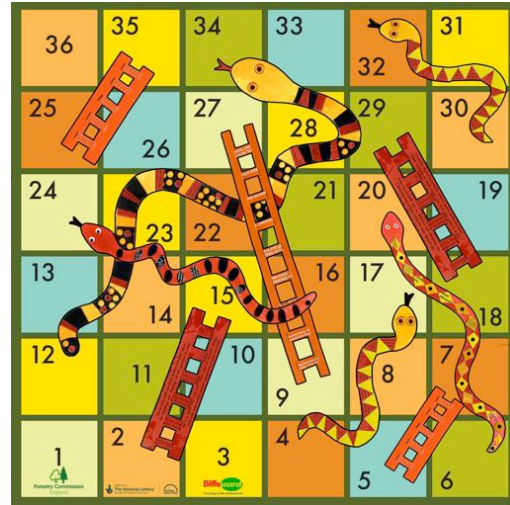


Introduction:

Snakes and Ladders is a traditional board game where two players take turns to roll dice and move their corresponding pieces up the board, aiming to reach the end space before their opponent. The snakes and ladders are positioned across the board and if the player lands on either the bottom of a ladder or the top of a snake, they are moved up or down the board respectively.



The game is popular and there are many variations of it already created, so it could be difficult to put an individual stamp on a new version of the game, or whether it would even be a good idea to make the game stray from its traditional format. However, these days, physical board games are played less and less, and people tend to look to their devices to play games, so I decided to create an application that could be played on computer or transferred to a device, so that people can play the board game wherever they are.

My target audience is children between about 5 and 10 years of age and families, and almost all children I know play on tablets and smart phones, so I think it is important that I create a game which is transferable to a hand-held device. This is an example of a traditional snakes and ladders board (see fig 1). It uses lots of bright colours and has numbered spaces to make it appropriate for children. These are some of the qualities that I want to incorporate in my adaptation, along with other features specifically aimed at young users.

For example, the game needs to be simple to control, so I will most likely try to have clickable buttons as controls rather than more complicated text commands. This will affect which application I choose to use when designing my app. The graphics will also need to be clear, bright and inviting, possibly incorporating cartoons to invite the attention of the users. There will also need to be clear labelling for each button because very young users may need lots of indicators as well as graphical suggestions to understand how to use the app.

How I researched:

While conducting my research, I downloaded several phone applications and looked at online versions of snakes and ladders and other, similar board games. I tried to look at the more popular game adaptations, as I want to look at the most successful methods and interpretations of traditional games. I wanted to analyse what was a better technique; keeping the game traditional to make it

1 <http://www.prateeknarang.com/Winning-a-Snakes-and-Ladders-Game/>

recognisable and comfortable for the user, or utilise the fact that I am creating a digital version of the game by developing the game in a new way.

There was a range of sources that I looked at, but I decided on the current system to base my solution from because it was in a similar format to what I think I will make; with separate sections for each traditional component of the game, even where it may not be necessary on a digital device, to keep it realistic, and it was the one of the most popular hits when I searched for 'snakes and ladders game'.

Description of current system:

One of the most popular snakes and ladders games online was on a website called 'playonlinedicegames.com'. I decided to create my new system using this as a current system, while also considering true-life snakes and ladders to try and keep the game somewhat traditional.

The current system has a menu screen, dice screen and game screen all on the same page, so all are visible all of the time. It doesn't give the option to play with two players across separate devices, but you can choose to either let the computer play the other side automatically, or you click the dice for both sides both players. The game is somewhat ambiguous, however, because the two options of game play are either a computer symbol (where the other player's turns are completed automatically) or a person (where you, the user, has to click for both players). Even on the 'two player' mode, however, the game only references "you" and "the opponent" instead of player 1 and player 2, so it does not seem like an actual two player mode. This is a negative for gameplay for the user because the only option for two-player mode is confusing, especially for younger users who are likely trying to play the game with their friends.

There is a button in the dice section, and a message board above it to say whose roll it is, which helps to make following the game easier for the user to follow. Both players can land on the same space, but the icons block each other out which is confusing when playing. This is another negative from the user's perspective as it can be easy to lose track of which piece belongs to whom and where the individual pieces are. There is also no notification when a player is sent wither up a ladder or down a snake, so you have to watch the board very carefully to keep track of what is happening. Younger users especially are not likely to be paying this kind of close attention, so they could easily fail to trace the game properly, which could seriously impact gameplay quality. When a player wins, a banner appears in above the dice and menu sections to say whether you have won or lost, which is also a useful indicator for the user.

The game is very standard, and has no real options of game play like difficulty or any extra features, so I feel like they have not taken full advantage of the possibilities of creating the traditional game digitally. This means that the user could become bored with the game very quickly, especially modern, young users who generally require more amusement than a standard board game can provide. I want to improve on this dullness for my own version of the game.



Description of My System:

Based on the current system, I have decided to create a system which is traditional enough so that people can easily recognise the game, as this seems popular when conducting my research, but I want to advance the system to make it more interesting, as I feel like a lot more can be accomplished by creating a digital solution.

I want the user to be able to play single player, or have the option to play two player on the same device; I found this is many apps in my research, the game references the players as separate, but on the same device, so the phone/tablet can simply be passed between players as they have their turns. This feels more like the traditional game to me; several people playing on the same board. I want to add some extra form of gameplay, however, where the players can affect each other's positions, for example, to add some originality to the game where I can.

I want to have separate screens or windows for menus and dice so that the game is dynamic and doesn't always stay on the same screen, as this can get boring to look at. I will try to make improvements of things in the current system, which are user-unfriendly. For example, I won't allow the players to land on the same space, and I will make sure to put up a notification on the screen somewhere to tell the players if someone lands on a snake or ladder, to make the game easier to follow.

I have decided to use kivy and python to create my system, as I feel more comfortable with the parent-child relationships in kivy and how it produces python objects than I do with any other graphically capable language. I want to use something which can produce a graphical window so that the game can be

played on a device, and has buttons which can be clicked and a board which is colourful, rather than a python-based text-based game, which can be hard to follow and look and feel messy when playing as the user has to type to signal any kind of action.

My Aims and Objectives:

- **Make a menu screen**
 - Should be able to grant access to different areas of the game such as load game, save game or play game
 - Should be able to quit the game from here
- **Create a board with a grid of game spaces which a piece can move up**
 - The grid should be colourful and be numbered to make following the gameplay easier
 - Any obstacles should be randomly generated
 - Should have an end space which, if reached, determines a winner based on which player landed on it
- **Make Snakes**
 - Can alter a player's position backwards on the board
 - Has a graphical or clear representation on the board space
- **Make Ladders**
 - Can alter a player's position backwards on the board
 - Has a graphical or clear representation on the board space
- **Make dice/spinner to give the illusion of a traditional physical board game**
 - Should have a graphical screen where the user can click something to produce a dice roll/spin.
 - Should then call something in main program to randomly generate a number for a dice roll/spin.
- **Create Players**
 - Should have different, identifiable pieces for player one, player two and the computer
 - Should be able to move across the board and land in any specific space
- **Make single player mode so that the user can play against the computer**
 - The computer should roll automatically, but the player should be told what they have rolled so that they can easily trace the game
 - There should be a menu created so that the user can choose whether to play in single or two player mode.
- **Be able to save games**
 - Should be able to save several games with unique file names, which can be inputted by the user to load a specific game.
 - Player positions, game format (e.g. how many players there are), and obstacle positions should all be saved and be able to be reloaded in exactly the same way.
- **Be able to load games**

- Player positions, game format (e.g. how many players there are), and obstacle positions should be able to be reloaded in exactly the same way as they were saved.
- The game should continue as if it was never paused; for example, the game should remember who had the last turn and start from the next person (if in two player mode).
- **Create additional gameplay features**
 - To add my own twist to the game, I want to add new features such as being able to play the game on different difficulty levels. As the game gets harder:
 - The amount of obstacles on the board should increase; the proportion of snakes to ladders should favour snakes as the difficulty gets harder.
 - The size of the board should increase to make the game longer
 - I also want to add extra gameplay features such as spaces where the players can either improve their own position or sabotage their opponent if they land on it. I feel like this would increase the competitiveness of the game and make it more exciting.

