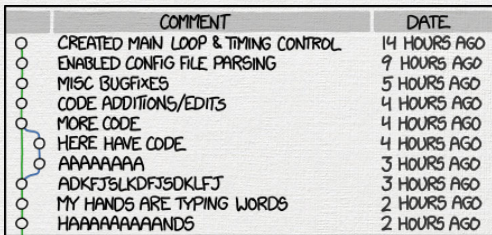
I will, in fact, claim that the difference between a bad programmer and a good one is whether he considers his code or his data structures more important.

Bad programmers worry about the code. Good programmers worry about data structures and their relationships.

- Linus Torvalds

Assignment

- Git : Version Control System
- Github
 - Initial repository and instruction
 - <https://github.com/SonTG/pp2021>



	COMMENT	DATE
○	CREATED MAIN LOOP & TIMING CONTROL	14 HOURS AGO
○	ENABLED CONFIG FILE PARSING	9 HOURS AGO
○	MISC BUGFIXES	5 HOURS AGO
○	CODE ADDITIONS/EDITS	4 HOURS AGO
○	MORE CODE	4 HOURS AGO
○	HERE HAVE CODE	4 HOURS AGO
○	AAAAAAAAA	3 HOURS AGO
○	ADKFJSLKDFJSDKLFJ	3 HOURS AGO
○	MY HANDS ARE TYPING WORDS	2 HOURS AGO
○	HAAAAAAAAAANDS	2 HOURS AGO

AS A PROJECT DRAGS ON, MY GIT COMMIT MESSAGES GET LESS AND LESS INFORMATIVE.

Don't be lazy with your commit messages

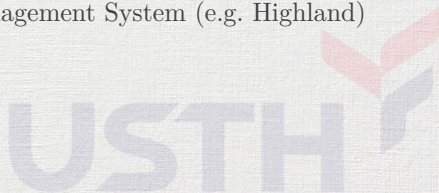
Projects

- Project: 5 students/group
 - Presentation: 10 mins/group
 - QA: 5 mins/group



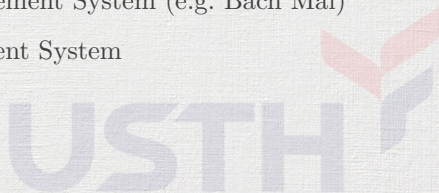
Project Topics

- Generic
 1. Human Resources Information Management System
 - Employees, Staff, Manager, Salary, . . .
- Food/Beverage
 2. Restaurant Information Management System (e.g. iSushi)
 3. Coffee Shop Information Management System (e.g. Highland)



Project Topics

- Transportation Services
 4. Airline Booking Information Management System (e.g. Air France)
 5. Taxi Information Management System (e.g. Mai Linh)
 6. Train Information Management System (e.g. VN Rail)
- Health, Accomodation Services
 7. Hospital Information Management System (e.g. Bach Mai)
 8. Hotel Information Management System (e.g. Intercontinental)

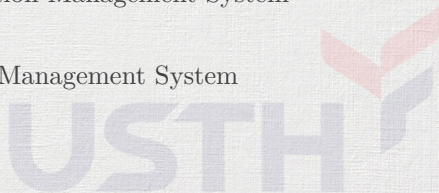


Project Topics

- Public Service
 9. Public Governmental Service Information Management System (e.g. birth/death declaration, marriage...)
 10. Water Information Management System (e.g. Hanoi Water)
 11. Electricity Information Management System (e.g. EVN)
 12. Newspaper Information Management System (e.g. VNexpress)
 13. Library Information Management System (e.g. national library)
 14. Internet Service Information Management System (e.g. VNPT)

Project Topics

- Stores
 15. Clothes Store Information Management System (e.g. Ivy Moda)
 16. Book Store Information Management System (e.g. Tien Phong bookstore)
 17. Computer Store Information Management System (e.g. Hanoi Computer)
 18. Mobile Phone Store Information Management System (e.g. FPTShop)
 19. Furniture Store Information Management System (e.g. IKEA)



Exams

- Final Exam (120 mins)
 - Written exam
 - Documents are allowed
 - **Only 3 sheets of A4 paper**
 - No laptop / mobile phone / internet
 - No discussion, of course



Final Exam: Possible question types

- Define concepts
- Explain how a concept works
- Show an example of concepts
- Write python snippets
- Explain what a python snippet does
- ...



References

- Books

- Allen Downey, *Think Python: How to Think Like a Computer Scientist*, 2nd edition,
- Burkhard Meier, *Python GUI Programming Cookbook*, 3rd Edition, Packt.
- Paul Barry, *Head-First Python*, 2nd edition, 2016, O'Reilly
- Steve Klosterman, *Data Science Projects with Python*, 2019, Packt.

