MINOR ASSIGNMENT-02
Game Programming with C++ (CSE 3545)

Publish on: 11-03-2025   **Submission on:** 18-03-2025

Course Outcome: CO_2 **Program Outcome:** PO_2 **Learning Level:** L_3

Problem Statement:

Experiment with classes, class members, objects, constructors and namespaces to learn basic framework of Game Programming using C++ with Simple and Fast Multimedia Library(SFML).

Learning Objectives:

Students will be able to learn the uses of predefined classes, objects, method calls, object as function argument and function returning object.

Answer the followings:

1. State the header file(s) and name of the namespace(s) required to use SFML libary to design game programs. Aslo write the **compilation and execution** commands in Linux-based enviroment.

   ANSWER::

2. Assume that you have a class as **calculateArea**{ ... };, , Write the C++ statement to declare 4 objects of that class.

   ANSWER::

3. Let say, **void setValues(int, int);** and **void getValues( );** are the public member functions for the class **calculateArea**{ ... };. Write the C++ statements to call both the functions using object(s) of that class.

   SFML-C++ statements::

4. Write C++ statements to open a window with 960 pixels wide by 540 pixels high.

SFML-C++ statements::

5. Write the SFML-C++ statements for the Game loop/ Application loop to stay in the program until the player want to quit for the Game Timber. Additionally enable the **Esc** key to terminate the game loop, when the key is pressed.

SFML-C++ statements::

6. Consider the two SFML classes, `Texture` and `Sprite`, that will take care of drawing sprites into the screen. Use the two classes to draw an image **soa.jpeg** onto the window of size 960×540.

SFML-C++ statements::

7. Write the SFM-C++ statements to fly the image **soa.jpeg** across the screen from top center to buttom of the screen. You can make use of the **Sprite** class method `setScale` to set the scale factors of the sprite object.

SFML-C++ statements::

8. Write the SFM-C++ statements to fly the image **soa.jpeg** across the screen from left to right. You can make use of the **Sprite** class method `setScale` to set the scale factors of the sprite object.

> **SFML-C++ statements::**

9. Let us pretend the speed of a **spriteBee** is 200 pixels per second. Calculate the amount of time the Bee will take to cross the entire width of the screen that is, 2000 pixels wide. Also calculate the bit rate per second (i.e. bps) of the **spriteBee**, if 1 pixel contains 8 bits.

> **Show the computation::**

10. The `Clock clock; clock.restart()` function restart the clock. The clock is restarted in every frame to know how long each and every frame takes. *In addition, however, **clock.restart();** returns the amount of time that has elapsed since the last time we restarted the clock.* So, compute the distance a `spriteBee` object will cover in a frame assuming the speed of the `spriteBee` is **beeSpeed** pixels/second.

> **Show the computation::**

12. Write SFML-C++ statements to display and set the center of the a message text " **SOA UNIVERSITY**" to the center of the screen of size 1920×1080. Additionally set the character size 100, text color Red and font family `KONIKAP_.ttf`.

> **SFML-C++ statements::**
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13. Construct SFML-C++ statements to draw a red filled rectangle shape of width **X** and height **Y** on the screen 1920×1080 at the center of the screen.

> **SFML-C++ statements::**
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14. Construct SFML-C++ statements to draw **FOUR** green filled circle shapes of radius **X** on the screen 1920×1080 close to 4 corners of the screen. Additionally one center stretched circle with red filled of the same radius using **sf::CircleShape** Class Reference.

SFML-C++ statements::