Introduction to PYTHON

Why this course?

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What will you learn in this course—Fundamental

- Basic programming concepts using Python as a programming language
- Basic programming concepts applicable to many languages
- Working with various data types and data structures (lists, dictionaries)
- Control flow: while loops and if statements
- User input and program interactivity
- Writing and using functions for code reusability
- Object-oriented programming with classes
- Error handling and graceful program execution
- Introduction to code testing
- Introduction to data structure and algorithms

What will you learn in this course—Application

1. Game Development
   - Create a Space Invaders-style game
   - Learn 2D game programming concepts
2. Data Visualization
   - Work with various datasets
   - Create visual representations of data
3. Web Application Development
   - Build a web app
   - Learn about web

FIG 1. Space invader game

Course overview and expectation

Course Overview

- 14-week comprehensive introduction to Python programming
- Combination of lectures, hands-on coding, and projects
- Focus on both theoretical concepts and practical application
- No prior programming experience required

What to expect

- Weekly lectures and coding exercises
- Regular assignments to reinforce learning
- Three major projects in the second half of the course
- Emphasis on problem-solving and critical thinking
- Collaborative learning environment

Expectations in you

- **Prerequisites**—Basic computer skills
- **Time commitment**—for self-learning and code debugging
- **Active Participation**—Engage in class discussions, ask questions when you don't understand, share your thoughts and ideas
- **Consistent Effort**—Attend all classes regularly, complete assignments on time, practice coding outside of class hours
- **Curiosity and Creativity**—Explore beyond the course material, Try to solve problems in multiple ways, apply what you learn to your own interests
- **Collaboration**—Work well with peers on group projects, share, knowledge and help classmates when appropriate, respect others' ideas and contributions
- **Academic Integrity**—Submit your own work and do not cheat
- **Growth Mindset**—Embrace challenges as learning opportunities. Learn from mistakes and feedback. Persist

What to expect in me

- I want you to succeed —both in this course but also, and most importantly, in life after you graduate
- I am prepared to help you understand the course material and help you pass your homework, quizzes and exams. My job is to help you, so let me know what I can do to help you succeed. If there is something that you would like me to do differently, please, let me know. I am happy to work with you to make class the best it can be.
- The Government of Rwanda is spending billions on your education and expect you to transform the future of this nation. I will make sure that such an investment does not go to waste.
- **Fairness**—I am a fair man. And fairness obliges me not to give preferential treatment to anyone.

Readings

- The course is based on Python Crash Course, 3rd Ed by Eric Matthes
- You are required to read the book before and after each weekly lecture
- The course website will provide details on the weekly reading
- The course website has also some other suggested reading

Evaluation

- There will be **online quizzes** over any material taught in the class to date.
- Exams —UR's policy will be applied
- Laboratory
  - There will be several programming assignments
  - Most lab will be conducted individually and submitted online
  - They expect strong programming and problem solving skills.
  - ADVICE: Please try to work on this assignment early and ask questions if needed.

NOTE If you do not complete your programming projects, odds are you will fail the exams and ultimately fail this class.

Course website

The course has two websites where I host all the materials

- Google classroom
  - https://classroom.google.com/c/NzA0NTM5MTcyOTY1?cjc=7bd7f4o4
  - Everyone must register here
  - All quizzes will be conducted on this platform
- Personal website
  - https://qiriro.com/ete2162/
  - It will be used for sharing lecture notes and code for the course
  - Please consult it regularly for the updates

Grading criteria

- Quizzes—10%
  - Short, online assessments every week
  - Cover recent material
  - No make-ups, but lowest score dropped
- Midterm Exams —20%
  - Covers first half of the course
  - Combination of multiple choice and coding questions
  - Proctored in-class exam
  - Based on the programming

- Programming assignments—30%
  - Larger, comprehensive coding project
  - Demonstrates cumulative skills learned
  - Final project at the end of the course
- Final exam —40%
  - Proctored in-class exam as per UR regulations
  - Comprehensive, covering all course material

The end