Project Proposal: Top Gun Challenge (Using SDL)

1. Introduction:

- Background

    Top Gun is a fun and interactive game where you shoot out enemy planes defeat them and gain scores. And to do that you would need to control your plane and shoot out enemy planes, and watch out for your fuel. Your mission is clear, defeat the enemy planes, gain scores, establish yourself as the top ace pilot and defeat the Top Gun Challenge.

- Objectives

    The primary objective of this project is to develop a plane shooting game that follows OOP principles and utilizes the SDL for graphical representation.

2. Project Description

- Game Overview

    The game will revolve around mostly a playable plane and you would shoot the enemy planes gaining power and fuel in between. At the start you would have a choice to select you own plane.

- Object-Oriented Principles

    The project will include core OOP principles:
    - Encapsulation
    - Inheritance
    - Polymorphism
    - Abstraction

3. Team members

    - Hussain Umer Farooqui: 08040
    - Muhammad Shayan Wasif: 08071
    - Syed Meesam Abbas Zaidi 08464

4. Features and Functionality

- Core Game Mechanics would include following:
    - Player movement
    - Shooting mechanism
    - Power-ups
    - Health
    - Collision detection
    - Score system (high score also)
    - level progression

- Graphics and User Interface
    - Create an attractive and user-friendly graphical interface for the game.
    - Animation would be mostly from importing images into screen.

5. GitHub Link:

    https://github.com/5-M-4-Z/OOP_Project_2023

6. UML (Cases & Class diagram)

Fighter Jet Shooting Game

GameObject

- x-coordinate: int
- y-coordinate: int
- width: int
- height: int
- Texture: SDL_Texture*

+ display()=0: virtual void
+ check_collision(game object* other): void
+ updateTexture():virtual void

Player

- health: int
- xp: int
- power: int

+ move(char direction): void
+ shoot(): void
+ gainExperience(): void

Enemy

- health: int
- speed: int

+ move(): void
+ shoot(): void

PowerUp

- power: char

+ applyPower(Player p): void

Profile

- name: string
- score: int

+ updateScore(int points): void
+ display(): void

HighScoreProfile

- name: string
- score: int

+ display(vector<Profile> pr): static void

Missile

+ damage: int

+ move(): void
+ onScreen(): bool