# UG2 - Team 5
# Chakravyuh

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GitHub repository link:

[https://github.com/AnirudhArrepu/GameDev-Chakravyuh-SE](https://github.com/AnirudhArrepu/GameDev-Chakravyuh-SE)

## **Game Features:**

1. Chakravyuh is a 2D-**Multiplayer**-PC game aimed at promoting awareness about the Sustainable Development Goals (SDGs).

2. Certain tasks are allocated to two teams, named **Collaborators** and **Saboteurs**, who work against each other. The former aims to serve SDGs by completing their allocated tasks, and the latter aims to serve Anti-SDGs accordingly.

3. The game addresses the following SDGs:
   - Quality Education (Two Quiz games and A Waste-Parkour game)
   - Clean Water and Sanitation (A BoatTrash game and A Waste-Parkour game)
   - Affordable and Clean Energy (A SolarPanel and PotatoLight game)

4. The Collaborators need to accumulate points by completing the tasks, whereas the Saboteurs reduce these points. As the game ends, the Collaborators emerge victorious by accumulating at least 100 points.

5. The two teams are allotted five minutes of game time to either reach 100 points or prevent the opposition from reaching their target (depending on which team they're in) by completing the tasks spread across the map.

6. In an event where the Collaborators cannot reach 100 points, the Saboteurs win the game.

## **Levels:**

1. The game has two levels, utilising our custom-designed map to play out the levels.
2. The collaborators are provided three *SDG-based* tasks at each level, out of which they can complete only two.
3. The saboteurs are given two *Anti-SDG* tasks in the 1st level and one in the 2nd level.

## Contributions:

1. **Adithya**:
   a. Worked on the backend code to control the player movements in the main map
   b. Worked on two tasks:
      i. One for SDG (Affordable and Clean Energy):

      The player is provided with two dirt-infested solar panels, which need to be cleaned by the player. Through mouse-interactive gameplay, the player can clean the panel. This game educates the user about the necessity of keeping solar panels clean and provides points.

      ii. One for SDG (Affordable and Clean Energy):

      The player is provided a laboratory setup and the required materials to build a potato-powered lightbulb (inspired by the classic potato clock experiment). The player clicks on buttons which provide him with potatoes, wires, and a lightblub which can form a circuit. This educates the user about alternate forms of generating energy.

2. **Anirudh**:
    a. Worked on the backend for connecting to the Server and join/create rooms
    b. Worked on multiplayer integration of the entire game, major tasks/issues fixed in multiplayer:
        i. Connecting players to the same scenes, making sure all of their positions/movements were communicated to everyone in the room and were read by everyone.
        ii. Adding a camera follow which works differently in each device using a single Main Camera tagged game object, ensuring each player sees only their frame in their game
    c. One task *against* SDG - The saboteur collects waste, the amount of waste he collects reduces his jump intensity, putting him in a dilemma as to get more logs to increase points or get more jump intensity to parkour faster through the map to dump waste in a river to pollute the water body reducing the points of the collaborators' team

3. **Ashish**:
    - Worked on 2 UI (Frontend)
        - **Loading Screen:** Created an engaging and visually appealing loading screen to enhance the player experience.
        - **Join and Create Page:** Developed a seamless and intuitive interface for multiplayer functionality, allowing players to join or create rooms effortlessly.

- Worked on one task
    - **One against SDG - Sabotaging Ships:** Designed and implemented a gameplay mechanic where the saboteur causes ships to crash onto land, resulting in oil spillages that pollute the ocean. The feature highlights the environmental damage caused by oil spills in a compelling and interactive way.

4. **Dhyanam**:

    Worked on two tasks

    a. One *for SDG* (Quality Education) - The player takes on the role of a community cleaner tasked with removing trash from various locations. For each piece of trash collected, the player is presented with a quiz question related to environmental sustainability, SDG (Sustainable Development Goals), and waste management awareness..

    b. One *for SDG* - The player controls a submarine tasked with cleaning trash from the ocean while raising awareness about ocean pollution and the importance of keeping the seas clean.

**5. Srikar**

- **Worked on Map design and Character Animation**

  Designed the game map with a strong focus on sustainability and nature, ensuring that each room reflects a unique aspect of environmental preservation. Every room on the map is carefully crafted to have its own distinct theme and purpose, showcasing various elements of sustainability in creative and engaging ways. From lush green areas symbolizing reforestation. We also discussed the character movement and animation across a map, although we couldn't find the time to include the animation.

- **Worked On One Task For SDG**

  The **Trash Sorting Game** is an engaging 2D mini-game designed to promote environmental awareness. The player's goal is to sort different types of trash into the correct bins while earning points for each correct placement

6. **Sudhanva**:
   - Worked on two tasks
     - One *for SDG* (<u>Quality Education</u>) - A quiz-based game designed to test and enhance a player's ability to *manage natural resources sustainably and make financial decisions* for national growth. Each question puts the *player in a dilemma* on saving *finance and nature health*, and for each answer, a feedback is reported affecting the parameters.
     - One *against SDG* - The Saboteur can cause forest fires and deforestation, thus disrupting the ecosystem. The player needs to select fire/axe and destroy the trees clicking them 3 times each. An animation is incorporated where, on completing the task, a credits screen rolls up displaying the effect on nature.