**Monopoly**

**This game is basically a Mayfair Monopoly game. This is basically a business game which can last hours or even days. This is a game played by 2-4 players. This is actually a dice based game. Our game is based on the actual Mayfair Monopoly which has been modified for appeal to IIT students. Though the game's rules are the same, the names and the way the fines are imposed are all completely changed. The changes we made are as follows.**

**1.The cities are replaced with the major engineering colleges in INDIA like IIT, NIT and some other institutes.**

**2.The transport services present in the original game are replaced with IIMs.**

**3.The luxury services are Playstation , Digital Home Theatre.**

**4.The way the fines and prizes were given are based completely on the way of life of an IIT student.**

**Attributes-Format and Input**:

The basic code for our monopoly application is written in C++ language. The basic theme of our code is using a while loop. We run an infinite while loop which runs the basic game play. The details of the C++ codes for the input part are given below.

**Input of the board attributes:**

\*In the information given below, the word "point" refers to a position on the board.

The basic input of the board, i.e. the names of the board points, their statistics that involve it's cost, fees (involving various rules), mortgage value, unmortgage value and various trade attributes are given as an input through a ***file which is pre-determined***. These are written in a tabular form and are taken into a pre-determined structure intended for the purpose. This structure includes

1. Position on the board

2. Name

3. It's category based on the type of point it is

4. It's category based on the colour of the point

5. The cost of the college/service

6. The fees of the college (this includes various types of fees##)

7. The cost of a hostel

8. The cost of a lab

9. The mortgage value

10. The owner number (0 if it is not owned by any number)

11. Number of hostels

12. Number of labs

**In-depth information about the attributes**

1.The position on the board is given by an integer, which is predetermined and is assigned to a point on the board.

2. In our project the position of the board are named by some of the important engineering colleges in India.

3.The points are categorized basically by the colour of the point.

4.The colours of the points are predetermined and these are important for determining the fees of a college. The rule is that if single person owns at least 3 colleges of a particular colour, the fees of the colleges he owns of that particular colleges are double of that of the original colleges.

5.The mortgage value of any point, irrespective of its category is half of it’s cost.

6.The cost of hostels and labs are different for different points and are pre determined.

**Input of the player attributes:**

The player attributes are taken at beginning of the game play where in the user/s are asked to enter their attributes like their name, their colour tag and their order of entry.

These are taken by the input command “cin”, into a pre determined structure intended for the purpose. The structure includes

1. Player name
2. Colour tag
3. Bank balance, which is fixed by the program and is pre-assigned initially.
4. Board position, which is also initialized to 0 at the beginning.
5. Order of play

**In-depth information about the above attributes**

1.Bank balance is a float input and is initialized at the beginning.

2.Board position is initially set to 1. This is integer value, which ranges from 1 to 40 based on the point on which the player is positioned.

3.Then their order of position by which the play is determined is determined by the throw of a dice. Assigning the respective dice values based on the order of entries, to the players, does this and then these order of entries are re-assigned to the order of play. This “order of play” decides the order in which the players take their chances.

***Technical Documentation***

**Looping part of the program**

The part of the program which will be repeated and rerun for each throw of dice is as follows

1. It is enclosed in an Infinite While loop. It can be broken out of anytime we wish by inserting a break command

2. There is a variable called p, which is the player identity. p remains the same for an iteration, and is updated for the next iteration, taking care that it's value should be lesser thatn the number of players.

3. Suppose p=1;

Let the player throw the dice by clicking a button on screen

4. The dice roll is obtained and playerpos[p] is updated

5. According as point on which the person is standing, the following choices are extended to the player

* + 1. Buy-Code

Once a player enters a board position, if the point is unowned the player is given a choice to buy it. For that, if the player is willing to buy the place, thee amount is cut from his bank balance, the owner part of that property is updated to the person.

* + 1. Sell

If a person is in requirement of money or due to some other reason, he wishes to sell his point by putting up an auction in which the base price is set by the owner. Then by a general bid process, the new owner(if someone goes for it) will be decided. After that the owner part of that property is updated to the new owner, the bank balance of the previous owner is increased by the relevant amount and the bank balance of the new owner is decreased by the same amount. This transaction is done in the chance of the previous owner.

* + 1. Mortgage

If person instead of putting a college to auction, he can even mortgage it to the bank. The bank pays him half the price of the college. Then the bank balance of the player will be updated and the status of the property is updated to “mortgage.” The college can be regained by the same owner only at a later stage.

* + 1. Unmortgage

Once a player's financial position betters, the player can unmortgage his mortgaged property by paying the mortgage price along with some interest with the interest rate being predetermined. This is followed

* + 1. Trade

The players if they owned atleast 3 colleges of the same colour tag, then he can construct some hostels and labs. From there on the player can construct houses if he enters the site of the relevant colour.

6. The value of p is incremented after each iteration