

The Actions



Setting up the screen

Part 1

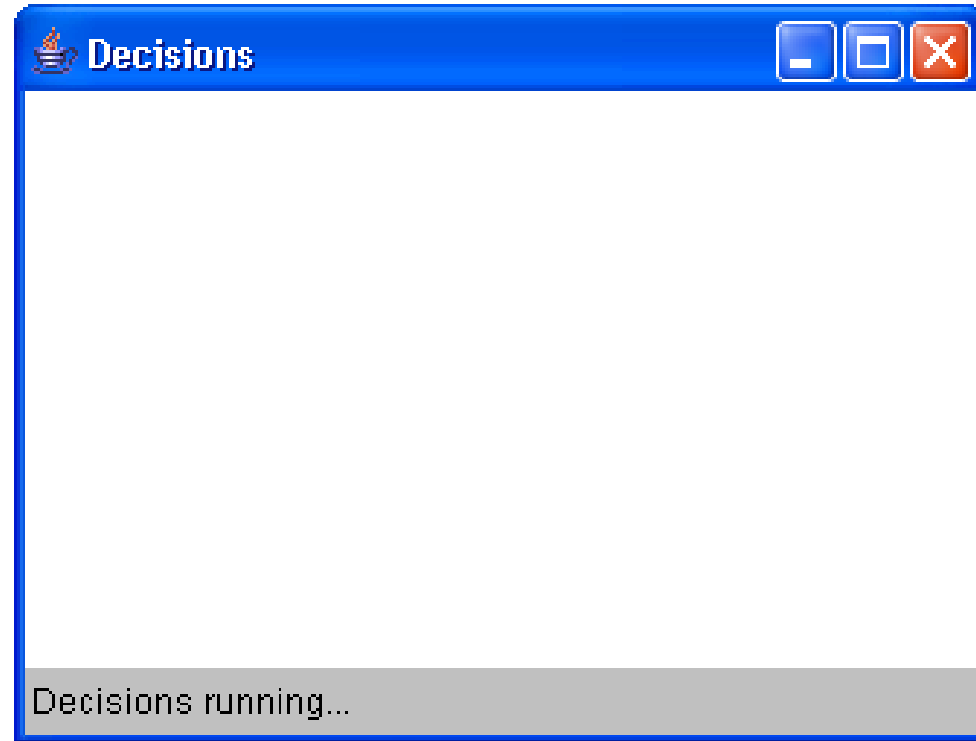
In init method

```
public void init ()
{
    resize (200, 100);
    JLabel title = new JLabel ("Test Guesser");
    title.setFont (new Font ("Arial", Font.BOLD, 20));
    add (title);

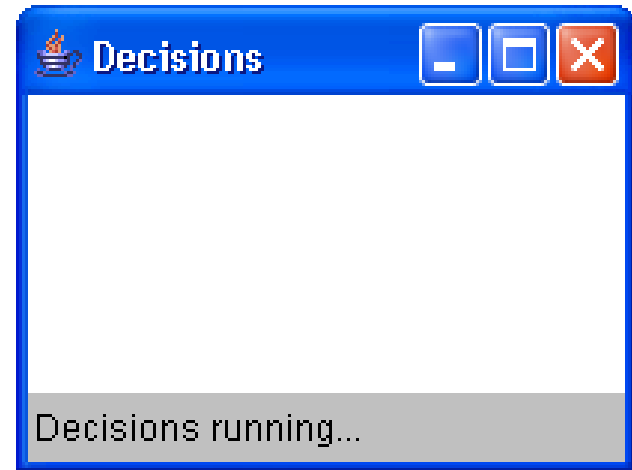
    JButton tf = new JButton ("True/False");
    tf.setActionCommand ("opt1");
    tf.addActionListener (this);
    tf.setForeground (Color.yellow);
    tf.setBackground (Color.red);
    add (tf);

    JButton abcd = new JButton ("A/B/C/D");
    abcd.setActionCommand ("opt2");
    abcd.addActionListener (this);
    abcd.setForeground (Color.blue);
    abcd.setBackground (Color.green);
    add (abcd);

    JLabel output = new JLabel ("Nothing yet.");
    add (output);
}
```



```
public void init ()  
{ resize (200, 100);  
  JLabel title = new JLabel ("Test Guesser");  
  title.setFont (new Font ("Arial", Font.BOLD, 20));  
  add (title);  
  
  JButton tf = new JButton ("True/False");  
  tf.setActionCommand ("opt1");  
  tf.addActionListener (this);  
  tf.setForeground (Color.yellow);  
  tf.setBackground (Color.red);  
  add (tf);  
  
  JButton abcd = new JButton ("A/B/C/D");  
  abcd.setActionCommand ("opt2");  
  abcd.addActionListener (this);  
  abcd.setForeground (Color.blue);  
  abcd.setBackground (Color.green);  
  add (abcd);  
  
  JLabel output = new JLabel ("Nothing yet.");  
  add (output);  
}
```

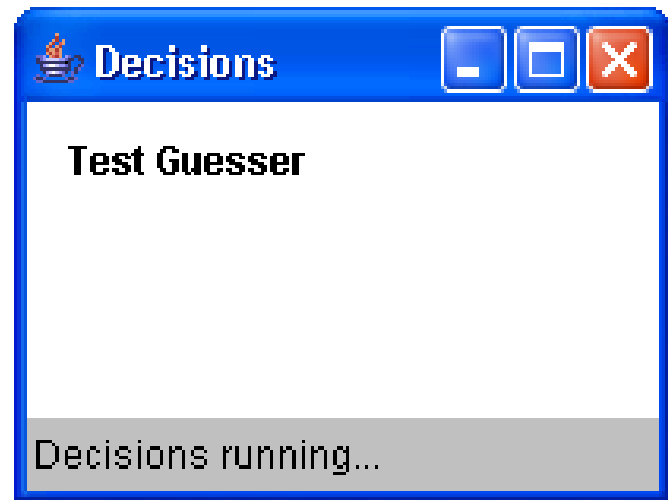


```
public void init ()
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  title.setFont (new Font ("Arial", Font.BOLD, 20));
  add (title);

  JButton tf = new JButton ("True/False");
  tf.setActionCommand ("opt1");
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  add (tf);

  JButton abcd = new JButton ("A/B/C/D");
  abcd.setActionCommand ("opt2");
  abcd.addActionListener (this);
  abcd.setForeground (Color.blue);
  abcd.setBackground (Color.green);
  add (abcd);

  JLabel output = new JLabel ("Nothing yet.");
  add (output);
}
```



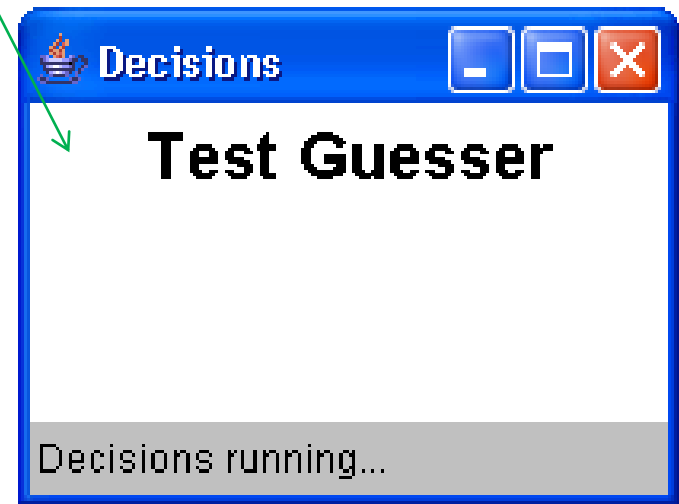
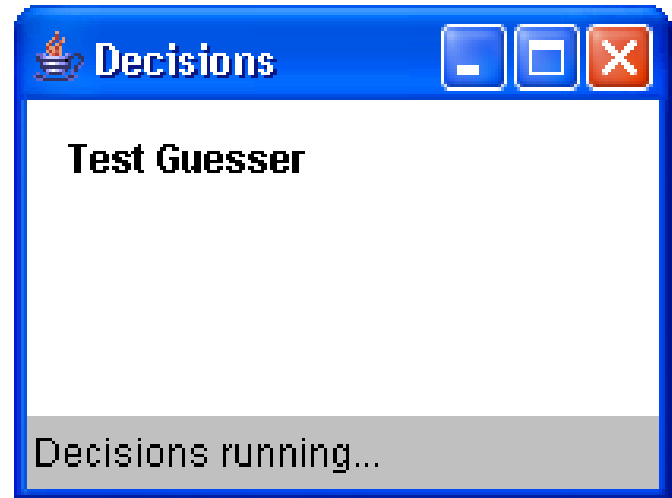
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public void init ()  
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  title.setFont (new Font ("Arial", Font.BOLD, 20));  
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  JButton abcd = new JButton ("A/B/C/D");  
  abcd.setActionCommand ("opt2");  
  abcd.addActionListener (this);  
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  abcd.setBackground (Color.green);  
  add (abcd);
```

```
  JLabel output = new JLabel ("Nothing yet.");  
  add (output);
```

```
}
```



```
public void init ()  
{ resize (200, 100);  
  JLabel title = new JLabel ("Test Guesser");  
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  tf.setActionCommand ("opt1");  
  tf.addActionListener (this);  
  tf.setForeground (Color.yellow);  
  tf.setBackground (Color.red);
```

```
  add (tf);
```

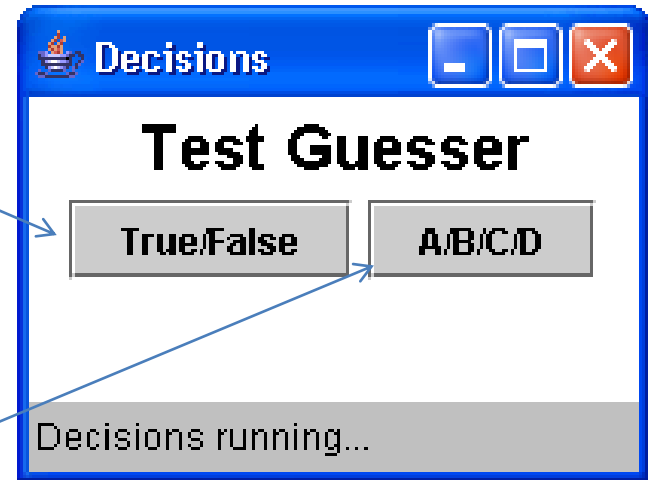
```
  JButton abcd = new JButton ("A/B/C/D");
```

```
  abcd.setActionCommand ("opt2");  
  abcd.addActionListener (this);  
  abcd.setForeground (Color.blue);  
  abcd.setBackground (Color.green);
```

```
  add (abcd);
```

```
  JLabel output = new JLabel ("Nothing yet.");  
  add (output);
```

```
}
```



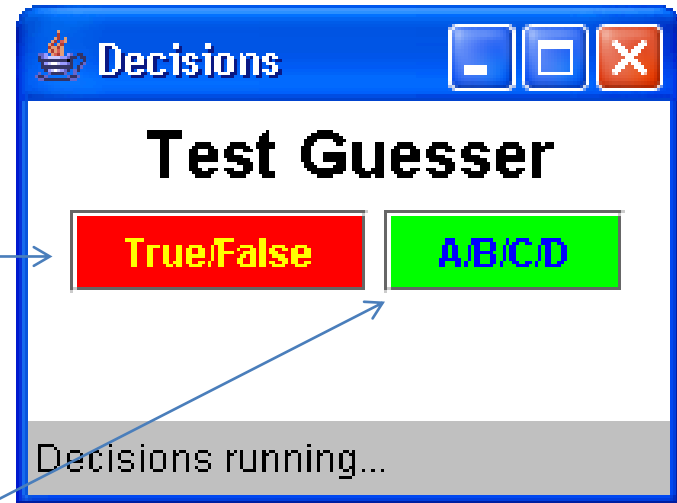
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  JButton abcd = new JButton ("A/B/C/D");  
  abcd.setActionCommand ("opt2");  
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  abcd.setBackground (Color.green);  
  add (abcd);
```

```
  JLabel output = new JLabel ("Nothing yet.");  
  add (output);
```

```
}
```



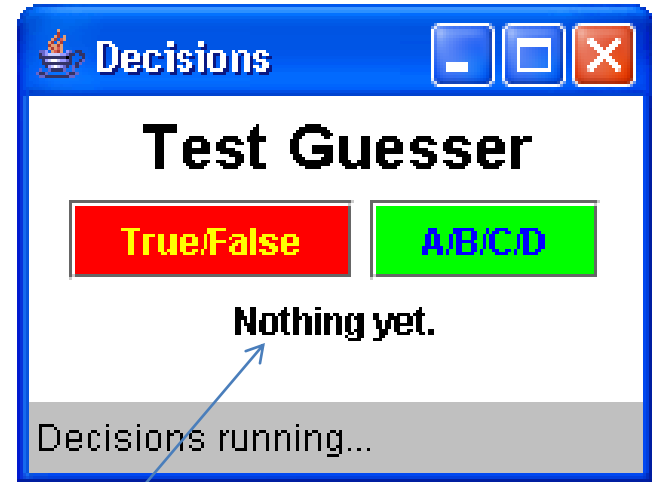
```
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  title.setFont (new Font ("Arial", Font.BOLD, 20));  
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  add (tf);
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```
  JButton abcd = new JButton ("A/B/C/D");  
  abcd.setActionCommand ("opt2");  
  abcd.addActionListener (this);  
  abcd.setForeground (Color.blue);  
  abcd.setBackground (Color.green);  
  add (abcd);
```

```
  JLabel output = new JLabel ("Nothing yet.");  
  add (output);
```

```
}
```



```

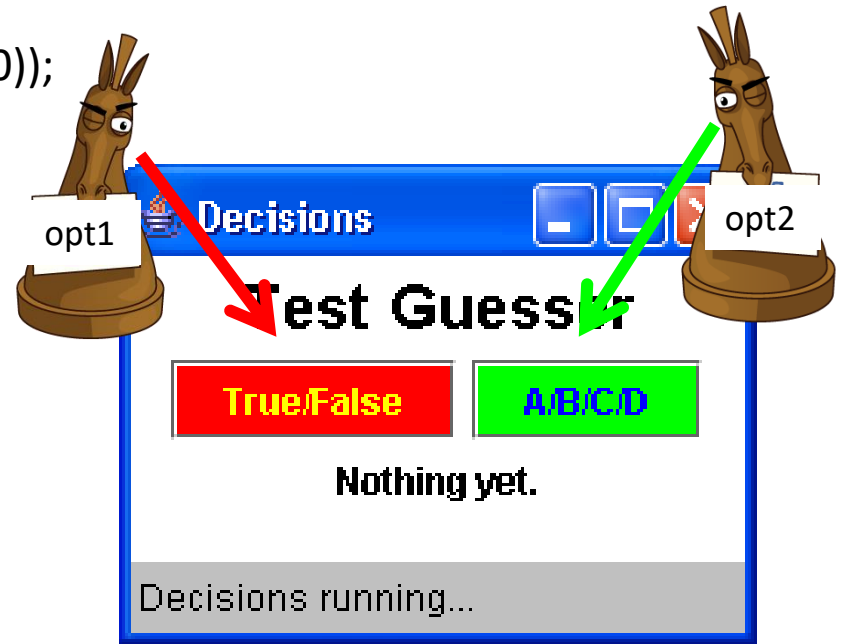
public void init ()
{
    resize (200, 100);
    JLabel title = new JLabel ("Test Guesser");
    title.setFont (new Font ("Arial", Font.BOLD, 20));
    add (title);

    JButton tf = new JButton ("True/False");
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    JLabel output = new JLabel ("Nothing yet.");
    add (output);
}

```



Action Listeners are pieces of code that “watch buttons”. They remember the actionCommands you give them.

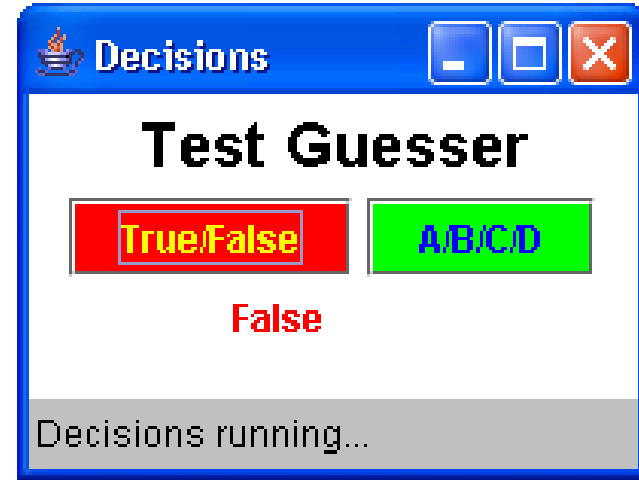
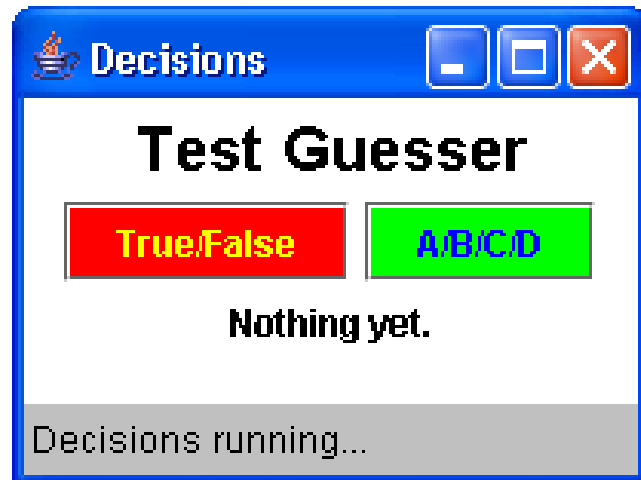
The “Actions”

Part 2

Action Listeners, Action Commands,
Action Events, Action Performed

Global Variables

What changes?

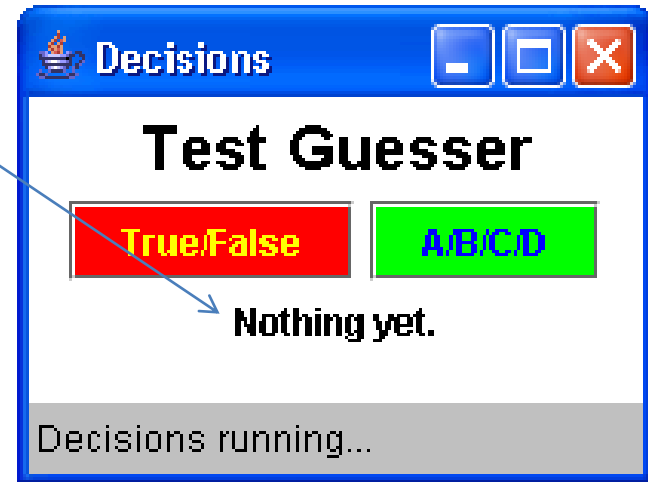


Global variables

- We need to be able to access widgets that change in both `init` AND `actionPerformed`.
- Therefore, they need to be declared **up** a set of brackets – inside the class brackets, so that they are available everywhere.
- This position is called **global**.

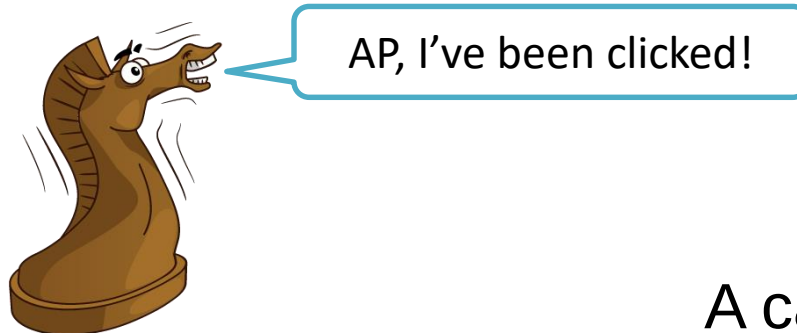
JLabel output;

```
public void init ()  
{  resize (200, 100);  
  
  JLabel title = new JLabel ("Test Guesser");  
  title.setFont (new Font ("Arial", Font.BOLD, 20));  
  add (title);  
  
  JButton tf = new JButton ("True/False");  
  tf.setActionCommand ("opt1");  
  tf.addActionListener (this);  
  tf.setForeground (Color.yellow);  
  tf.setBackground (Color.red);  
  add (tf);  
  
  JButton abcd = new JButton ("A/B/C/D");  
  abcd.setActionCommand ("opt2");  
  abcd.addActionListener (this);  
  abcd.setForeground (Color.blue);  
  abcd.setBackground (Color.green);  
  add (abcd);  
  
  output = new JLabel ("Nothing yet.");  
  add (output);  
}
```



Using ActionPerformed

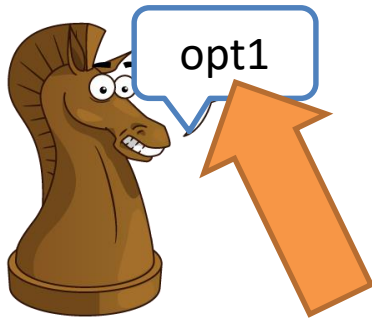
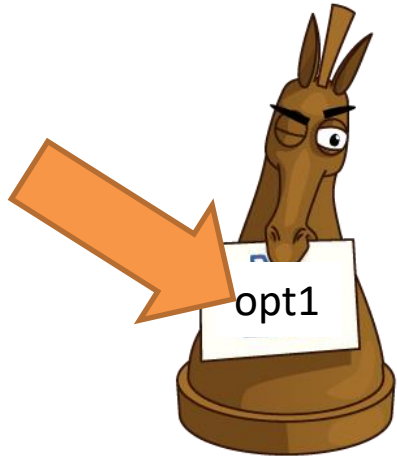
and 'e', the ActionEvent



ActionListener

- Is a piece of code set up to watch a button
- It has an `actionCommand`.
- When a button is pressed, it calls the `ActionPerformed` method and passes it the `ActionCommand`

A card for you to write.



ActionCommand

- Is a STRING
- It is a word that is passed from the ActionListener to the ActionPerformed
- It is used by the AP to determine which button was pressed.
- It is like a secret code word that is passed between the AL and the AP.

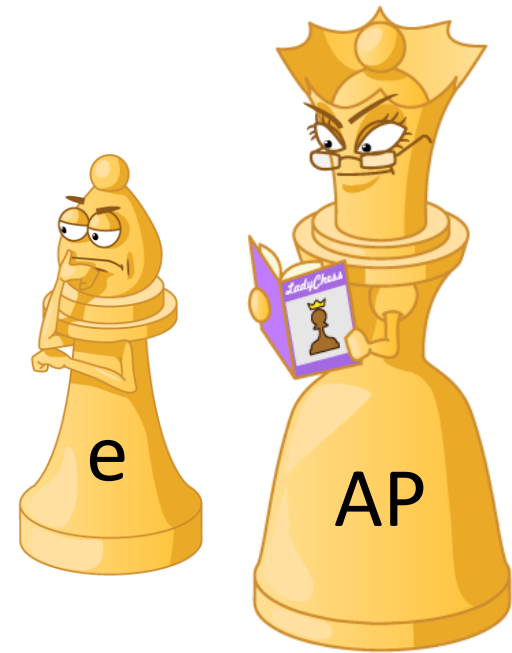
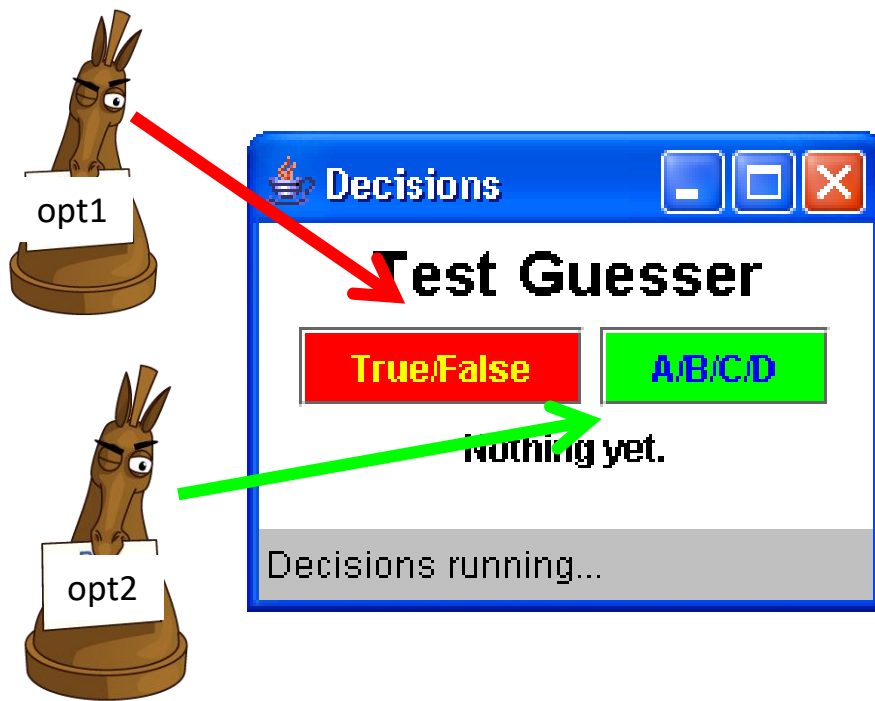
A card for you to write.



ActionPerformed

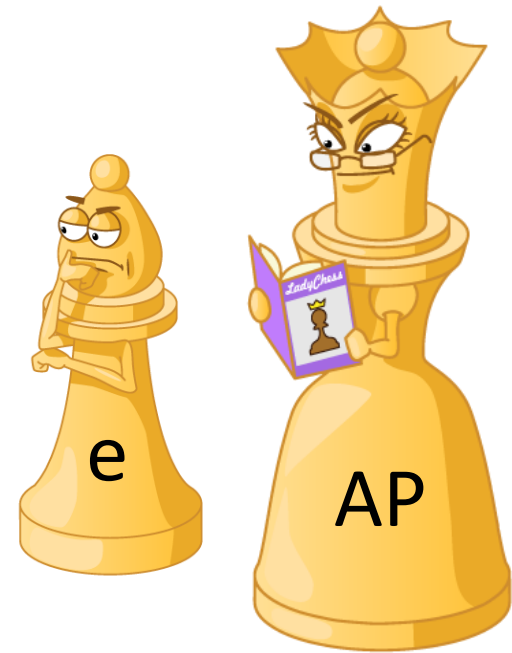
- Is a method
- It is called by the ActionListener when a button is pressed.
- It has code to respond to the user's button click and it is used to update the screen.
- It uses the ActionCommand to figure out which button was pressed to run the appropriate code.

A card for you to write.



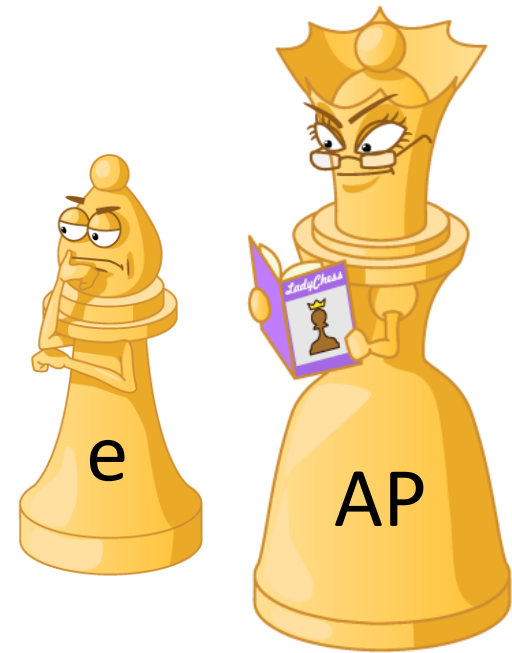
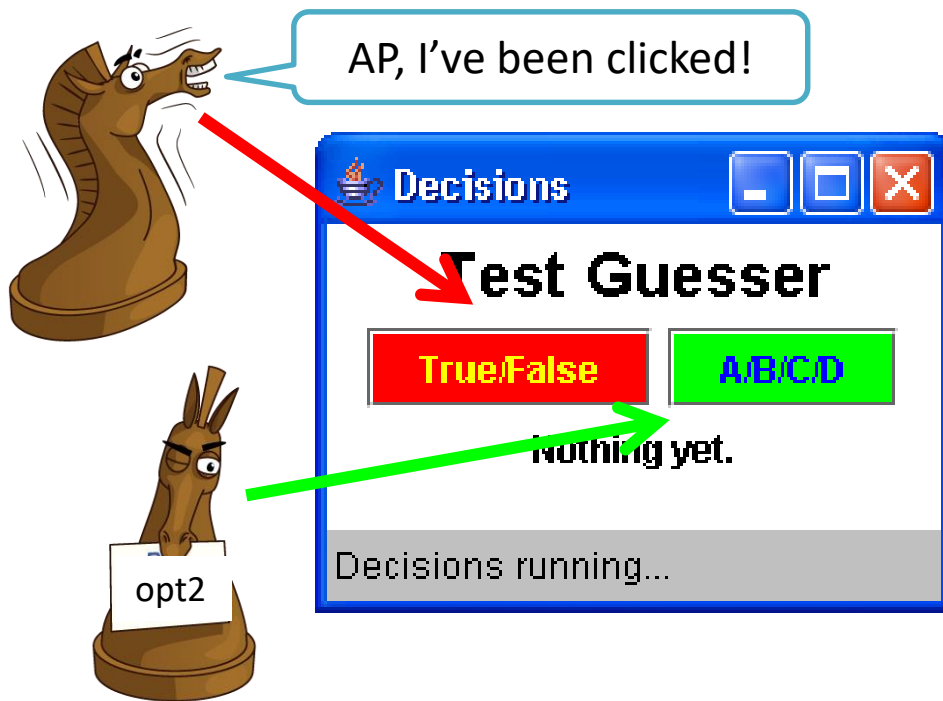
```
public void actionPerformed (ActionEvent e)
{
    if (e.getActionCommand ().equals ("opt1"))
    {
        int num = ((int) (Math.random () * 2)) + 1;
        output.setForeground (Color.red);
        if (num == 1)
            output.setText ("True");
        else
            output.setText ("False");
    }
}
```

```
else // it is opt2
{
    int num = ((int) (Math.random () * 4)) + 1;
    output.setForeground (Color.blue);
    if (num == 1)
        output.setText ("A");
    else if (num == 2)
        output.setText ("B");
    else if (num == 3)
        output.setText ("C");
    else
        output.setText ("D");
}
```



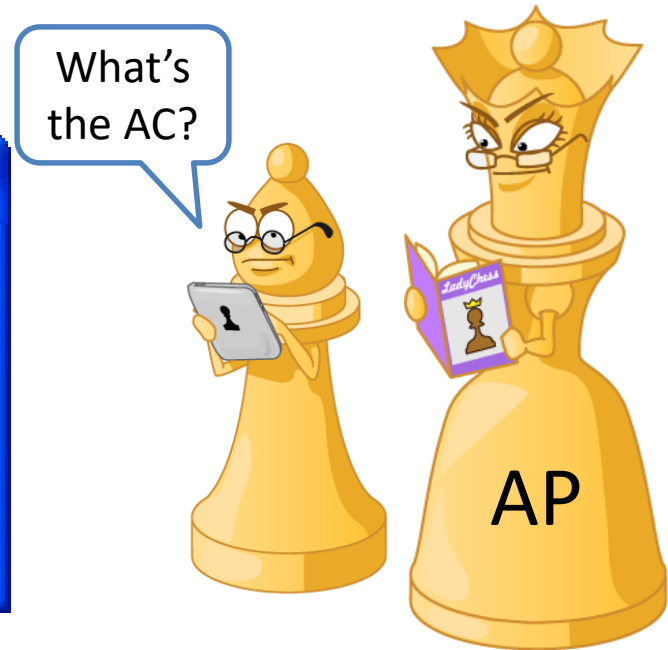
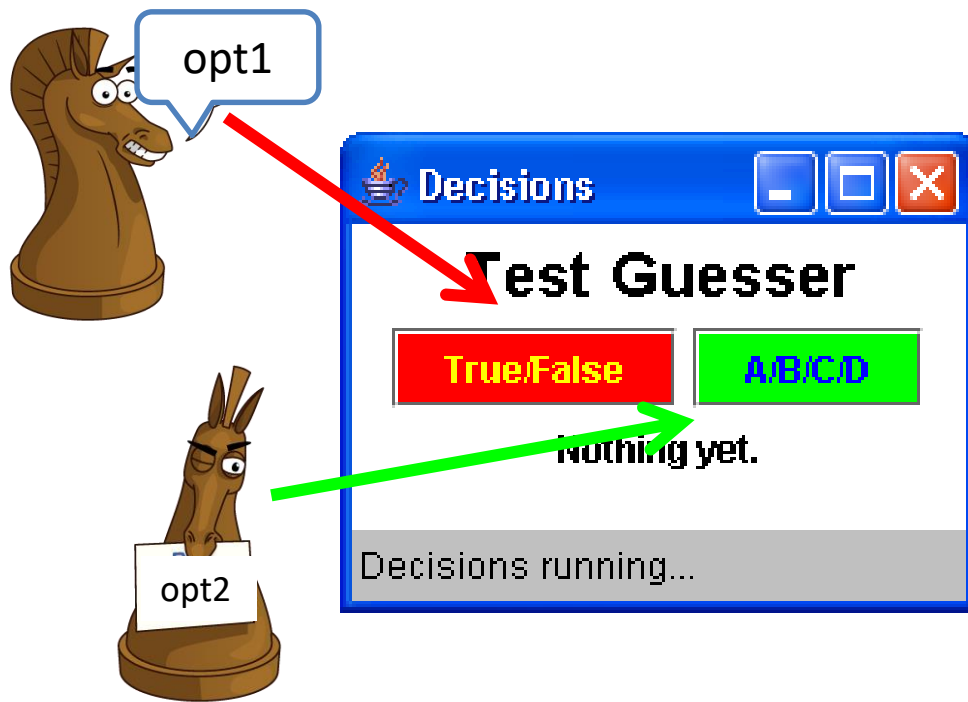
```
public void actionPerformed(ActionEvent e)
{
    if (e.getActionCommand().equals("opt1"))
    {
        int num = ((int) (Math.random () * 2)) + 1;
        output.setText (Integer.toString (num));
        if (num == 1)
            output.setForeground (Color.blue);
        else
            output.setForeground (Color.red);
    }
}
```

```
else // it is opt2
{
    int num = ((int) (Math.random () * 4)) + 1;
    output.setForeground (Color.blue);
    if (num == 1)
        output.setText ("A");
    else if (num == 2)
        output.setText ("B");
    else if (num == 3)
        output.setText ("C");
    else
        output.setText ("D");
}
```



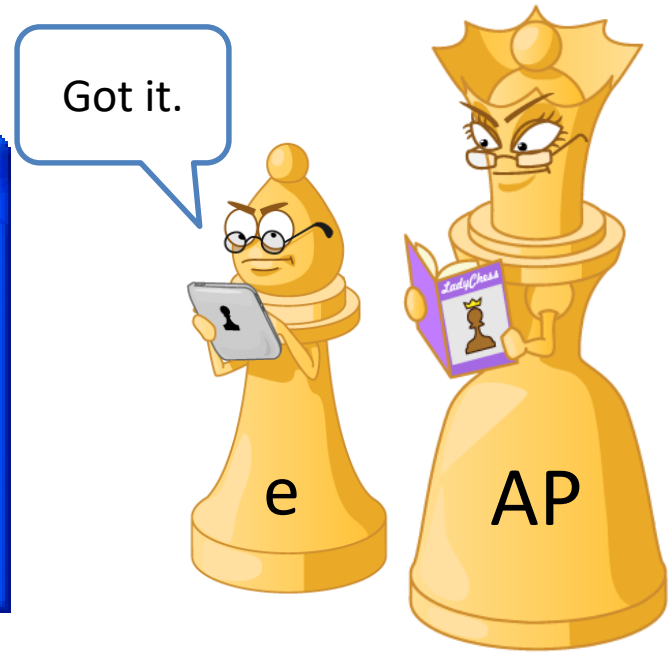
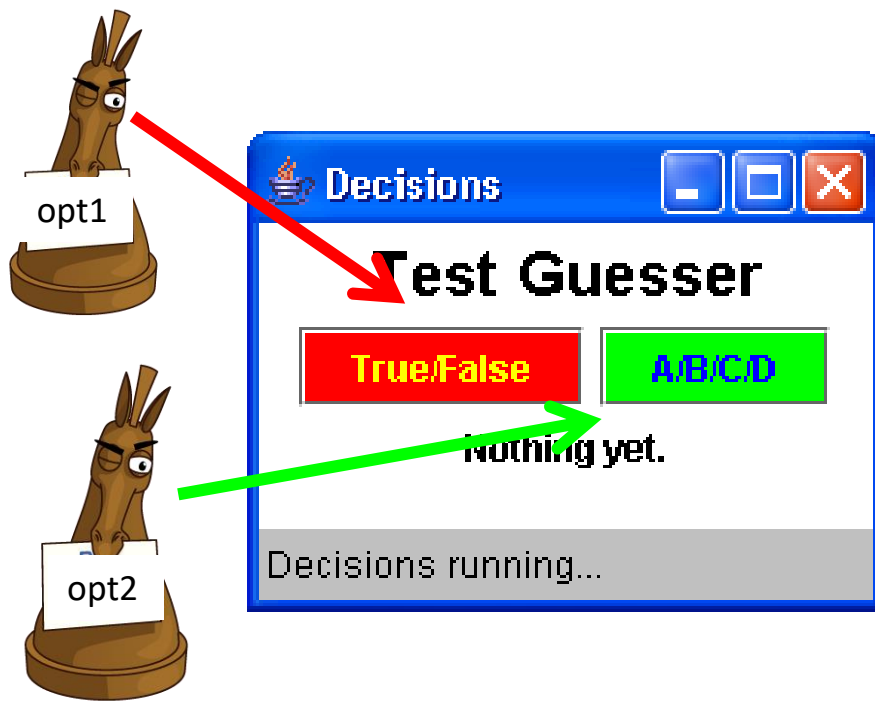
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        int num = ((int) (Math.random () * 2)) + 1;
        output.setForeground (Color.red);
        if (num == 1)
            output.setText ("True");
        else
            output.setText ("False");
    }
}
```

```
else // it is opt2
{
    int num = ((int) (Math.random () * 4)) + 1;
    output.setForeground (Color.blue);
    if (num == 1)
        output.setText ("A");
    else if (num == 2)
        output.setText ("B");
    else if (num == 3)
        output.setText ("C");
    else
        output.setText ("D");
}
```



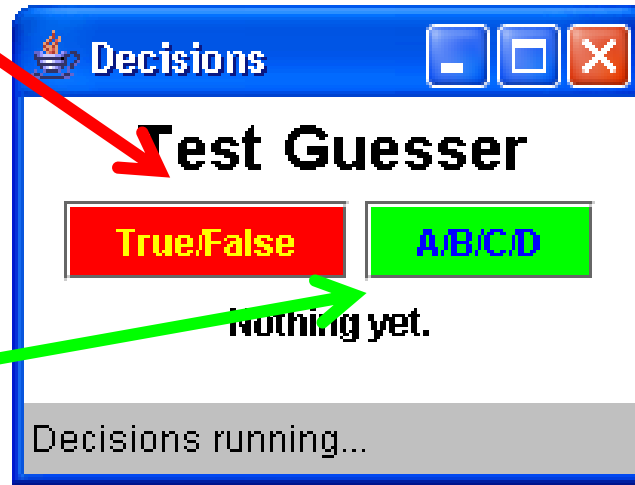
```
public void actionPerformed (ActionEvent e)
{
    if (e.getActionCommand ().equals ("opt1"))
    {
        int num = ((int) (Math.random () * 2)) + 1;
        output.setForeground (Color.red);
        if (num == 1)
            output.setText ("True");
        else
            output.setText ("False");
    }
}
```

```
else // it is opt2
{
    int num = ((int) (Math.random () * 4)) + 1;
    output.setForeground (Color.blue);
    if (num == 1)
        output.setText ("A");
    else if (num == 2)
        output.setText ("B");
    else if (num == 3)
        output.setText ("C");
    else
        output.setText ("D");
}
```



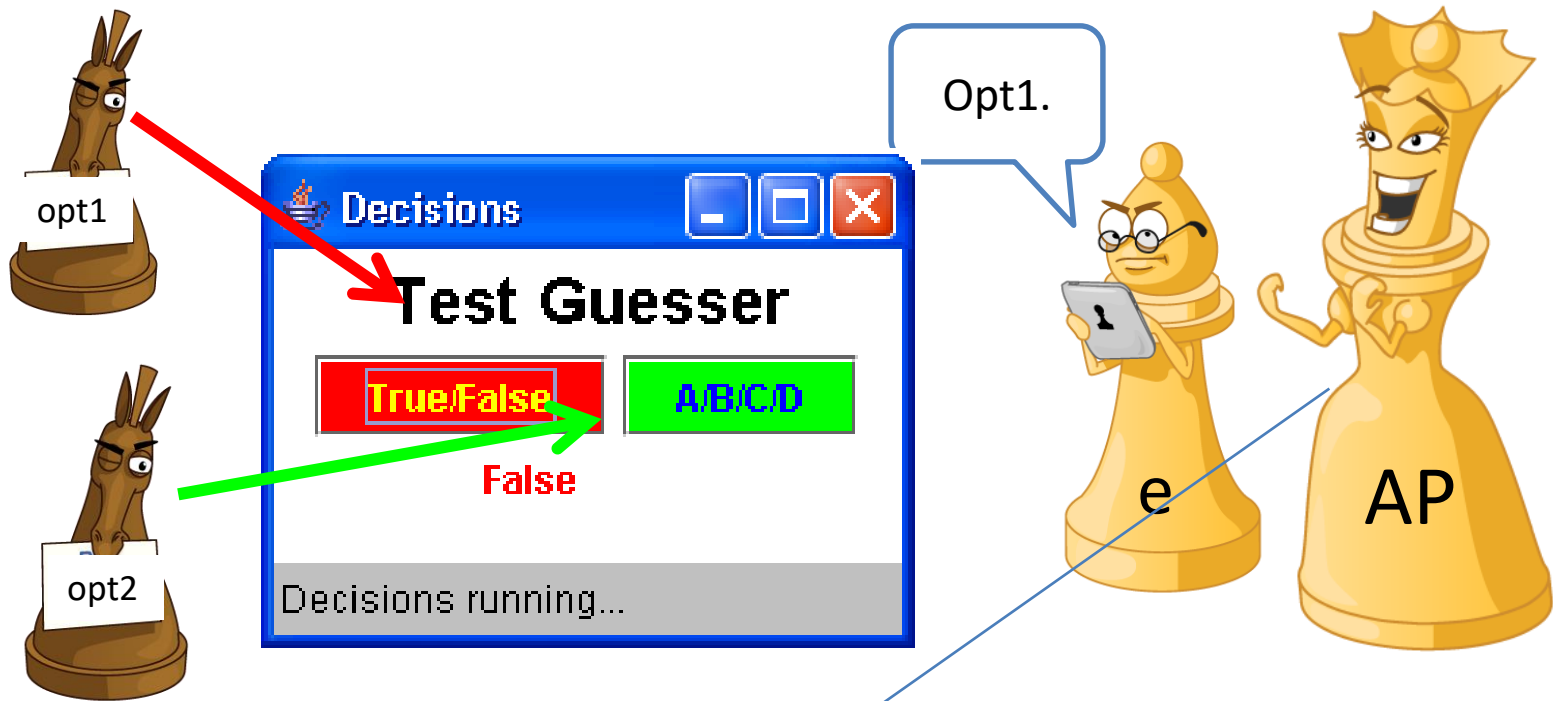
```
public void actionPerformed (ActionEvent e)
{
    if (e.getActionCommand ().equals ("opt1"))
    {
        int num = ((int) (Math.random () * 2)) + 1;
        output.setForeground (Color.red);
        if (num == 1)
            output.setText ("True");
        else
            output.setText ("False");
    }
}
```

```
else // it is opt2
{
    int num = ((int) (Math.random () * 4)) + 1;
    output.setForeground (Color.blue);
    if (num == 1)
        output.setText ("A");
    else if (num == 2)
        output.setText ("B");
    else if (num == 3)
        output.setText ("C");
    else
        output.setText ("D");
}
```



```
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        if (num == 1)
            output.setText ("True");
        else
            output.setText ("False");
    }
}
```

```
else // it is opt2
{
    int num = ((int) (Math.random () * 4)) + 1;
    output.setForeground (Color.blue);
    if (num == 1)
        output.setText ("A");
    else if (num == 2)
        output.setText ("B");
    else if (num == 3)
        output.setText ("C");
    else
        output.setText ("D");
}
```



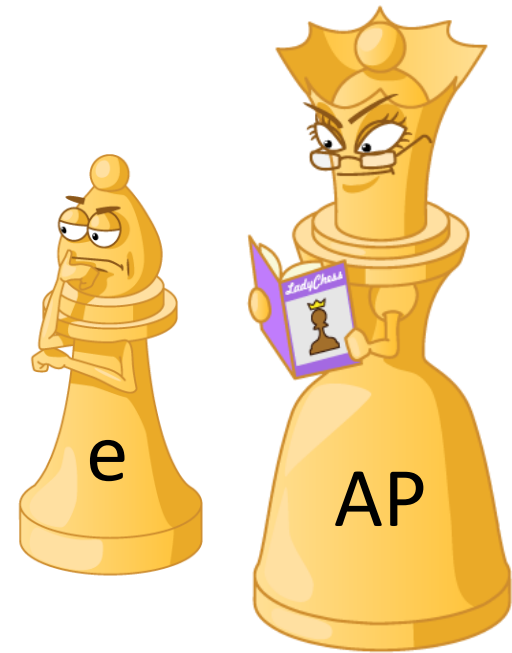
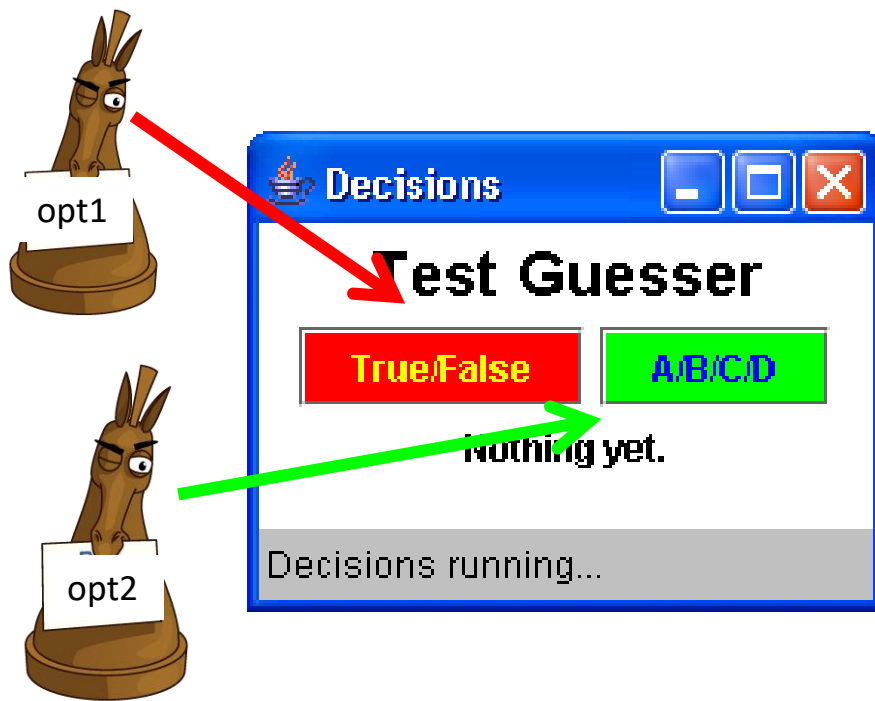
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{
    if (e.getActionCommand ().equals ("opt1"))
    {
        int num = ((int) (Math.random () * 2)) + 1;
        output.setForeground (Color.red);
        if (num == 1)
            output.setText ("True");
        else
            output.setText ("False");
    }

    else // it is opt2
    {
        int num = ((int) (Math.random () * 4)) + 1;
        output.setForeground (Color.blue);
        if (num == 1)
            output.setText ("A");
        else if (num == 2)
            output.setText ("B");
        else if (num == 3)
            output.setText ("C");
        else
            output.setText ("D");
    }
}

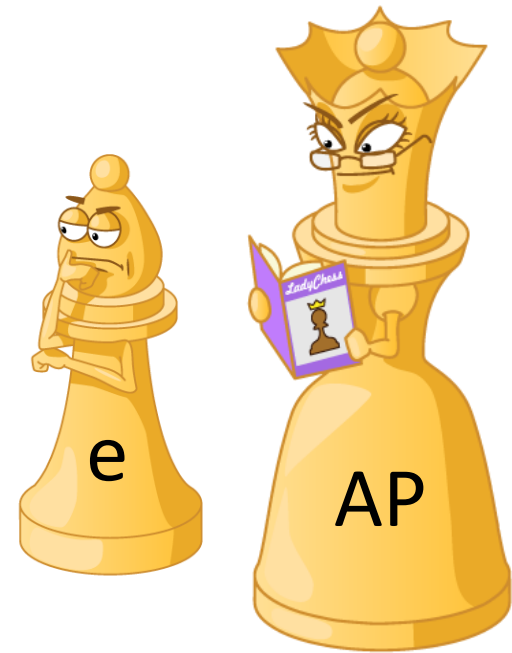
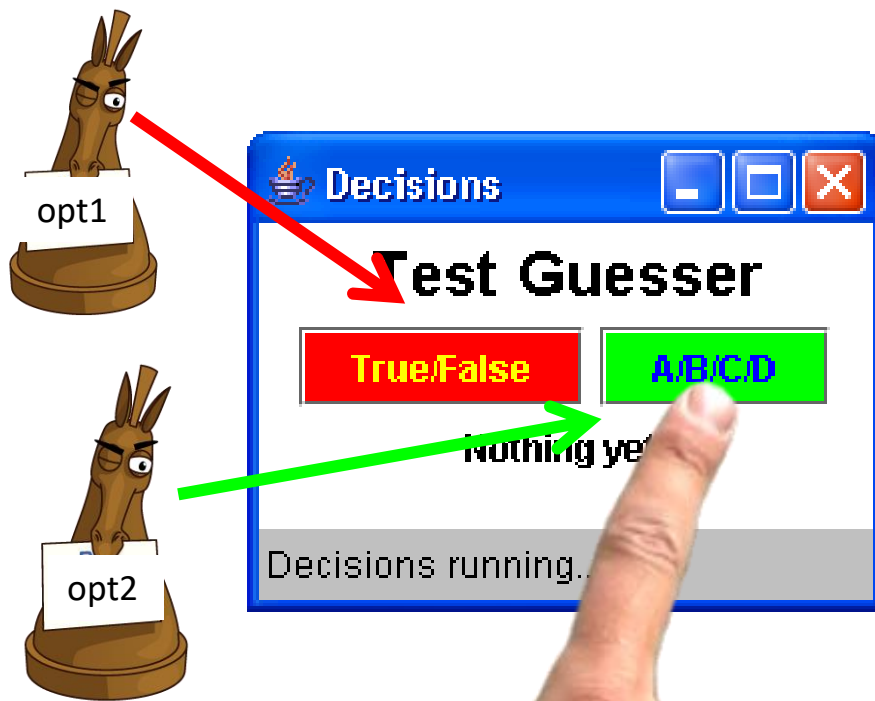
```

A second example.



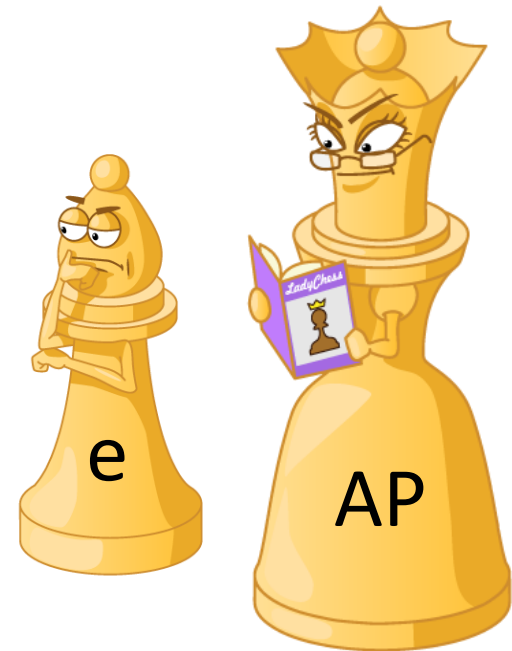
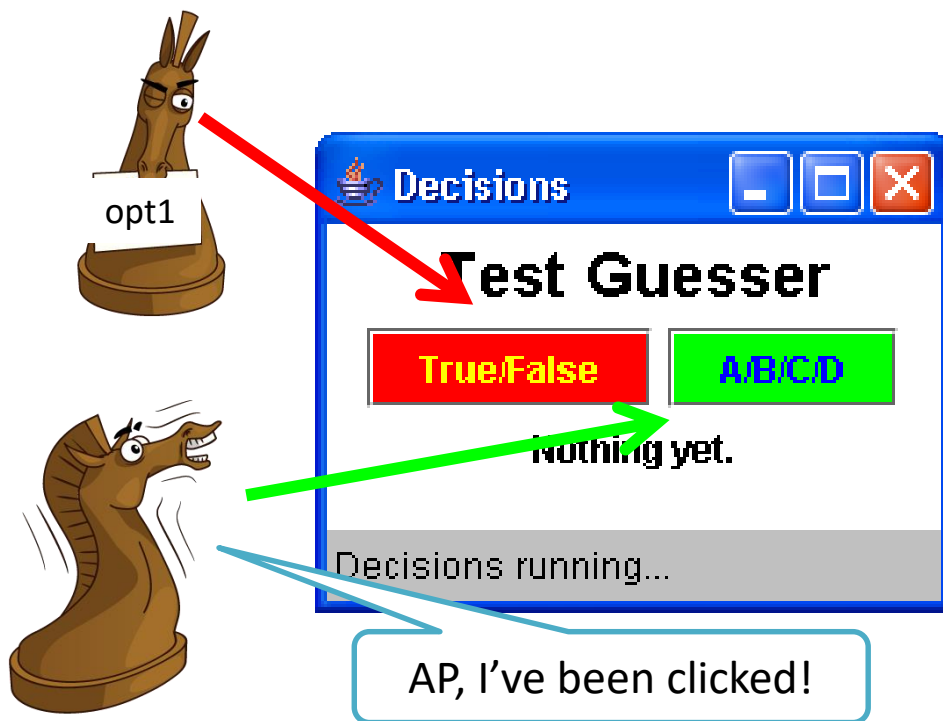
```
public void actionPerformed (ActionEvent e)
{
    if (e.getActionCommand ().equals ("opt1"))
    {
        int num = ((int) (Math.random () * 2)) + 1;
        output.setForeground (Color.red);
        if (num == 1)
            output.setText ("True");
        else
            output.setText ("False");
    }
}
```

```
else // it is opt2
{
    int num = ((int) (Math.random () * 4)) + 1;
    output.setForeground (Color.blue);
    if (num == 1)
        output.setText ("A");
    else if (num == 2)
        output.setText ("B");
    else if (num == 3)
        output.setText ("C");
    else
        output.setText ("D");
}
```



```
public void actionPerformed (ActionEvent e)
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        if (num == 1)
            output.setText ("True");
        else
            output.setText ("False");
    }
}
```

```
else // it is opt2
{
    int num = ((int) (Math.random () * 4)) + 1;
    output.setForeground (Color.blue);
    if (num == 1)
        output.setText ("A");
    else if (num == 2)
        output.setText ("B");
    else if (num == 3)
        output.setText ("C");
    else
        output.setText ("D");
}
```



```

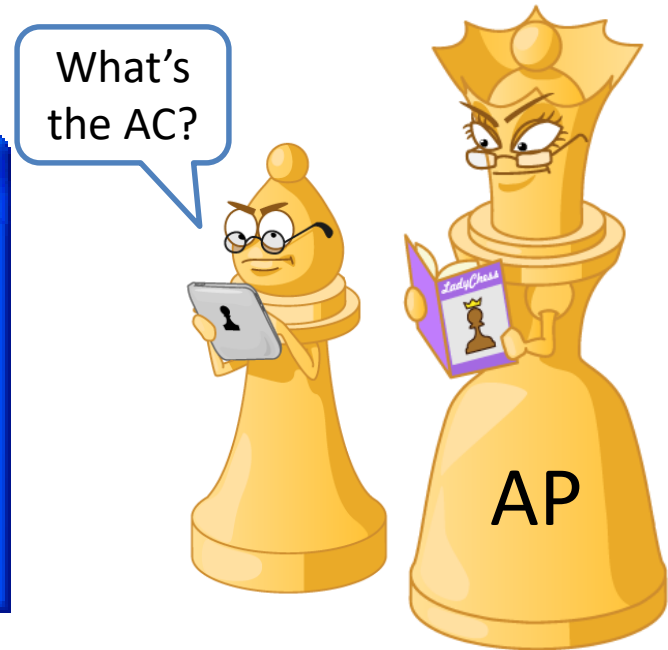
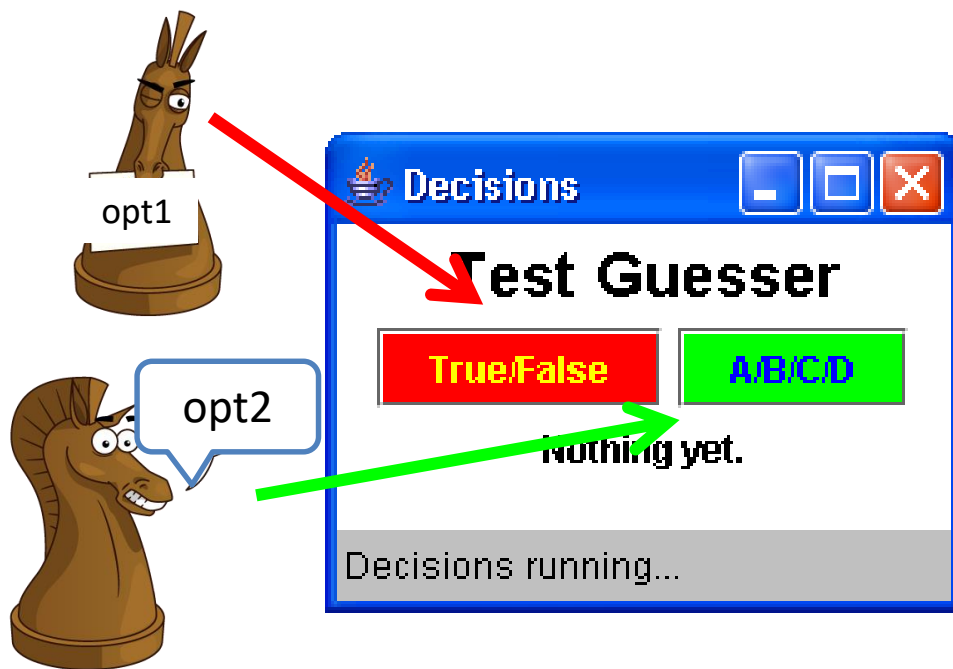
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        if (num == 1)
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        else
            output.setText ("False");
    }
}

```

```

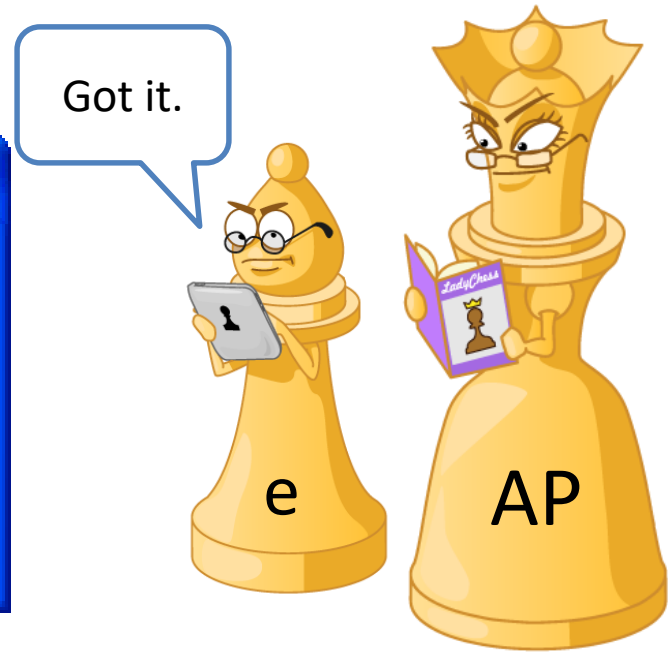
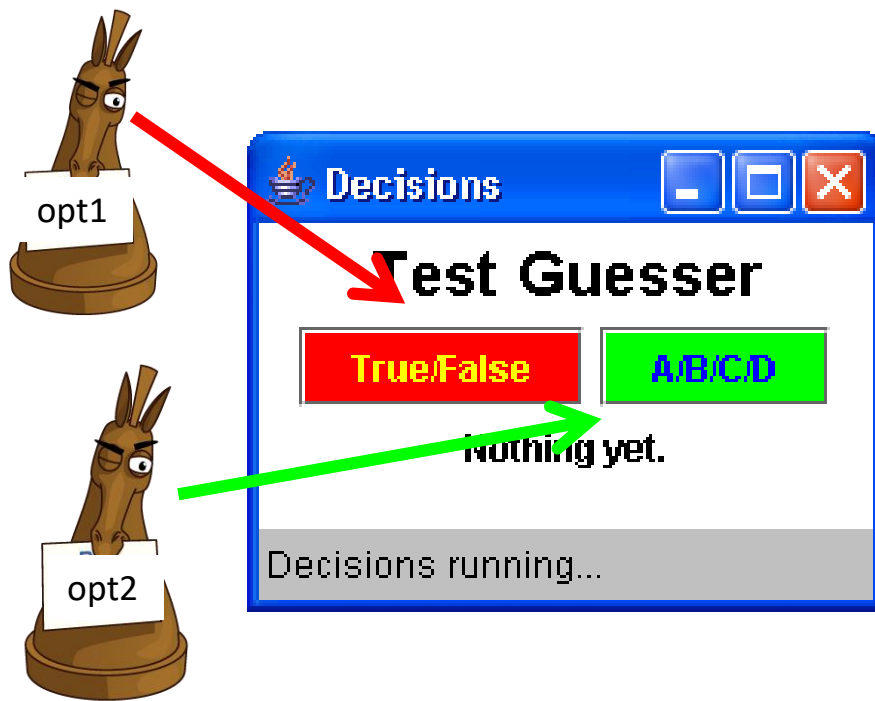
else // it is opt2
{
    int num = ((int) (Math.random () * 4)) + 1;
    output.setForeground (Color.blue);
    if (num == 1)
        output.setText ("A");
    else if (num == 2)
        output.setText ("B");
    else if (num == 3)
        output.setText ("C");
    else
        output.setText ("D");
}

```



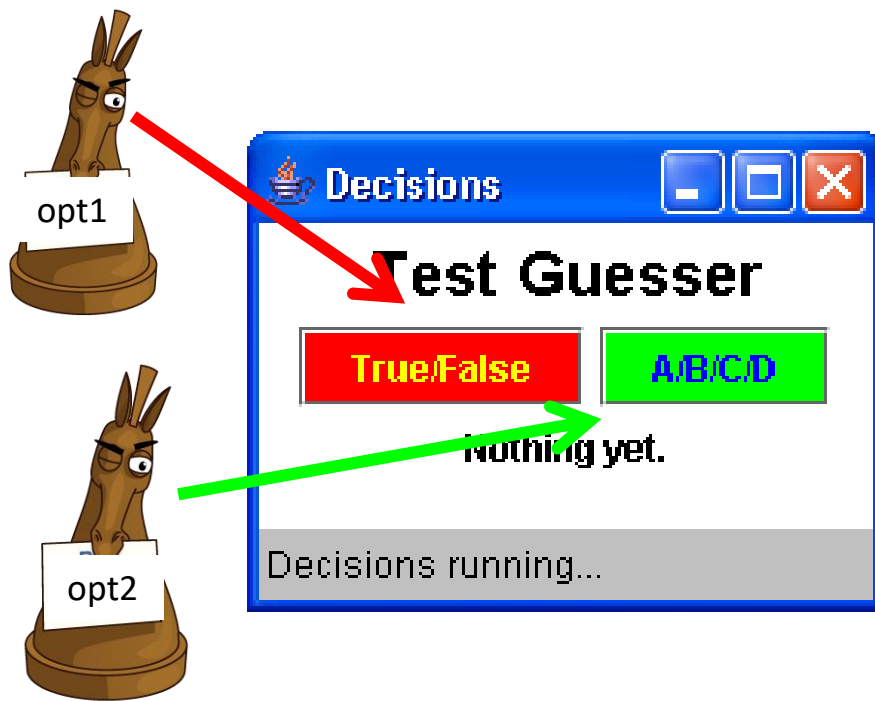
```
public void actionPerformed (ActionEvent e)
{
    if (e.getActionCommand ().equals ("opt1"))
    {
        int num = ((int) (Math.random () * 2)) + 1;
        output.setForeground (Color.red);
        if (num == 1)
            output.setText ("True");
        else
            output.setText ("False");
    }
}
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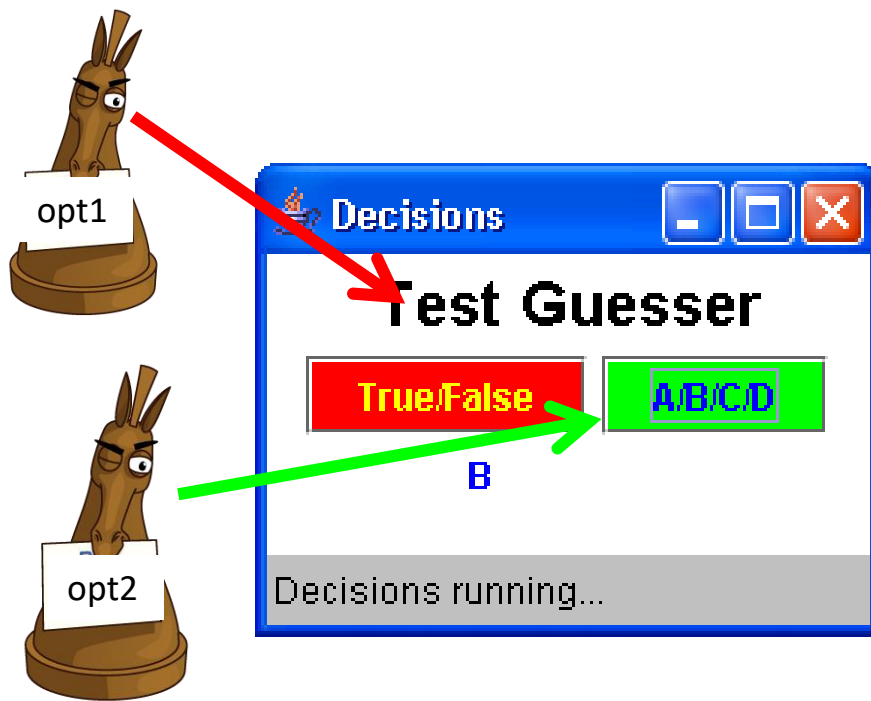
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