

Minesweeper

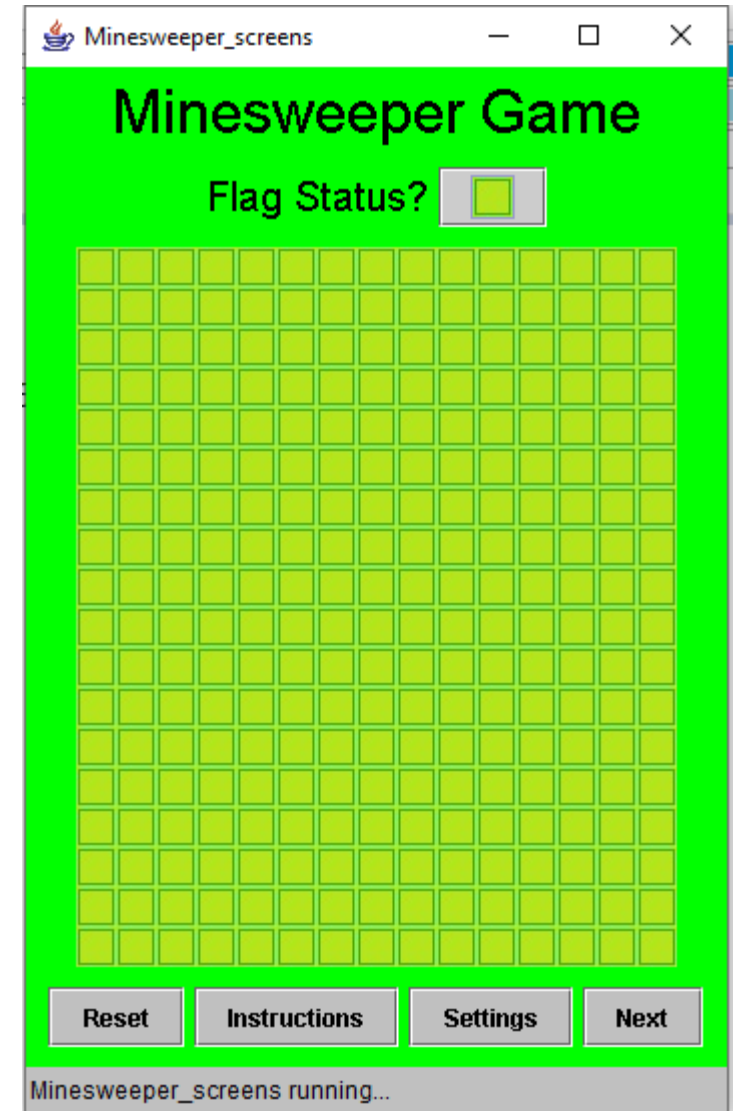
Flags & Grid Clicks

Start with field covered

```
card4.add (title);  
card4.add (p);  
card4.add (p2);  
card4.add (p3);  
p_card.add ("4", card4);
```

```
addMines (20);  
neighbours ();  
redraw ();
```

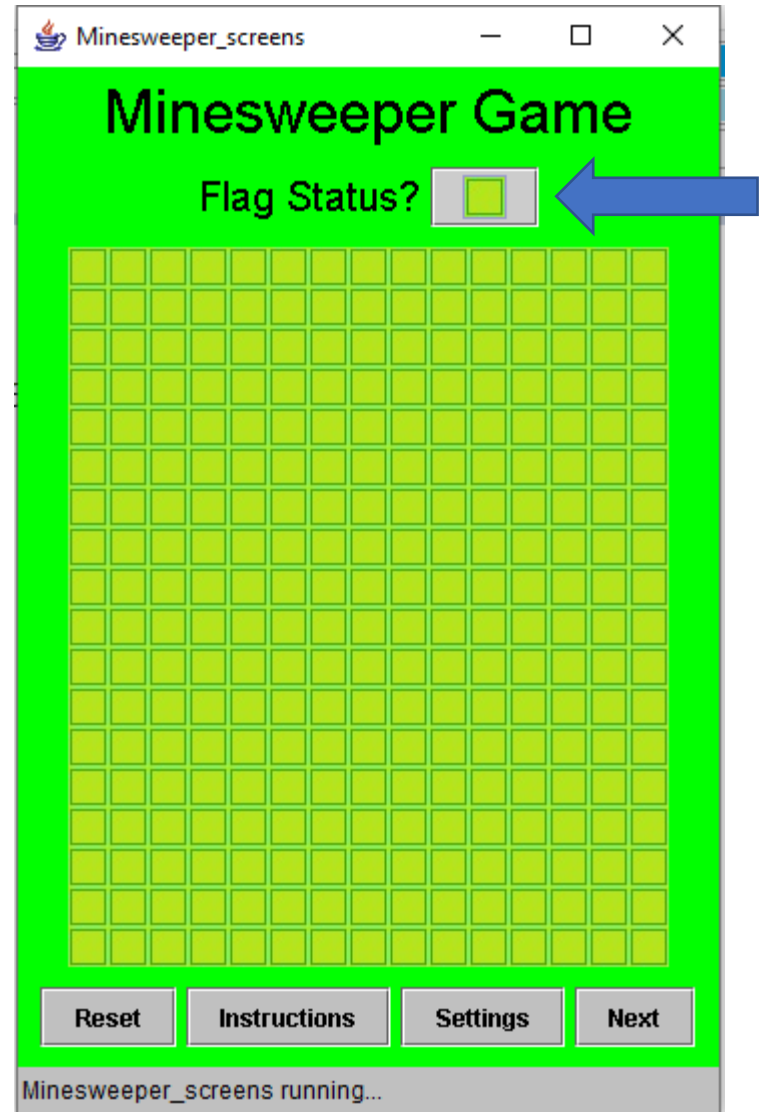
```
}
```



Used to be a turn JLabel

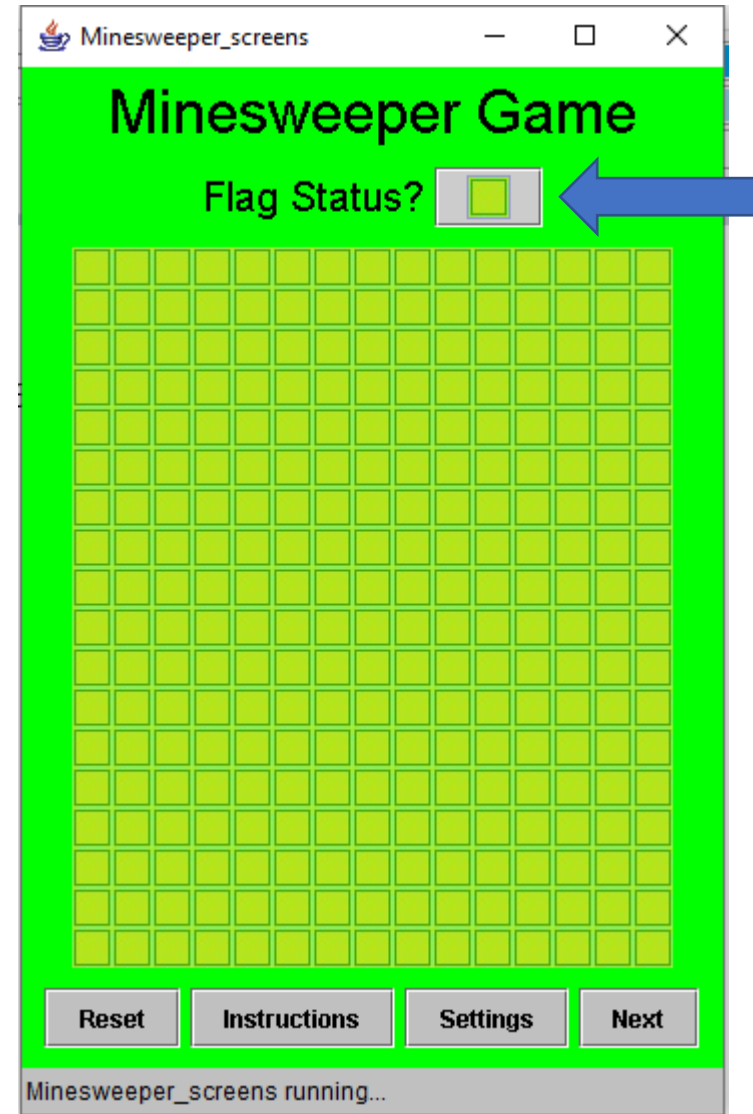
```
//For screens
Panel p_card;
Panel card1, card2, card3, card4;
CardLayout cdLayout = new CardLayout ();
JTextField txtName, txtName2;

//Game screen
JButton flagPic;
boolean flagOn = false;
//grid
int row = 18;
int col = 15;
JButton a[] = new JButton [row * col];
int b[] [] = new int [row] [col];
int show[] [] = new int [row] [col];
int flags[] [] = new int [row] [col];
```



Used to be a turn JLabel 2

```
JLabel title = new JLabel ("Minesweeper Game");  
title.setFont (titleFont);  
title.setForeground (titleColour);  
  
Panel p = new Panel ();  
JLabel curturn = new JLabel ("Flag Status?");  
curturn.setFont (promptFont);  
flagPic = new JButton (createImageIcon ("cover.jpg"));  
flagPic.addActionListener (this);  
flagPic.setActionCommand ("flag");  
p.add (curturn);  
p.add (flagPic);  
  
//Set up grid  
Panel p2 = new Panel (new GridLayout (row, col));  
int m = 0;  
for (int i = 0 ; i < row ; i++)  
{
```



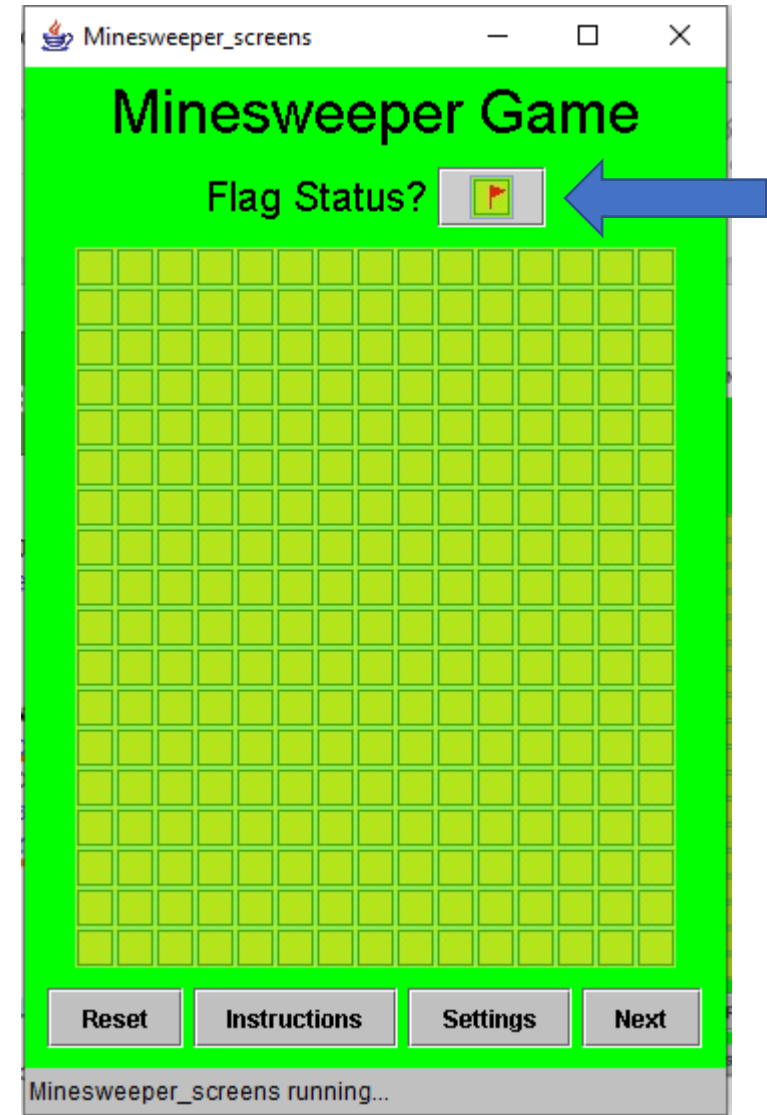
Toggle Flag

```
else if (e.getActionCommand ().equals ("instruct"))  
{  
    cdLayout.show (p_card, "2");  
}
```

```
else if (e.getActionCommand ().equals ("flag"))  
{  
    if (flagOn == true)  
    {  
        flagOn = false;  
        flagPic.setIcon (createImageIcon ("cover.jpg"));  
    }  
    else  
    {  
        flagOn = true;  
        flagPic.setIcon (createImageIcon ("flag.jpg"));  
    }  
}
```

```
//TO DO: Fill this comment in
```

```
else  
{  
    int n = Integer.parseInt (e.getActionCommand ());
```



Up, Left

Guard:
 $i-1 \geq 0$
 $j-1 \geq 0$

$i-1,$
 $j-1$

Up

Guard:
 $i-1 \geq 0$

$i-1, j$

Up, Right

Guard:
 $i-1 \geq 0$
 $j+1 < \text{col}$

$i-1,$
 $j+1$

Open

Left

Guard:
 $j-1 \geq 0$

$i, j-1$

i, j

Right

Guard:
 $j+1 < \text{col}$

$i, j+1$

$i+1,$
 $j-1$

$i+1, j$

$i+1,$
 $j+1$

```
public void open(int i, int j) {
    if (b[i][j] != 0)
        return;
    if (i-1 >= 0 && j-1 >= 0 && show[i-1][j-1] == 0) {
        show[i-1][j-1] = 1;
        if (b[i-1][j-1] == 0)
            open(i-1, j-1);
    }
    if (i-1 >= 0 && show[i-1][j] == 0) {
        show[i-1][j] = 1;
        if (b[i-1][j] == 0)
            open(i-1, j);
    }
    //etc for all 8 neighbours
}
```

Down, Left

Guard:
 $i+1 < \text{row}$
 $j-1 \geq 0$

Down

Guard:
 $i+1 < \text{row}$

Down, Right

Guard:
 $i+1 < \text{row}$
 $j+1 < \text{col}$

Grid Clicks in ActionPerformed

```
//TO DO: Fill this comment in  
else  
{  
    int n = Integer.parseInt (e.getActionCommand ());  
    int i = n / col;  
    int j = n % col;  
    if (flagOn == true)  
    {  
        flags [i] [j] = 1;  
        show [i] [j] = 1;  
    }  
    else  
    {  
        open (i, j);  
        show [i] [j] = 1;  
    }  
    redraw ();  
}
```

