

TECHNICAL DOCUMENTATION FOR CARD MATCHING GAME

➤ Start Screen

File Name: **start.vb**

Application is initialized with this form.

Components :

- **GameStartMenu : Menu Strip**
This component defines the menu strip for the window. It has various menu items and sub-menu items. No custom listener has been added to this.
- **FileItem: Menu Item**
This is the menu item of menu strip. It has a sub-menu item. No custom listener has been added to this.
- **About: Menu Item**
This is the menu item of menu strip. No custom listener has been added to this.
- **ExitSubMenu: SubMenuItem**
This is the menu item of menu strip. It is used to exit from the program. It has listener for click has been added to this which quits the application.
- **StartButton: PictureBox**
This is a picturebox. When this is clicked the game begins. It has a listener for mouse click which when activated begins the game.

Variables :

- `Public Shared levely As Integer = 2`
- `Public Shared levelx As Integer = 2`
These are shared integer variables for determining the no. of card along x & y axis.

Functions :

- `Private Sub PictureBox1_Click(sender As Object, e As EventArgs) Handles StartButton.Click`

This function handles the click on the StartButton (Picture Box). It initializes the level of the game and opens the new form "play.vb" and hides the current form.
- `Private Sub ExitToolStripMenuItem1_Click(sender As Object, e As EventArgs) Handles ExitSubMenu.Click`

This function handles the click on the ExitSubMenu (Sub Menu Item). It exits the application by disposing the form.

➤ **Play Screen**

File Name: **play.vb**

Game play begins here.

Components :

- **PlayStartMenu : Menu Strip**
This component defines the menu strip for the window. It has various menu items and sub-menu items. No custom listener has been added to this.
- **FileItem: Menu Item**
This is the menu item of menu strip. It has a sub-menu item. No custom listener has been added to this.
- **About: Menu Item**
This is the menu item of menu strip. No custom listener has been added to this.
- **NewSubMenu: SubMenuItem**
This is the menu item of menu strip. It is used to start the game from the beginning. It has listener for click has been added to this which opens the start.vb .
- **ResetSubMenu: SubMenuItem**
This is the menu item of menu strip.. It is used to reset the current board. It has listener for click has been added to this which redraws the board.
- **ExitSubMenu: SubMenuItem**
This is the menu item of menu strip. It is used to exit from the program. It has listener for click has been added to this which quits the application.
- **bNewGame: Button**
This is a button. It is used to start the game from the beginning. It has listener for click has been added to this which opens the start.vb .
- **bexit: Item**
This is a Button. It is used to exit from the program. It has listener for click which quits the application on mouse click.
- **best : GroupBox**
This is a groupbox containing labels for Best Score and the no. of clicks corresponding to that.
- **currScore : GroupBox**
This is a groupbox which shows Current Score , Number of clicks and the time taken.
- **cardPane : Panel**
This is a panel which acts like a container for another panel “cardContainer”. This helps in proper positioning of the cards.

- cardContainer : Panel
This panel contains all the cards which are shown on the board.
- GameTimer : Timer
This is to keep a track of time taken by the player.
- timerDisplay: Timer
This is a timer to control the time for which the cards are displayed.

Variables :

- `Dim upImg As Image`
This is a variable for image and it refers to the image on top face of card.
- `Dim images(15) As Image`
This is an array of images that are on the down face of the card.
- `Dim oGrid(25) As PictureBox`
This is an array of picturebox that contain the cards on display.
- `Dim lastClick As Integer`
This is an integer which keeps track of the last card which was clicked.
- `Dim lastOb As Object`
This Stores the object on which the last click was made.
- `Dim clickCount As Integer`
This Stores the number of click made by the user.
- `Dim scoreCount As Integer`
This Stores the score of the user.
- `Dim removed As Integer`
This Stores the number of proper card matches.
- `Dim timercount As Integer`
This is the timer for which cards are shown.
- `Dim pb As Object`
This Stores card on which the current click was made.

- `Dim num As Integer`

This Stores the array index of the image which is the downface of the card.

Functions :

- `Private Sub SetupGrid(ByVal levx As Integer, ByRef levy As Integer)`

Takes in parameters for number of cards along x and number of cards along y. This function does the job of placing and randomly distributing cards on the boards

- `Private Sub play_Load(sender As Object, e As EventArgs) Handles MyBase.Load`

This is called when the play.vb form is loaded. It then calls SetupGrid(levelx, levely) to setup the board

- `Private Sub cardFlip(sender As Object, e As EventArgs)`

This is called whenever a card is clicked. If it was already flipped up then this function exits else it flips the card up. It also does the job of checking if two matching cards are flipped cosecutively

- `Private Sub ClearPictureBox(pb As PictureBox)`

This is a function which gets called whenever a card match of cards os found. It does the job of removing those cards from the board.

- `Private Sub bnewGame_Click(sender As Object, e As EventArgs) Handles bnewGame.Click`

This is called whenever “bnewGame” is clicked. It calls the start.cv form.

- `Private Sub bexit_Click(sender As Object, e As EventArgs) Handles bexit.Click`

This is called whenever “bexit” is clicked. It exits from the application by calling dieform().

- `Private Sub reset_Click(sender As Object, e As EventArgs) Handles reset.Click`

This is called whenever “reset” is clicked. It resets the board by calling setupGrid(levelx,levely).

- `Private Sub dieGame()`

This is a call to kill the application by disposing both start.vb and play.vb

- `Private Sub formClose(sender As Object, e As EventArgs) Handles MyBase.FormClosed`

This is a call to kill the application by calling `dieform()`
- `Private Sub increaseLevel()`

It increases the value of `levelx` and `levely` and calls `setupGrid(levelx,levely)` to increase the level.
- `Private Sub NewGameToolStripMenuItem_Click(sender As Object, e As EventArgs) Handles NewSubMenu.Click`

This function handles the click on the ExitSubMenu (Sub Menu Item). It exits the application by disposing the form.
- `Private Sub ResetGameToolStripMenuItem_Click(sender As Object, e As EventArgs) Handles ResetSubMenu.Click`

This function handles the click on the ResetSubMenu (Sub Menu Item). It resets the play arena by calling `setupGrid(levelx,levely)` with same values of `levelx` & `levely`.
- `Private Sub ExitToolStripMenuItem1_Click(sender As Object, e As EventArgs) Handles ExitSubMenu.Click`

This function handles the click on the ExitSubMenu (Sub Menu Item). It exits the application by calling `dieform()`.
- `Private Sub Timer1_Tick(sender As Object, e As EventArgs) Handles GameTime.Tick`

This function controls the game timer and the timer starts ticking as soon as the level starts.
- `Private Sub timerdisplay_Tick(sender As Object, e As EventArgs) Handles timerdisplay.Tick`

This function controls the display time of two cards when the two un-matching cards are flipped.

➤ **About**

File Name: **about.vb**

About Window.

Components :

- Logo : PictureBox
This component contains the logo of the application and shows on about window.

- IName: Label
It displays the name of application.
- version: label
It displays the version of the application.
- TextBox: RichTextBox
It displays the text from about.txt

Functions :

- `Private Sub About_Load(sender As Object, e As EventArgs) Handles MyBase.Load`

This function is called when about window is called. It sets the content in TextBox from the file about.txt

Limitation/Bugs

- It is assumed that the card placing is done using a perfect randomization algorithm.
- After a certain increase in level of the game further increase can be done by changing the initial flip time only and restricting on display time.
- The initial display of all the cards for a particular time interval could not be implemented.
- After every level increase all the previous cards had to be disposed , and new set of cards to be initialized. This process results in window flicker.