



F02 Group 2

CDT 1D Project Report

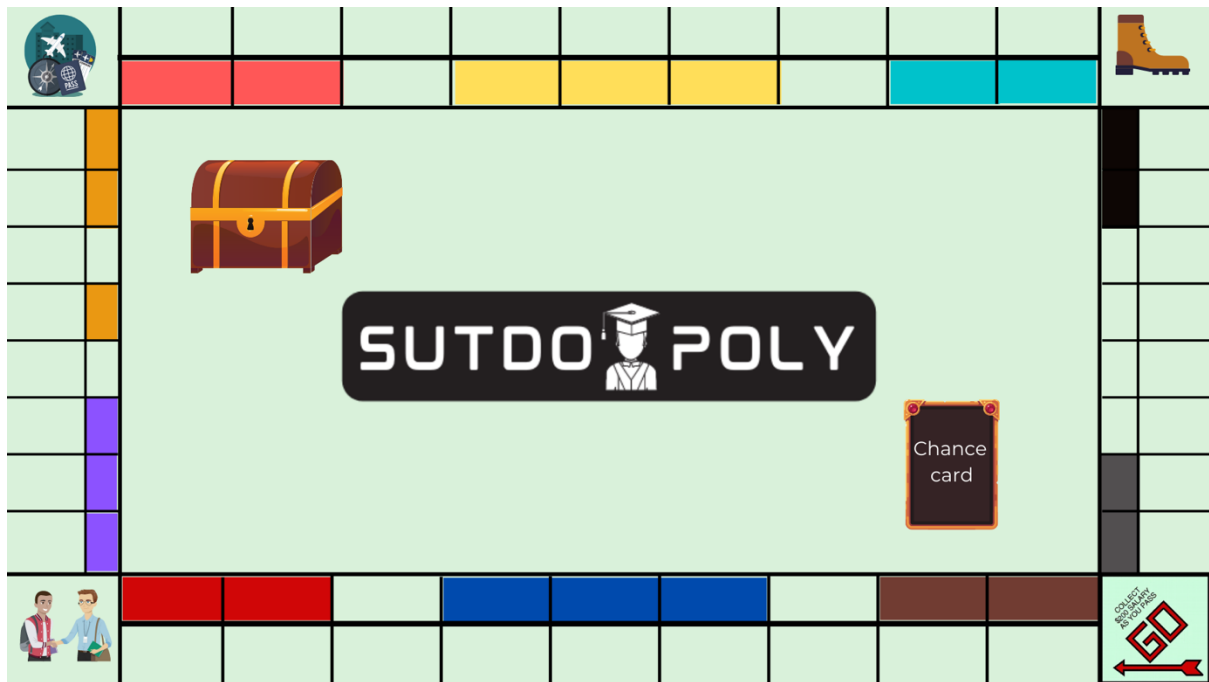
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SUTDOPOLY

Question	Description
Background of SUTDopoly	<p>SUTDopoly is a text-based boardgame that is run straight from the command line. As the name may suggest, it is a board game heavily inspired by the classic game: Monopoly.</p> <p>Monopoly is a boardgame that can be played by between 2 to 8 players, where each goes around the board to purchase property with the aim of establishing a monopoly. The full rules of the original game can be found in this link: https://www.hasbro.com/common/instruct/monins.pdf.</p> <p>As a variation of Monopoly, SUTDopoly follows similar rules, but is instead structured around the setting of SUTD whereby the properties names are the names of Fifth Rows and the Chance and Chest cards are relatable to SUTD students. However, several features, like auctions, railroads, and jail, were not implemented into the final design of SUTDopoly.</p> <p>We were inspired to create SUTDopoly as applying a classic game to life in SUTD would be a novel concept for the players, who understand, and relate to, the contexts well. It would be something we experience in our everyday life, converting real life into a game that is familiar to most of us.</p>
Objective of SUTDopoly	<p>The objective of the game is to become the wealthiest player through buying, renting, and selling of property and forcing other players into bankruptcy. Other than property, players can raise their wealth through 'chance', 'chest' and by passing through 'Go', and interact with other players through trades.</p>

How to play	<p>Setting up the game: The game comes in the form of a python package. To run the application, open “<i>Main.py</i>” on your command terminal. This will open the main menu, where local play (inputting enter) or online play (inputting “<i>H</i>” or “<i>J</i>”) can be selected. After selecting your preferred domain of play, the players can then follow the steps onscreen to register themselves as players.</p> <p>Start of SUTDopoly: Each player starts with \$1500, and the turns taken are in the same order as that of the players’ registration. The number of steps the player takes equals to the digit shown, equivalent to throwing 2 dice. Depending on the space the player ‘lands’ on, he/she can buy the property using in-game money. If the property is owned by another player, he/she is obliged to pay rent. Some spaces allow players to have a free space, or draw Chance or Community Chest cards.</p> <p>A turn in SUTDopoly comprises of 3 phases, as explained below.</p> <p>Phase 1: Movement The dice is rolled, and the player will move through the board depending on the dice roll.</p> <ul style="list-style-type: none"> • On passing Go: Each time a player passes ‘Go’, he/she receives \$200. • View your properties: Enables the player to view all their properties, as well as other valuable information about the properties: rent, colour group, number of houses, and mortgage statuses. <p>Phase 2: Tile Interaction The dice is rolled, and the player will move through the board depending on the dice roll.</p> <ul style="list-style-type: none"> • Chance card: If the player lands on Chance, he/she must draw a Chance card and follow what it says- they will either collect money from or pay the bank. There is a higher chance of getting a ‘good’ card (receiving money from the bank) when drawing a Chance card. • Community Chest card: If the player lands on Community Chest, he/she must draw a Community Chest card and follow what it says- they will either collect money from or pay the bank. There is a higher

chance of getting a 'bad' card (paying money to the bank) when drawing a Community Chest card.

- **Buying property:**

When player lands on an unowned property, he/she can choose to purchase the property at the offered price. Skipping the property is allowed in SUTDopoly.

- **Paying for rent:**

When a player lands on an owned property, the owner collects rent from the player. If the property is mortgaged or owned by the player himself, the player need not pay rent.

Phase 3: Miscellaneous actions

At this stage, various other actions can be performed by the player.

- **Building hotels and houses:**

Players can choose to build houses which can be renovated to hotels once they own the full colour set of that property. Players can trade with one another to obtain the full set of properties. Players must build houses within their fully collected sets evenly: players must have an equal number of houses on each property of the colour set before building more for each property. The maximum number of houses available is 32.

- **Trading:**

Players are given the option of trading property and money with one another, during the second phase of their turn. After an offer is sent by the player taking the turn, to another player, the other player can choose to accept or reject the trade offer.

- **Mortgage:**

- Players can mortgage their properties in exchange for half of the original buy price. Mortgaged properties cannot earn rent, and can be unmortgaged by the owner buy paying 55% of the original buy price.

- **Cheat Codes:**

If, during this phase, a player enters "*CHEAT*", there are several cheat codes available. These cheat codes were implemented for the purpose of testing the application, and the option of doing so is hence hidden from the user interface.

- *WIN*: If a player types in 'WIN', he/she will make all other players bankrupt.

	<ul style="list-style-type: none"> - <i>LOSE</i>: If a player types in 'LOSE', he/she will cause him/herself to be bankrupt - <i>GODMODE</i>: If a player types in 'GODMODE', he/she will receive \$10000000 and all properties will become his/hers. <p>Post-turn: Victory determination</p> <p>Once the player ends phase 3, the game checks for any bankrupt players, and if only 1 player is left, that player would be declared the winner. Hence, if a player becomes bankrupt during his/her turn, the player can use the various actions, such as mortgaging remaining properties, or trading with other players, to earn money in phase 3 to save themselves from defeat.</p> <p>Upon defeat, a defeated player's properties would shift ownership back to the bank, and he/she would not be able to take any more turns.</p>
Main features in the game	<p>The game features an implementation of majority of the rules in Monopoly. This includes trading with other players, mortgage, rent, building houses and hotels, and more.</p> <p>Another feature of SUTDopoly is the ability to play both on a single computer (offline), as well as across multiple computers (online). Similar to offline play, online play allows players to interact with one another via trade, and players not taking their turns are still able to receive real time information about the current player's actions. Online functionality is implemented through the usage of a cloud database, hosted by Google Firebase as taught during 10.014 lab session.</p> <p>A minor, yet novel, feature implemented would be the frame-by-frame animation of board movement. This gives more life to the text-based game.</p>
Citations/references	<ol style="list-style-type: none"> 1. This game is a modified version of Monopoly, whose rules can be found at https://www.hasbro.com/common/instruct/monins.pdf. We adopted the following features: <ul style="list-style-type: none"> • Boardgame style (multiplayer game etc) and game rules • Features of the game such as 'Go' • Property (modified according to SUTD context) • Chance cards & community card(modified according to SUTD context) • Can be played online (similar to Monopoly on App Store) And we ignored the following aspects: <ul style="list-style-type: none"> • Railroads

	<ul style="list-style-type: none"> • Utility • Jail • Auction • Taxes • Certain chance card • Double dice roll <p>2. Clear terminal in Python - Stack Overflow</p> <p>3. 10.014 Lab Sheet (Release) - Google Docs, where the files are obtained from 10.014 Lab Starter Code - Google Drive</p>
Video link	https://youtu.be/ZQWXEs5q8Y