COAL Project version 4.0 - Fall 2022

You have to make an animation of infinite length with following requirements:

1- **[Phase I - Objects' Printing]** Animation will have following objects:
   a. Top 1/3rd of your screen will have mountains; one print triangle function is to be called with different parameters to print multiple mountains. You may have buildings or trees instead of mountains, again generic function and multiple calls to print multiple buildings.
   b. Middle 1/3rd of the screen will have ships of different sizes, one print ship function called with different parameters
   c. Bottom 1/3rd is only sea
   d. Currently the scene will be of Daytime only

2- **[Phase II - Objects' Movements]** You have to move
   a. the sky leftward
   b. the ship rightward

3- **[Phase III – Keyboard Interrupt]** You have to hook the keyboard interrupt to provide following functionality:
   a. On pressing left, right, up or down arrow keys a fish will move in respective direction <u>by one cell only</u> (if you keep the keys pressed then you will see it keep moving).
   b. If user presses right key, having the fish on right corner of the screen, the fish should reappear from the left corner (on same row), and vice versa.
   c. If fish tries to cross the bottom and upper boundary of sea a sound notification should be generated by your process without moving the fish. Fish should not enter the region where ships are moving (1/3rd middle of screen).
   d. If user enters ESC key, your program should exit successfully. If user opens any other program on same DOSBOX, it should work fine (for example, right left keys on command prompt should work normal). Open different programs e.g. AFD etc, to verify that your process terminated successfully. [Implement required change in ESC functionality given in Phase V]

4- **[Phase IV - Timer]**
   a. Take the left and right shift of first two halves of the screen in timer i.e. shift by one cell per tick (you may adjust the frequency as required).
   b. Randomly place two objects/coins (red or green) in fish area (lower 1/3rd of the sea).
   c. If fish crosses an object, it will collect it. The object will disappear and update in score will be as follows:
      i. If object was green, 10 points will be added in score
      ii. If object was red, 50 points will be added
   d. Life of red and green objects will be 5 and 10 seconds respectively. If fish doesn't collect the object it will disappear after its life span and new object (of random color at random position) will appear again.
   e. Show the score at top right of the screen.

5- **[Phase V – BIOS/DOS Services]** You have to provide following functionalities using BIOS/DOS Services only:

a. Ask user to enter name on command prompt, after he enters yourProgram.com. Show user friendly message "Enter your name:"
b. After taking user's name, go to Introduction Screen that will have following content:
    i. Hello <User Name Abc Xyz>
    ii. Welcome to <Your Game's name>
    iii. Print Instructions on: coins score and how fish can be moved
    iv. At bottom right of screen print, Developed By: Your roll numbers and names
    v. Press Enter to Continue and Esc to exit. This text will be blinking and user's input should be responded accordingly.
    vi. There will be marks for user interface so design your introduction screen accordingly
c. If user enters Escape while playing the game. Show him confirmation message "Are you sure you want to quit? Yes (y) No (n)". Respond accordingly.

6- **[Multitasking – Bonus Part]**
a. Schedule two tasks by timer
    i. Background music
    ii. Main program i.e. mountains and ships movement until user presses ESC.

Important Instruction: Best use the programming practices i.e. Make subroutines and use string instructions properly. Credit will be given for efficiently using string instructions. Code should be properly commented.