



Cover page

Project title: Snakes And Ladders

Academic Year: 2024-2025

Group Members: Abdullah Shwareb

Majd Waked

Project Type: Hardware

Supervisor Name: Dr. Samer Arandi

Format:

- Single space, Times New Roman.
- 12 pt,
- Maximum 1 page.

Abstract Body:

Items must be provided in the Abstract:

- Why do you think this project is important? Please explain the significance of this Project in brief.
- In your point of view what are the important aspects that should be covered in the project?
- Objective(s): In your view, please explain the main objectives of the project.
- Methodology: Give a brief outline of the application development process.
- Had this project been done before? Are there any similar applications available today?
- **Note:** Please deliver this abstract early to ensure that your Project has been approved by the department's projects committee. **Registration will not be done without this approval.**



Project's Abstract:

Snakes and Ladders, it's a classic board game and is played on a board with numbered squares and features a number of "snakes" and "ladders" connecting certain squares. Players take turns rolling a die and move their game piece accordingly. If a player lands on a square with the bottom of a ladder, they move up to the top of the ladder. If they land on a square with the head of a snake, they slide down to the bottom of the snake. The objective is to be the first to reach the final square, usually number 100.

This project presents a hardware implementation of the classic board game Snakes and Ladders, integrating modern technology to automate gameplay. The system comprises a closed area housing a die, a camera, a Raspberry Pi, an Arduino, and a CNC mechanism with magnets. Players interact with the game by pressing a push button to initiate and stop the shaking of the die. The camera, controlled by the Raspberry Pi, captures the image of the die to recognize its value using image processing algorithms. The recognized value is then transmitted serially to an Arduino, which controls the movement of the player's piece across the board through The CNC mechanism with controlled electro magnet by relay, precisely maneuvers the magnetic player tokens. Additionally, the system features sound and RGB light effects to enhance the gaming experience. This implementation not only automates the traditional game but also introduces an engaging and interactive element, combining the nostalgic charm of Snakes and Ladders with modern technological advancements.