

Project Report

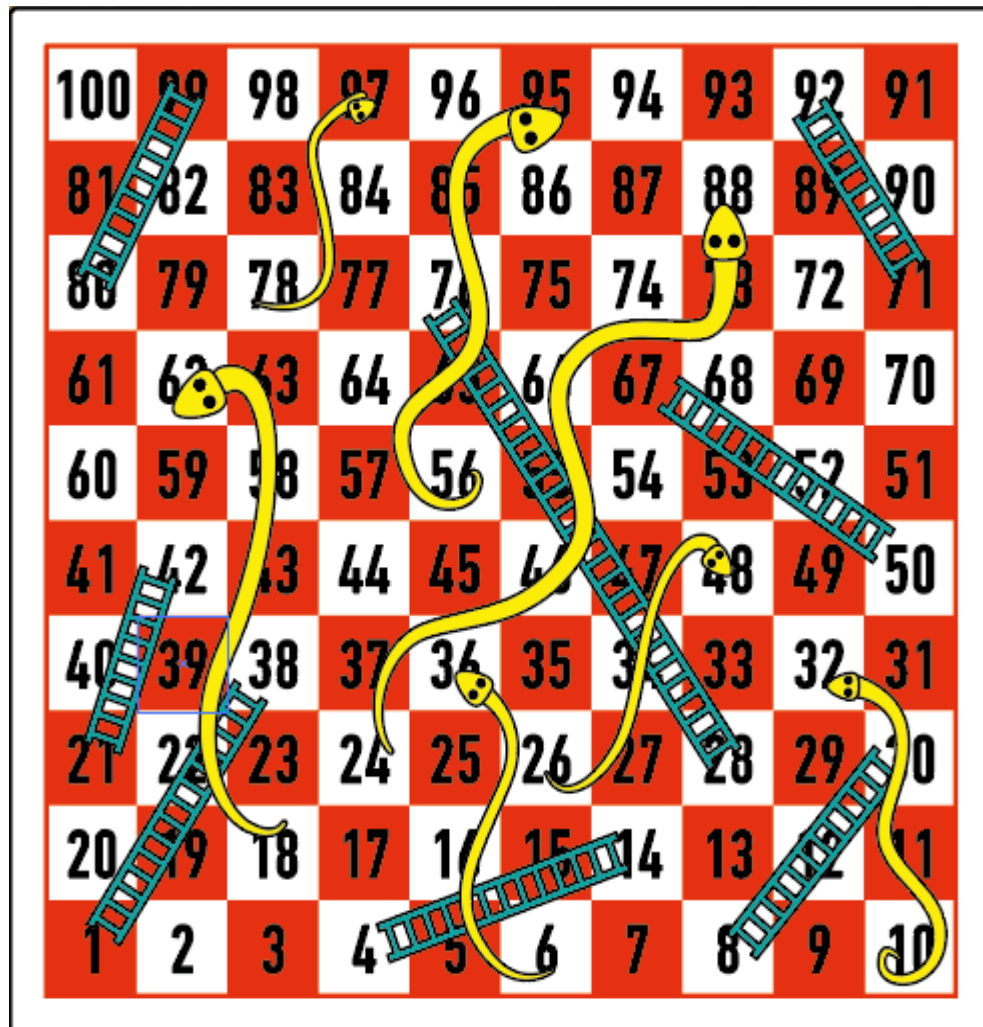
Snake And Ladder

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The Game

Snakes and Ladders is a quite simple racing board game. You probably have played it once or twice in your childhood. It has been around for ages. First instance of the game played was recorded in 2nd century BC in India where it was known as Moksha-patamu. The game was discovered by Europeans during the colonization of India and spread widely around the world. It has been originally used to teach children about good and bad as ladders represented good deeds and snake's punishment for the bad.



Concept Used-

- OOPS to write clean modular extensible code
- python language
- python library

Steps involved-

1. Create a snake and ladder application.
2. The application should take as input (from the command line or a file):
 - Number of snakes (s) followed by s lines each containing 2 numbers denoting the head and tail positions of the snake.
 - Number of ladders (l) followed by l lines each containing 2 numbers denoting the start and end positions of the ladder.
 - Number of players (p) followed by p lines each containing a name.
3. After taking these inputs, you should print all the moves in the form of the current player name followed by a random number between 1 to 6 denoting the die roll and the initial and final position based on the move.

Format: <player_name> rolled a <dice_value> and moved from <initial_position> to <final_position>

When someone wins the game, print that the player won the game.

Format: <player_name> wins the game

Rules of the game-

- The board will have 100 cells numbered from 1 to 100.

- The game will have a six-sided dice numbered from 1 to 6 and will always give a random number on rolling it.
- Each player has a piece which is initially kept outside the board (i.e., at position 0).
- Each player rolls the dice when their turn comes.
- Based on the dice value, the player moves their piece forward that number of cells. Ex: If the dice value is 5 and the piece is at position 21, the player will put their piece at position 26 now ($21+5$).
- A player wins if it exactly reaches the position 100 and the game ends there.
- After the dice roll, if a piece is supposed to move outside position 100, it does not move.
- The board also contains some snakes and ladders.
- Each snake will have its head at some number and its tail at a smaller number.
- Whenever a piece ends up at a position with the head of the snake, the piece should go down to the position of the tail of that snake.
- Each ladder will have its start position at some number and end position at a larger number.

- Whenever a piece ends up at a position with the start of the ladder, the piece should go up to the position of the end of that ladder.
- There could be another snake/ladder at the tail of the snake or the end position of the ladder and the piece should go up/down accordingly.

Assumptions you can take apart from those already mentioned in rules

- There won't be a snake at 100.
- There won't be multiple snakes/ladders at the same start/head point.
- It is possible to reach 100, i.e., it is possible to win the game.
- Snakes and Ladders do not form an infinite loop.

Few basic concepts used in the code are-

- Dictionary
- List
- Generating random number
- Selecting a Random value from a list

- Adding wait/sleep in program
- Conditional Statements i.e. IF and ELSE
- Getting input from user

Output

When Game starts it ask to press enter to start the game as shown below

```
Welcome to Snake and Ladder Game.
Version: 1.0.0
Developed by: Aditya Sharma
Rules:
>>> Initially both the players are at starting position i.e. 0 .
    Take it in turns to roll the dice.
    Move forward the number of spaces shown on the dice.
>>> If you lands at the bottom of a ladder,
    you can move up to the top of the ladder.
>>> If you lands on the head of a snake,
    you must slide down to the bottom of the snake.
>>> The first player to get to the FINAL position is the winner.
>>> Hit enter to roll the dice.
>>> In mutiplayer mode none of the player can quit else it will end the game.

Enter 'S' to start game, Enter 'N' to quit the game: 
```

Here our program will run on user input basis, it will ask for number of ladders(with starting and ending point), number of Snakes(with starting and ending point), number of players. Etc..

What is happening in this Game-

- 1- Display the welcome message
- 2- Collect the player's names
- 3- Until one of the player wins do the following:
 - 3.1- Roll the dice
 - 3.2- Move the player forward for the value got on the dice roll.
 - 3.3- If the player is on snake's head, move down to its tail
 - 3.4- If the player is on ladder's bottom, take it to its top
 - 3.5- else remain there and let the second player roll the dice