Department of Computer Science and Engineering
Institute of Technical Education & Research, SOA, Deemed to be University

MINOR ASSIGNMENT-04

Game Programming with C++ (CSE 3545)

Publish on: 12-04-2025 **Submission on:** 18-04-2025
Course Outcome: CO_3 **Program Outcome:** PO_3 **Learning Level:** L_4

Problem Statement:

Experiment with objects by coding various classes for Pong game and to explore the benefits of Object-Oriented Programming(OOP) paradigm in designing the game.

Learning Objectives:

Students will be able to learn and use OOP to get started with the Pong game project by coding own classes.

Answer the followings:

1. Create a code snippet to declare two private members of the type `Vector2f` and `RectangleShape` for the class **HypoBat** with appropriate headers.

Code Snippet

2. Fill out the places marked with the symbol, **?**, in the following code snippet.

```
Font ?;
?.loadFromFile("sample.ttf");
Text  ?;
?.setFont(?);
?.?(Color::White);
? . setCharacterSize(75);
```

Code Snippet

3. Assume that **MyBat** class has four `int` type data members and two member functions, **setData()** and **getData()** with return types `void`. Write the code snippet to declare the said class.

Code Snippet

4. Write the public member functions definition outside of the class for question-3. The function **setData()** to initialize the data members and **getData()** to display the data members.

Code Snippet

5. As encapsulation in action, the class members variables cannot be accessed directly from `main`. So Write the code snippet to access the members variables from `main` indirectly by the code of the class using an object of the class **MyBat**.

Code Snippet

6. The above declared class of yours provide two functions that are `public` and will be usable with an object (*i.e. an instance of the class*) of the `MyBat` type. Write the code snippet to create FOUR instances of that class and access the public functions by one of them.

Code Snippet

7. Write a program to design a class with private data members and public functions as necessary to draw a rectangle shape of size (10, 10) over a window of resolution 1920 & 1080 respectively.

Code Snippet

8. Design a **SelfBat** class with a parameterize constructor to takes two `float` parameters. Write a program to create a **bat** of size **100**×**5**. The constructor receives two values that represent the position of the bat on the screen.

Code Snippet

10. Write the **`update(Time dt)`** public member function definition of our designed **PONG!!!** game with appropriate member variables.

Code Snippet

11. We have `moveLeft`, `moveRight`, `stopLeft` and `stopRight` functions in our **Bat** class of the **PONG!!!** game for controlling the direction the bat will be in motion. Additionally, we found the bat is getting out of the window scene. Now re-write the required functions so that the bat would not move out of the window (i.e. always visible on the window).

Code Snippet

12. Write a event poll loop to display a message, `A Key Pressed`, on the standard stream(i.e. monitor), when an event **KeyPressed** would be happened. Further add few lines of code to detect whether the key **W** is pressed or any other key.

Code Snippet

13. State the code snippet to handle the ball hitting the top.

Code Snippet

14. State the code snippet to handle the ball hitting the buttom.

Code Snippet

15. State the code snippet to handle the ball hitting the sides.

Code Snippet

16. State the code snippet to to determine whether the ball has hit the bat (dynamic collision detection).

Code Snippet

17. Consider the following C++ code snippet;

```
class CSE{
 public:
   int x, y;
   void set(int x1, int y1){
      x=x1;y=y1;
  }
  void get(){
      cout<<x<<" "<<y<<endl;
  }
};
int main(){
        CSE a;a.set(10,20);
        a.get();
        return 0;
}
```

Output

18. Consider the following C++ code snippet;

```
class CSE{
 public:
   int x, y;
   CSE(int x1, int y1){
      x=x1;y=y1;
  }
  void get(){
     cout<<x<<" "<<y<<endl;
  }
};
int main(){
    CSE(100,200).get();
    CSE A(50,60);
    cout<<A.x<<" "<<A.y<<endl;
    return 0;
}
```

Output

19. Consider the following C++ code snippet;

```
 class Box{
        public :
        double length;
        double breadth;
        double height;
 };
int main(){
Box Box1;
double volume;
Box1.height = 5;
Box1.length = 6;
Box1.breadth = 7.1;
volume = Box1.height * Box1.length * Box1.
   breadth;
cout << "Volume of Box1 : " << volume <<endl;
return 0;
}
```

Select the Correct one

- ❑ 210
- ❑ 213
- ❑ 215
- ❑ 217