Homework 4

Develop a Graphical User Interface (GUI) for the counting-out game you implemented during the previous homework assignment. The requirements have been listed below. The logic of the game should be implemented using a circular linked list; and you are free to use your code from the last homework assignment.

Requirement 1:

The GUI should have option to enter the values of N and K. The allowed values for N and K are:
- $1 < N < 12$
- $K >= 1$

For any other values, an informational pop-up dialog box should be displayed. Please refer to the video demonstration below.

Requirement 2:

The GUI should have a 'Text' widget that will be used to display informational text during the game. Please refer to the video demonstration below.

Requirement 3:

The GUI should have a button named 'Start' that will initialize the UI based on the provided value of N. When this button is clicked:
- N player icons (number from 0 to N-1) should be displayed on the UI. **You can display the players in a circle, or in a line.**
- In addition, another button named 'Eliminate' should be displayed.
- A message 'Game started. N=?? K=??' should be displayed on the 'Text' widget

Requirement 4:

When the user clicks on the 'Eliminate' button, the game should progress by one round:
- one player will be eliminated according to the game rules.
- The corresponding player icon should be removed from the UI.
- A relevant message should be displayed on the 'Text' widget.

Requirement 5:

During the last round (when there are only 2 players left), when the user clicks on 'Eliminate' button:
- The winner of the game should be displayed in a pop-up window.
- The 'Text' widget should be cleared.
- The 'UI' should be cleared to prepare it for the next game.

Requirement 6:

You should add short and concise comments in your code as needed to explain the logic and functionality of your implementation.

Video demonstration of the game:

For your reference, a video demonstration of the game has been provided. Your developed GUI should have the UI components (widgets) and functionalities demonstrated in this video.

https://drive.google.com/file/d/1kY8zgC9GrUXONJjGF83P1WO6kGpE2CBf/view?usp=sharing

Grading Breakdown

Requirement #	Description	Points
1	Game parameters (N & K) – input & validation	10
2	Implementation of the 'Text' widget	10
3	Implementation of the 'Start' button and relevant functionalities	30
4	Implementation of the 'Eliminate' button and relevant functionalities	40
5	Displaying winner info; clean-up actions	5
6	Comments	5

Submission Instructions

(Please follow the instructions carefully and submit accordingly.)

Regular Submission
- Name your source code file as "FULL_NAME_HW5.py"
- Submit this file in iCollege folder '**Homework5**'
- Due date: Friday, 11/15/2024 11:59 PM

Late Submission

The late submissions penalty will be determined based on the following formula:

PENALTY = 0.4 * NUMBER_OF_HOURS_LATE

Examples:
If your submission is 2 hours late, PENALTY = 0.8%
If your submission is 24 hours late, PENALTY = 9.6%
If your submission is 72 hours late (maximum allowed), PENALTY = 28.8%

Note:
- Only late submissions that are <= 3 days late will be considered for grading.
-All submissions must be made through iCollege. No email submission will be accepted.