# PROJECT: DOTS & BOXES

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Introduction:

Dots & Boxes is a paper and pencil puzzle game that has been used to entertain children in ancient time but nowadays there is peak time of growing technology so it is also designed to play on computer like other games.  This implementation of the game features a computer board manager to control the play of two humans, since we are going to design one player game so it is more interesting that by coding we gave the playing strategy of a man.

The Rules of Dots & Boxes

The game play area of Dots & Boxes consists of an m x m grid of "dots".  A player's turn consists of connecting two horizontally or vertically adjacent dots with a line – diagonal lines aren't allowed and the dots must be next to each other.  A point is scored each time a player completes a square.  When a square is created, the turn stays with the player who made the square, otherwise the turns alternate.

It should be noticed that the player must complete the square to get points – even if you provide three of the sides, if your opponent fills in the fourth side, he gets the points.  It is compulsory to fill in the square with the initials of the player who won the square (say one fill-up the square by A and other should fill up the box by B). Since both players usually avoid putting lines close together until they have to, when it becomes possible to make one square, there is a whole cascade of possible squares.  The player who makes the first square in such a cascade can elect to take any or all of the possible squares – there are some strategic schools of thought that say its better not to take them all.

Progress Report of the Project:

Most of the coding work took place after the First stage submission. We created an array of boxes, the small ones representing the dots and the larger ones representing the boxes. The game is fairly straightforward. The game can be

played in 2Player mode as well as 1Player mode in three different levels. We also introduced some randomness by creating special marked boxes, which might benefit the player who creates it or may push him back.

Modules of the Program:

The code can be distributed into the following three parts:

- Callback functions for the Main menu as well as the menubar: This includes the functions:
  mainmenu_CB(): The main menu
  help_CB():Instructions on how to play a game
  Quit_CB(): To exit from a game
  player_CB(): Commands to be executed when user selects 2Player mode
  CPU_CB(): Implementing the 1Player mode
  save_CB(): To save a game state
  load_CB(): To resume from a saved game

- CPU automation for the 1Player mode: This has been achieved in the function computer().

- Definition of the elements of the game window:  The elements are defined mostly in the main() function. The classes MyDesk and MyProgram are also used.

The main function acts as the bridge between these modules and controls the overall execution of the program.

Individual Efforts:

Gaurav Jain (L): Created the main functions and contributed to the CPU automation part.

Shrey Kumar: Defined the various graphics elements and the callback functions for the window screen and its subitems. Also, created and managed the menubar.

Satyendra Kumar: Defined the constraints on the choice of lines connecting the dots and created the CPU automation technique.

Acknowledgement:-

We are very thankful to everyone who supported us ,for we have completed our project effectively and, moreover, on time.

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Thanks to all.