# CSE201 Advanced Programming
## AP PROJECT 2023

**IMPORTANT Instructions:**

1) It is mandatory to adhere to all deadlines in this project as per the schedule. No requests for deadline extensions will be entertained.

2) You MUST maintain a PRIVATE Git repository for your project. Each group member should frequently commit their code to this repository. Plagiarism will not be tolerated; keep your repository private.

3) No extensions will be provided. **Any submission after the deadline will not be evaluated**. If you encounter any ambiguity or inconsistency in a question, please seek clarification from the teaching staff.

4) **Please follow all the good programming practices as mentioned in the Assignments. Failing to do so will lead to a penalty.**

5) Evaluation will be Maven based. If the **pom file doesn't work, zero will be given**.

**6) JUnit tests should be included in your submission.**

7) You should **use at least two design patterns**, either the ones discussed in the class or outside of it. Kindly comment/annotate in the code where the design patterns are used.

8) Please try to use as many OOP principles as possible.

9) Please use the **JavaFX library** only.

**Plagiarism: All submitted deliverables are expected to be the result of your individual effort. You should never misrepresent someone else's work as your own. In case of detected plagiarism, it will be addressed following IIITD's plagiarism policy.**
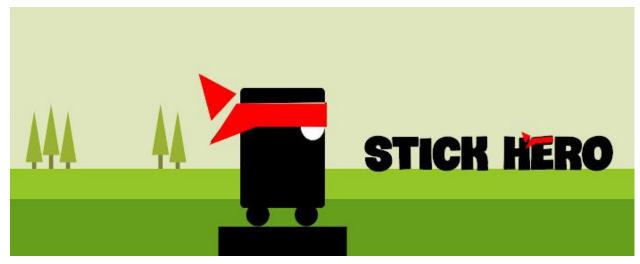
**Deadline- I : 16th Nov, 2023 (10%)**
Please submit a pdf with UML, use-cases, skeleton screens( with some UI components in it), classes without body but containing the class relationships and hierarchy, method declarations.

**Deadline-II: 9th Dec, 2023 (90%)**
Entire code, with .pom file and an appropriate ReadMe.txt (similar to Assignments). No Demo will be taken.

---------------------------------------------------------------------------

**Stick Hero Game Implementation**

Youtube Video - https://youtu.be/VvbPMrWXQVU?si=bB41wvJRrWv4rjtZ
For better understanding, you can download the game on PlayStore/AppStore.

**Introduction:**
For your AP course project, you will be tasked with implementing a game inspired by Stick Hero using JavaFX and object-oriented programming (OOP) concepts. Your game should emulate the core mechanics of Stick Hero while adding your own creative twist. This document provides the necessary guidelines for your project.

**Game Summary:**
In this project, you will develop a game where a character named stick-hero traverses between platforms by stretching out a stick. The stick has to be of exact length or the character will fall down. The character can collect the reward (cherries) while reaching the goal. The objective of your project is to create an engaging game that follows these core principles.

**Game Mechanics:**
1. Your game should allow players to control a character named stick-hero who moves between platforms. The character can stretch out a stick to bridge gaps between pillars.

2. The game should include multiple pillars of different widths.

3. The game should include a reviving feature, which allows the player to be revived once using a certain amount of cherries which can be collected during the game. The cherries (and related score) need to be deducted after the player has been revived.

4. Players need to time the stick extension correctly to land on the next platform. Failing to land on a platform will result in the character falling into the abyss, ending the game.

5. The character should collect rewards, such as cherries, as in the original game, by flipping the player upside down using user input while traversing platforms. These rewards should add to the player's score.

6. Your game should have a scoring system that encourages players to achieve higher scores by collecting more rewards.

8. The game should include the option for players to save their progress (last score, highest score till the point, total cherries) any point of time during gameplay.

9. The project should feature graphics, sound effects, and animations to enhance the overall gaming experience.

Notes / Hints:
- Point 3 is not part of the original game, so you are free to implement it using your own creative imagination.

- While designing your game, you can use existing images or assets from the internet to create visuals and animations. Be sure to respect copyright and licensing restrictions.

- Focus on implementing the core gameplay mechanics described in the Game Mechanics section while simplifying the Stick Hero concept for your project.

Bonus Marks:
You have the opportunity to earn bonus marks by introducing innovative and exciting features to your game. Bonus marks will also be given for introducing multithreading in the game. Creativity and uniqueness will be considered when awarding bonus marks.