Tutorial 19

Programming exercise 1 – GDI+

The task is to create a simple tic-tac-toe game.

1. Create new project. Name it TicTacToe
2. Add Panel control. Name it pnl and set its size to be 210x210 pixels
3. Add handler to panel’s Paint event. First add code to draw the grid:

private void pnl\_Paint(object sender, PaintEventArgs e)

{

var g = e.Graphics;

g.DrawLine(Pens.Black, 70, 1, 70, 210);

g.DrawLine(Pens.Black, 140, 1, 140, 210);

g.DrawLine(Pens.Black, 1, 70, 210, 70);

g.DrawLine(Pens.Black, 1, 140, 210, 140);

}

1. Run the program to see the result
2. Add private enumeration for players

private enum Players

{

None,

Player1,

Player2

}

1. Add private fields to store current player and grid’s data (which player clicked where):

private Players[,] cells = new Players[3,3];

Players currentMove = Players.Player1;

1. Add handler to panel’s MouseClick event and check which square was clicked:

private void pnl\_MouseClick(object sender, MouseEventArgs e)

{

var isMove = false;

for (var i = 0; i < 3; i++)

{

for (var j = 0; j < 3; j++)

{

var cellCoordinates = new Rectangle(i \* 70 + 1, j \* 70 + 1, 69, 69);

if (cellCoordinates.Contains(e.Location.X, e.Location.Y))

{

//check that it's not already occupied

if (cells[i, j] == Players.None)

{

isMove = true;

cells[i, j] = currentMove;

}

}

}

}

if (isMove)

{

//change the turn

currentMove = currentMove == Players.Player1 ? Players.Player2 : Players.Player1;

//redraw

pnl.Invalidate();

}

}

1. Update panel’s Paint event handler to draw the clicked squares with corresponding colors

for (var i = 0; i < 3; i++)

{

for (var j = 0; j < 3; j++)

{

var cellCoordinates = new Rectangle(i \* 70 + 1, j \* 70 + 1, 69, 69);

if (cells[i, j] == Players.Player1)

g.FillRegion(Brushes.Blue, new Region(cellCoordinates));

else if (cells[i, j] == Players.Player2)

g.FillRegion(Brushes.Red, new Region(cellCoordinates));

}

}

1. Run the program to see the results.
2. Independent task – add code to check the winning conditions and call it after each click.