**CMPU 2016 Object Oriented Programming**

TU857-2

2024-25, Semester 1: Python with Sunder Ali Khowaja

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**Assignment: Group Game Expansion**

**Introduction:**

In this assignment, you will have the opportunity to collaborate in groups (4-6 students per group) to expand upon our text-driven mystery game using your knowledge of object-oriented programming (OOP) and Python. The objective of this assignment is to further develop and enrich the game by applying key OOP concepts, emphasizing clean coding practices, teamwork, and ethical considerations.

**Assignment Objectives:**

By the end of this assignment, you should be able to:

1. Apply your understanding of OOP concepts, including inheritance, encapsulation, polymorphism, and abstract classes, in a practical project. Topics that are still to come, for example exception handling, file handling, and modules should be incorporated into the game as appropriate.
2. Develop clean, well-documented code that ensures the maintainability and readability of the expanded game.
3. Work effectively as part of a team, fostering collaboration, communication, and division of responsibilities.
4. Test and debug code to ensure the expanded game functions correctly and is error-free.
5. Maintain ethical standards in your group dynamics, respecting the contributions and privacy of fellow students.
6. Showcase your creativity by designing new character interactions, scenarios, and gameplay mechanics.
7. Document your code and present your expanded game to the class, providing insights into your design choices and coding practices.

**Assignment Details:**

**Game Expansion Scope**: You will work in groups of 4-6 students to expand the existing text-driven mystery game. The expansion should include new character interactions, scenarios, and gameplay mechanics. A list of possible expansions is provided below and should be seen as inspiration rather than a definite or exhaustive list. Each group should decide on specific and unique enhancements. Any deviation from the expected group size will half the group mark for this assignment.

**Ethical Considerations**: When expanding the game, maintain ethical standards in your group dynamics. Do not use other students' names or identities for the game without their consent. Always respect the contributions and privacy of fellow students. The game should create a safe and inclusive environment for all participants.

**Coding Standards**: Code quality and readability are important. Ensure that your code adheres to clean coding practices, including proper indentation, informative variable names, and in-code comments to explain complex logic. The same guidelines apply that were part of your lab rubrics.

**Documentation and Presentation**: Each group should document their code. The code header must contain an overview of the specific expansions tackled by the group, see example below. The group prepares a brief game play presentation (5-10 minutes) to showcase their expanded game to the lab TA. Each member of the group will have to answer a question that the TA asks you during this presentation. These questions may include insights into your design choices, coding practices, and challenges you encountered during the expansion.

An appropriate code file header for this assignment could be:

*################################################################################  
# CMPU 2016 OOP – TU 857 - Semester 1 Assignment.  
# Group: The Code Wizards.  
# Members:  
# 1. Alice Smith (student ID: as123).  
# 2. Bob Johnson (student ID: bj456).  
# 3. Charlie Brown (student ID: cb789).  
# 4. Diana White (student ID: dw012).  
# 5. Ethan Davis (student ID: ed567).  
# Date: November 4, 2024.  
#  
# Game Expansion Explanation:  
#  
# In this expansion of our mystery game, "The Detective's Enigma," The Code  
# Wizards group introduces exciting new features. We've implemented a  
# comprehensive system of achievements and leaderboards that tracks players'  
# progress and allows them to compete for the top detective spot.  
# Additionally, we've incorporated educational elements that enhance the  
# gaming experience with puzzles related to real-world detective work,  
# helping players develop critical thinking skills.  
#  
# File Structure:  
# - main\_game.py: The main game script.  
# - achievements.py: Module for handling achievements.  
# - leaderboards.py: Module for managing player rankings.  
# - puzzles.py: Module containing educational puzzle content.  
#  
# Running the Game:  
# - To play "The Detective's Enigma" with our exciting expansions, run the  
# "main\_game.py" file.  
# - Ensure that the "achievements.py," "leaderboards.py," and "puzzles.py"  
# modules are in the same directory for full functionality.  
#  
# Enjoy the game and have fun becoming the ultimate detective!  
#  
# Important Note:  
# Please keep this header unaltered in all submitted files.  
################################################################################*

**Submission**: You should submit your code files as one zip file as a group submission in the appropriate group submission area on brightspace. Naming convention of the zip file is group\_name.zip, for example TheCodeWizards.zip.

**Evaluation**: Your group's work will be assessed based on the quality of your code, the creativity of your game expansion, your answers during the presentation, and your adherence to ethical standards. This assignment is marked out of 100. The value of this assignment is 60% of the CA grade for semester 1.

Please see the separate file for a rubric for this assignment.

Plagiarism results in a 0 grade. A submission without presentation will not be marked. All team members are expected to be present at the presentation.

Code is expected to run. Code that still contains syntax errors will not be graded. Run time errors might result in a reduction of up to 25% depending on severity. Logic errors will result in a reduction of up to 20%.

**Important Dates**:

* **Assignment Release**: Week 8, starting 04-11-2024.
* **Group Formation**: Register your group in a designated group registration sheet by end of week 9, 15-11-2024. Failure to do so does result in a late submission penalty applied to your final submission. Students who are not part of a group will not be permitted to submit an assignment.
* **Lab in week 11** will be used to facilitate group work on the assignment.
* **Assignment Submission**: Week 11, 30-11-2024.
* **In-lab Presentations**: Week 12, if necessary week 13.
* **Grading**: The assignment is worth 60% of your semester 1 CA grade.

**How to make group work successful:**

1. Clearly Define Roles and Responsibilities:

* Assign specific roles and responsibilities to each team member.
* Ensure that everyone understands their role and its importance in the project.
* This clarity minimizes confusion and overlap of duties.

1. Effective Communication:

* Establish regular communication channels, such as meetings or collaboration tools. A simple spreadsheet could be enough or use an online tool, like notion or trello.
* Encourage open and honest communication among team members.
* Active listening and constructive feedback are essential for understanding and addressing issues.

1. Set Clear Goals and Objectives:

* Define clear project goals, objectives, and expectations.
* Establish achievable milestones and deadlines to track progress.
* This keeps the team focused on the tasks at hand.

1. Establish a Code of Conduct:

* Develop a code of conduct or group norms that outline acceptable behaviours and guidelines.
* Address issues like attendance, punctuality, communication, and conflict resolution.
* Having agreed-upon rules can help maintain a positive working environment.

1. Regularly Assess and Reflect:

* Periodically assess the group's progress and performance.
* Reflect on the team's strengths and weaknesses and adjust strategies as needed.
* Continuous improvement is vital for the success of the group.

**Plagiarism**:

I recommend that you discuss your planned extensions with the other groups in this class in order to avoid any perception of copying. Each group’s developments must be unique. Plagiarism results in a 0 grade. There are other benefits to discussing your ideas with other groups:

* Mutual Learning: Explaining ideas to other groups fosters mutual learning, enhancing problem-solving skills.
* Inspiration and Innovation: Exposure to others' ideas sparks creativity and fresh approaches.
* Quality Benchmark: Sets a high standard, motivating excellence in work.
* Collaboration and Networking: Builds connections and a supportive academic community.
* Real-World Skill: Prepares students for professional collaboration beyond academia.

If you’d like to comment on your experience with the group work component of this assignment, please use the form in brightspace. Commenting is optional. However, if you do decide to comment I may use this as part of the grading decision.

**Note**: If you have any questions or require clarification regarding the assignment, please reach out to me promptly: [SunderAli.Khowaja@tudublin.ie](mailto:SunderAli.Khowaja@tudublin.ie)

Good luck, and let your creativity shine in expanding this mysterious adventure!

**Possible Game Extensions:**

* Multiple Storylines: Create branching storylines where player choices have a significant impact on the game's outcome. This can include different endings based on decisions made.
* Inventory System: Implement an inventory system where players can collect and use items they find during the game. These items could be clues, tools, or objects that help progress the story.
* Puzzles and Riddles: Integrate various puzzles, riddles, and challenges that players need to solve to advance. This can include cryptic messages, locked doors, or even math-based puzzles.
* Character Interaction: Create non-playable characters (NPCs) that the player can interact with. Add dialogues and decision points with these characters that influence the game.
* Time-Based Events: Include time-sensitive events or sequences. For instance, the player must solve a puzzle or make a decision within a specific time frame to proceed.
* Sound and Graphics: Add sound effects, music, and even basic graphics to enhance the atmosphere and overall experience.
* Red Herrings: Introduce red herrings or false clues that can lead the player off-track, adding an extra layer of mystery and challenge.
* Mini-Games: Implement mini-games or challenges that players must complete to unlock new areas or progress in the story.
* Multiple Locations: Allow the game to take place in different locations, such as a mansion, a haunted forest, or an abandoned laboratory.
* Incorporate Feedback: Add a feedback system where players can provide input or rate the game, allowing developers to gather information for improvement.
* Narrative Techniques: Incorporate storytelling techniques such as flashbacks, unreliable narrators, or different perspectives.
* Dynamic Text Generation: Enable the game to generate dynamic text based on player choices, making the story more responsive and immersive.
* Achievements and Leaderboards: Include achievements and leaderboards to encourage competition among players.
* Educational Elements: Incorporate educational aspects related to the subject being taught, such as historical facts, scientific principles, or language and vocabulary.
* Player Customization: Allow players to customize their in-game characters, names, or backgrounds.
* Save and Load: Implement a save and load system so players can continue the game at their own pace.