



PGR 101 Objektorientert Programmering 2
Vår 2017

Forelesning 25.4.17

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Armstrong var her



Du er her



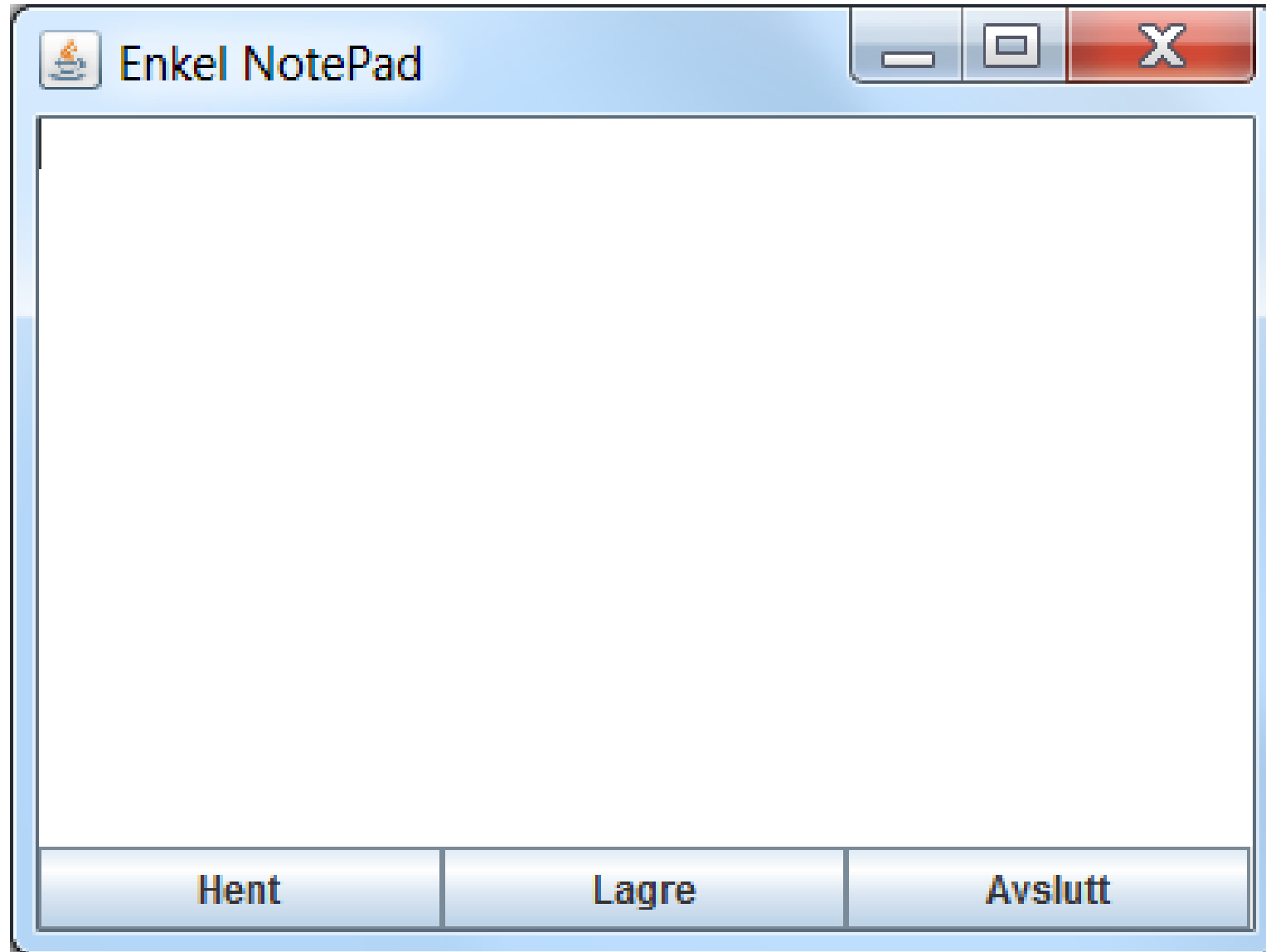
Dagens agenda

- Mer filbehandling
- Anonym indre klasse
- JScrollPane
- JTextArea-metoder
 - setLineWrap
 - setWrapStyleWord
- Menyer

Huskelapp-applikasjonen

Last ned/åpne Note.java (fra forrige gang!)

Huskelapp-applikasjonen



Enkel NotePad

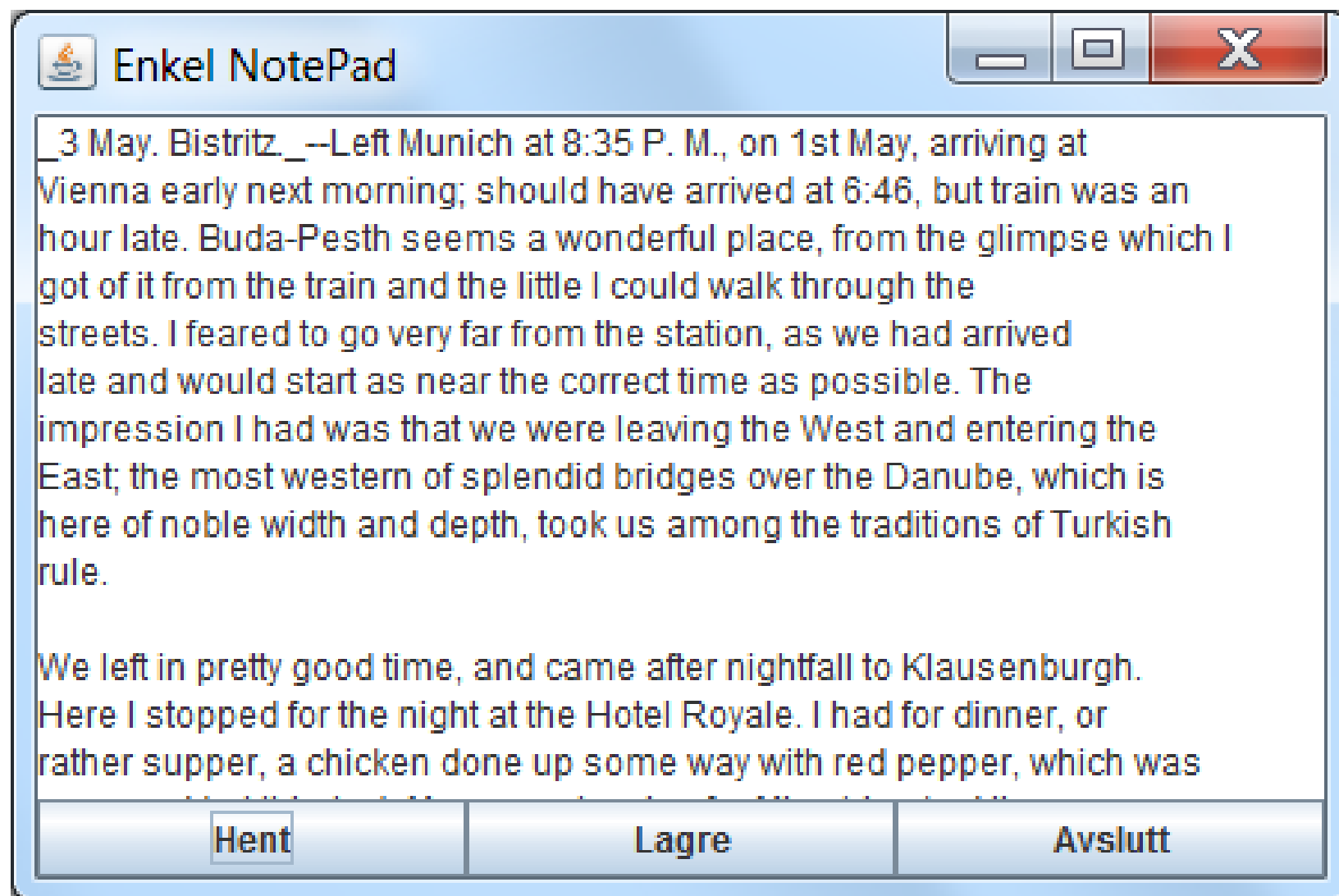
Kan også brukes som en vanlig tekst-editor.

Skrive tekst

Lagre

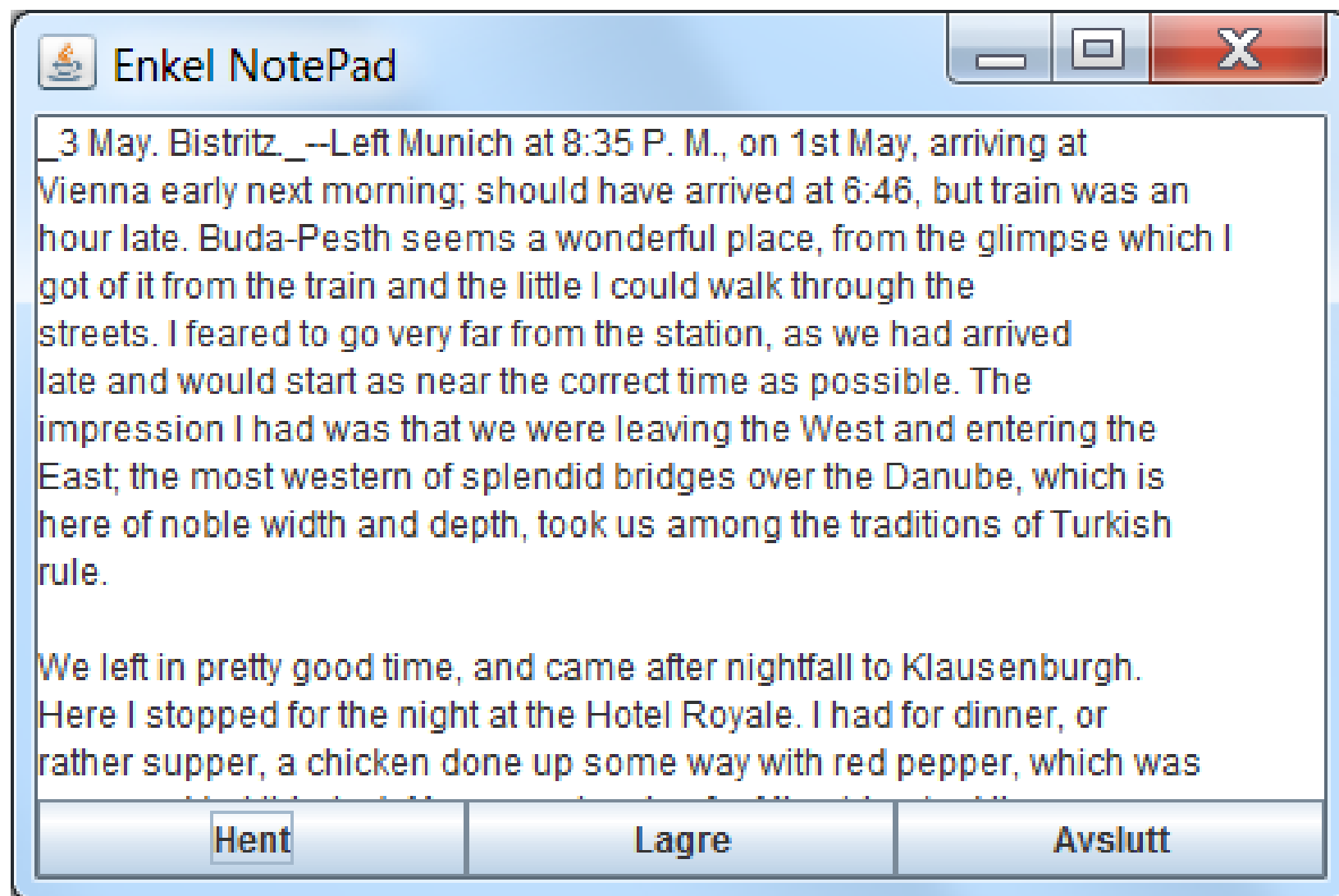
Hente

Enkel NotePad



Her er en lang tekst hentet.

Enkel NotePad



Teksten har for mange linjer til å få plass i vinduet!

Løsning – JScrollPane

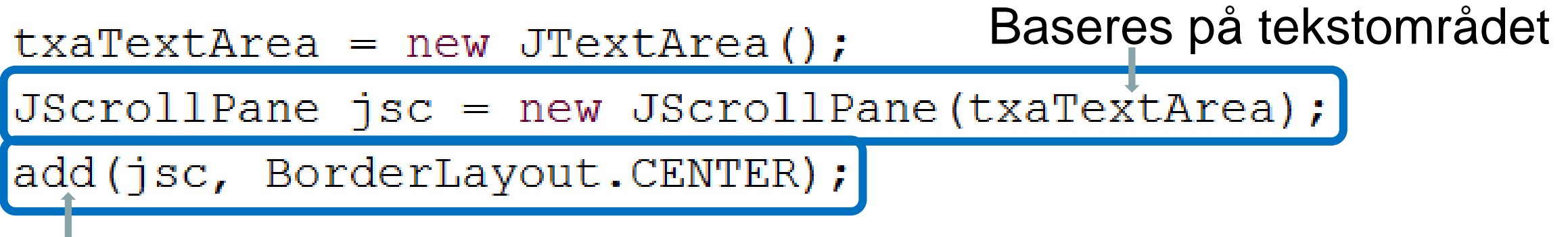
Slik er det:

```
txaTextArea = new JTextArea();  
add(txaTextArea, BorderLayout.CENTER);
```

Legger til et rullefelt:

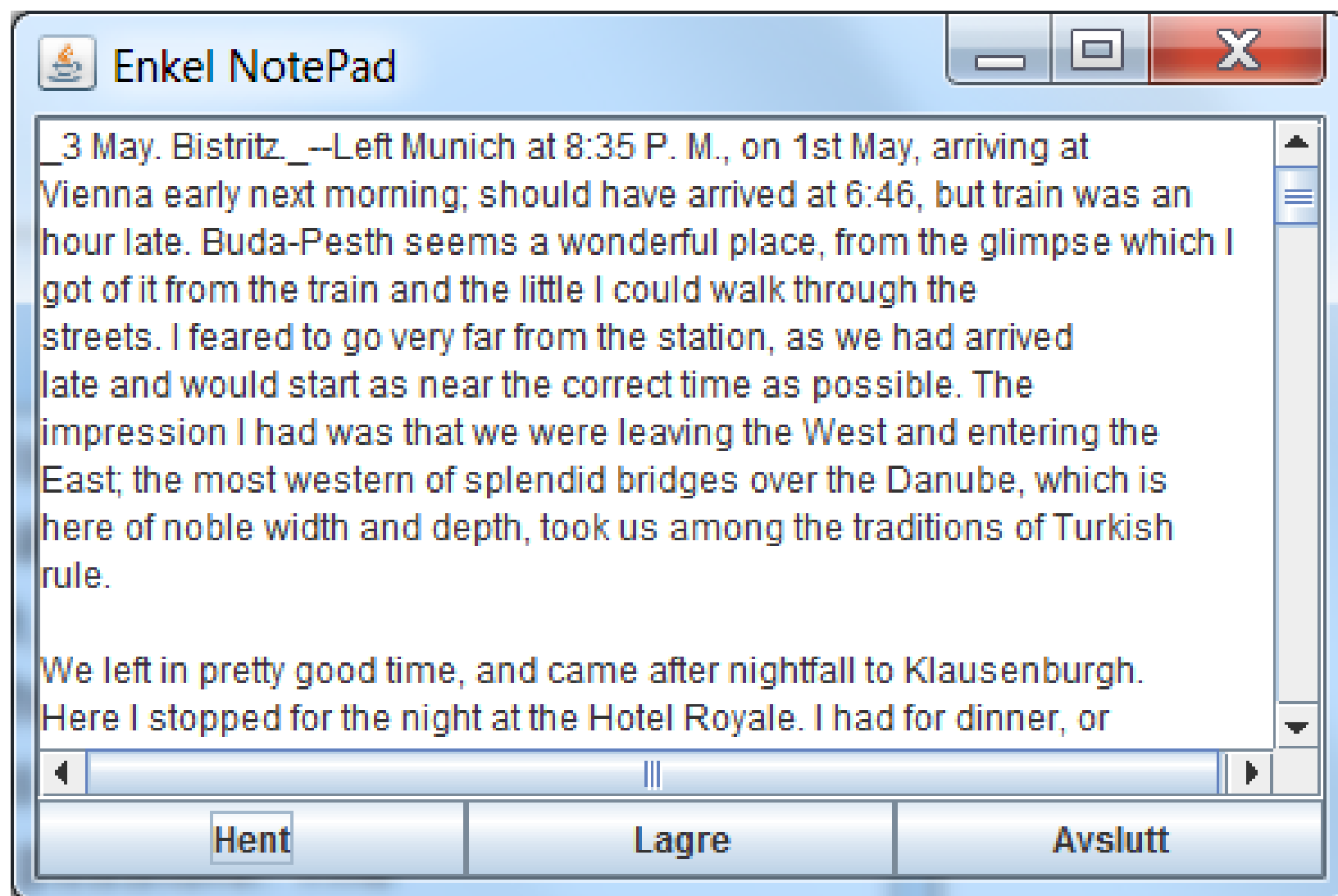
```
txaTextArea = new JTextArea();  
JScrollPane jsc = new JScrollPane(txaTextArea);  
add(jsc, BorderLayout.CENTER);
```

Baseres på tekstområdet



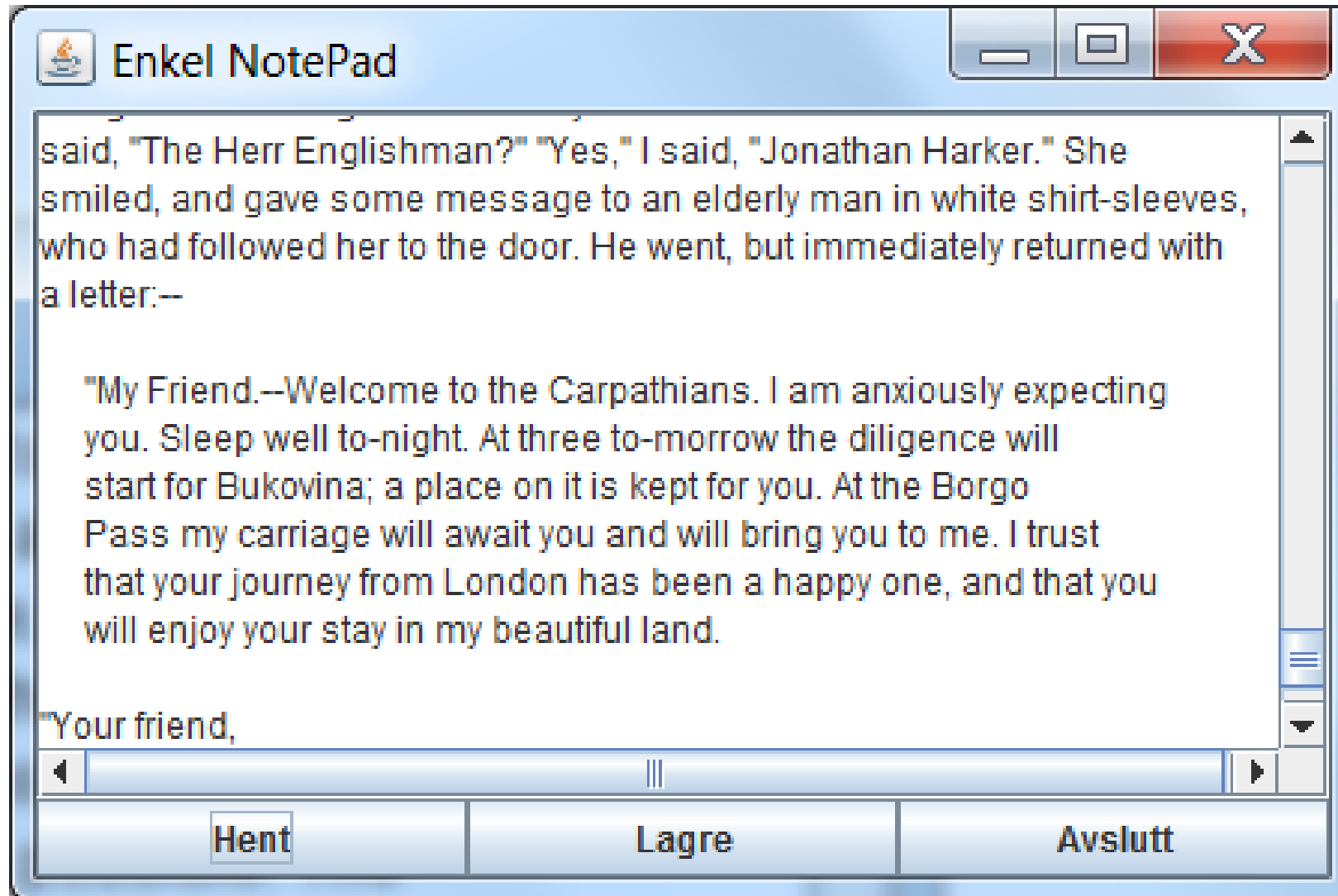
Rullefeltet (ikke tekstområdet) legges i vinduet!

Enkel NotePad



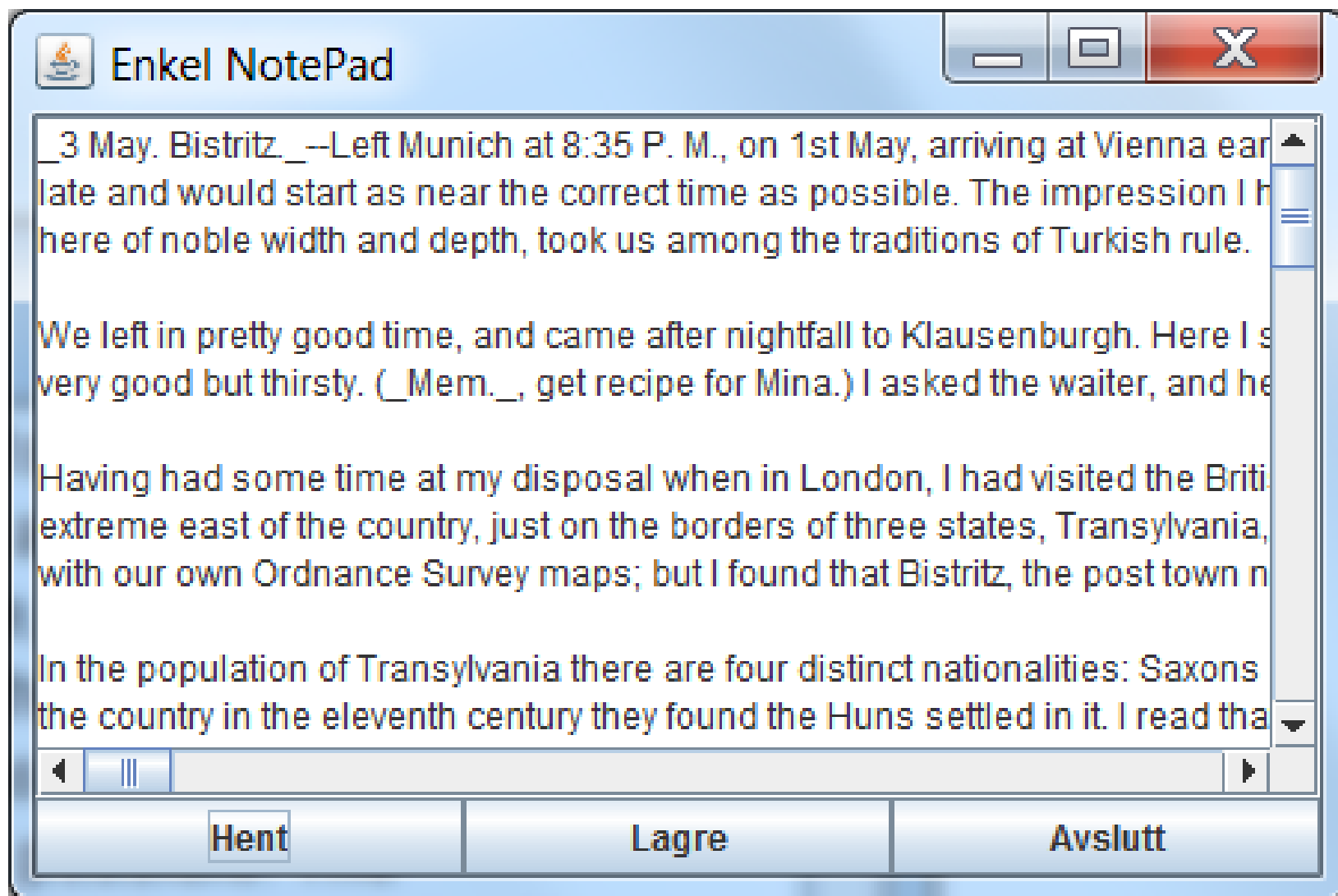
Teksten kan nå "rulles" opp og ned!

Enkel NotePad



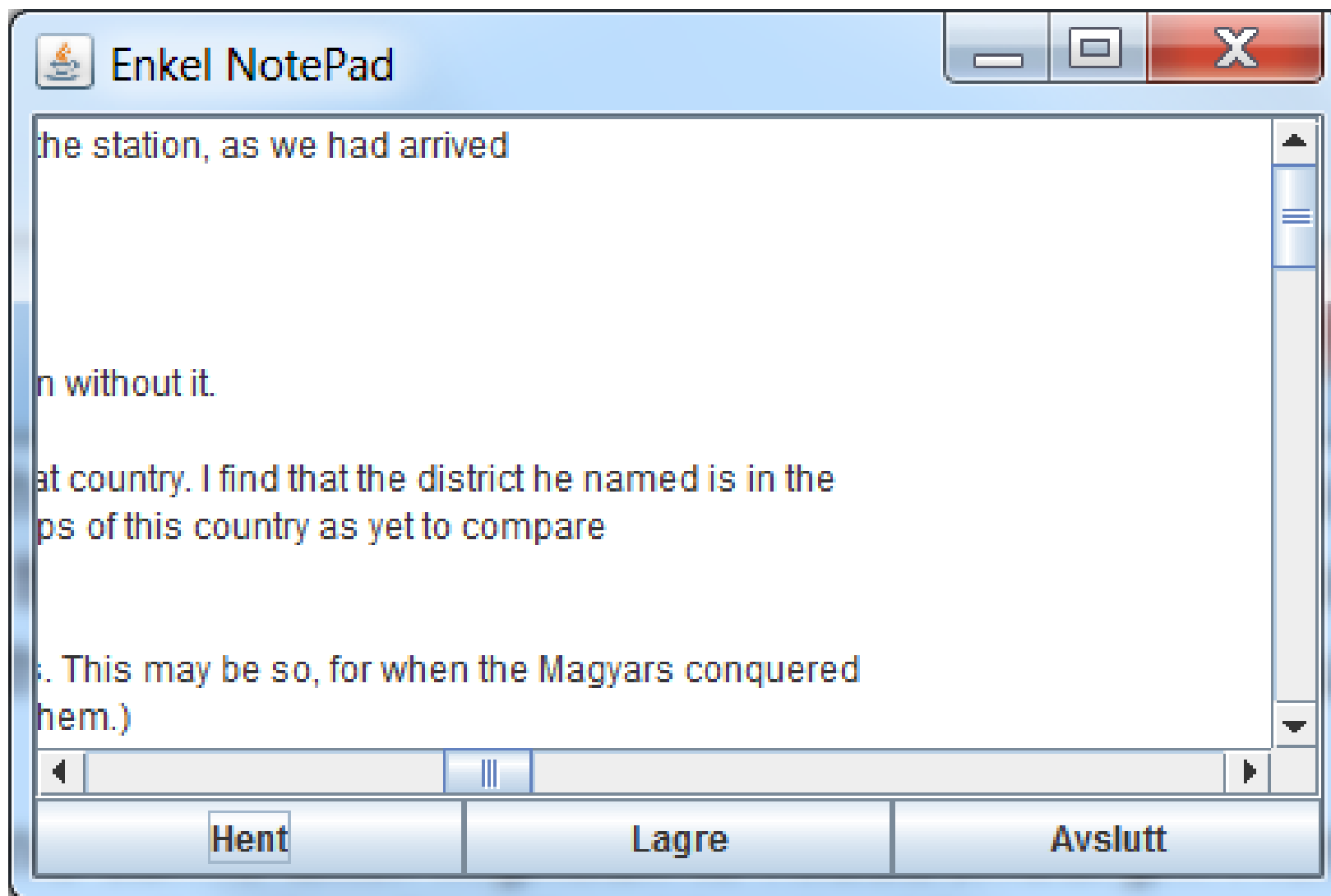
Teksten kan nå "rulles" opp og ned!

Enkel NotePad



Teksten kan også "rulles" fram og tilbake hvis linjene er for lange!

Enkel NotePad



Teksten kan også "rulles" fram og tilbake hvis linjene er for lange!

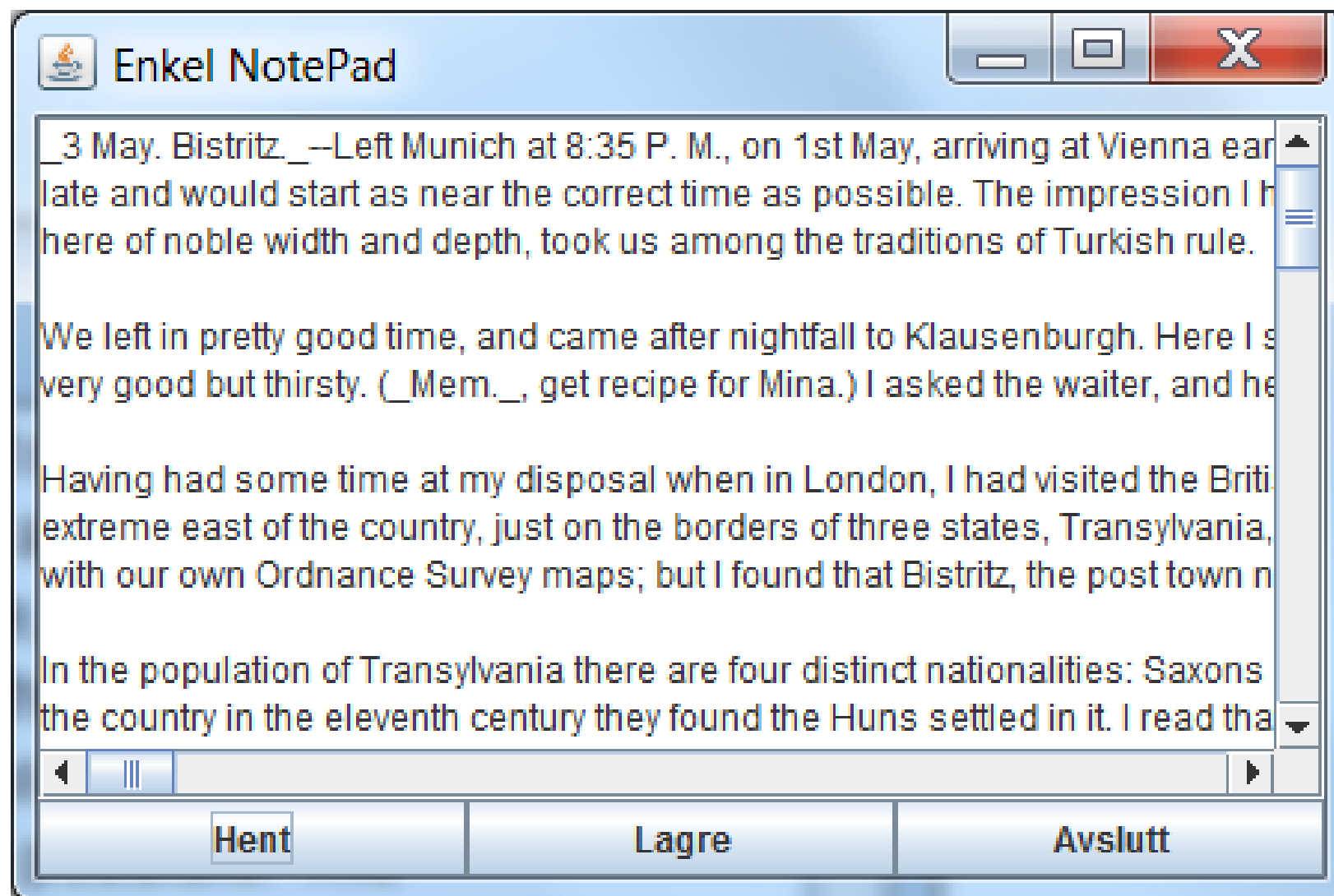
Enkel NotePad

Eller bedre – "brekker" linjene:

```
txaTextArea.setLineWrap(true);
```

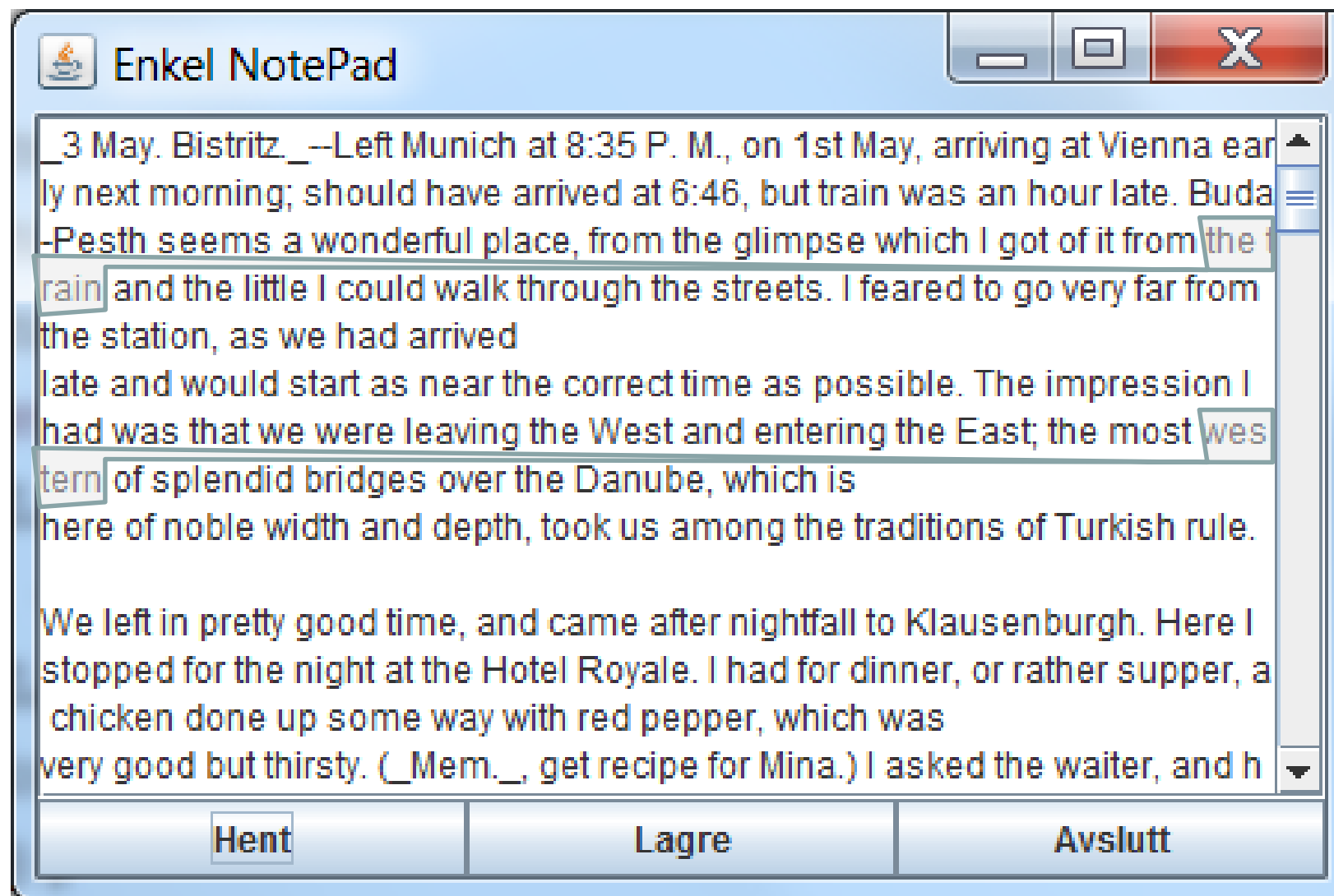
Enkel NotePad

Eller bedre...



Enkel NotePad

"Brekker" linjene:



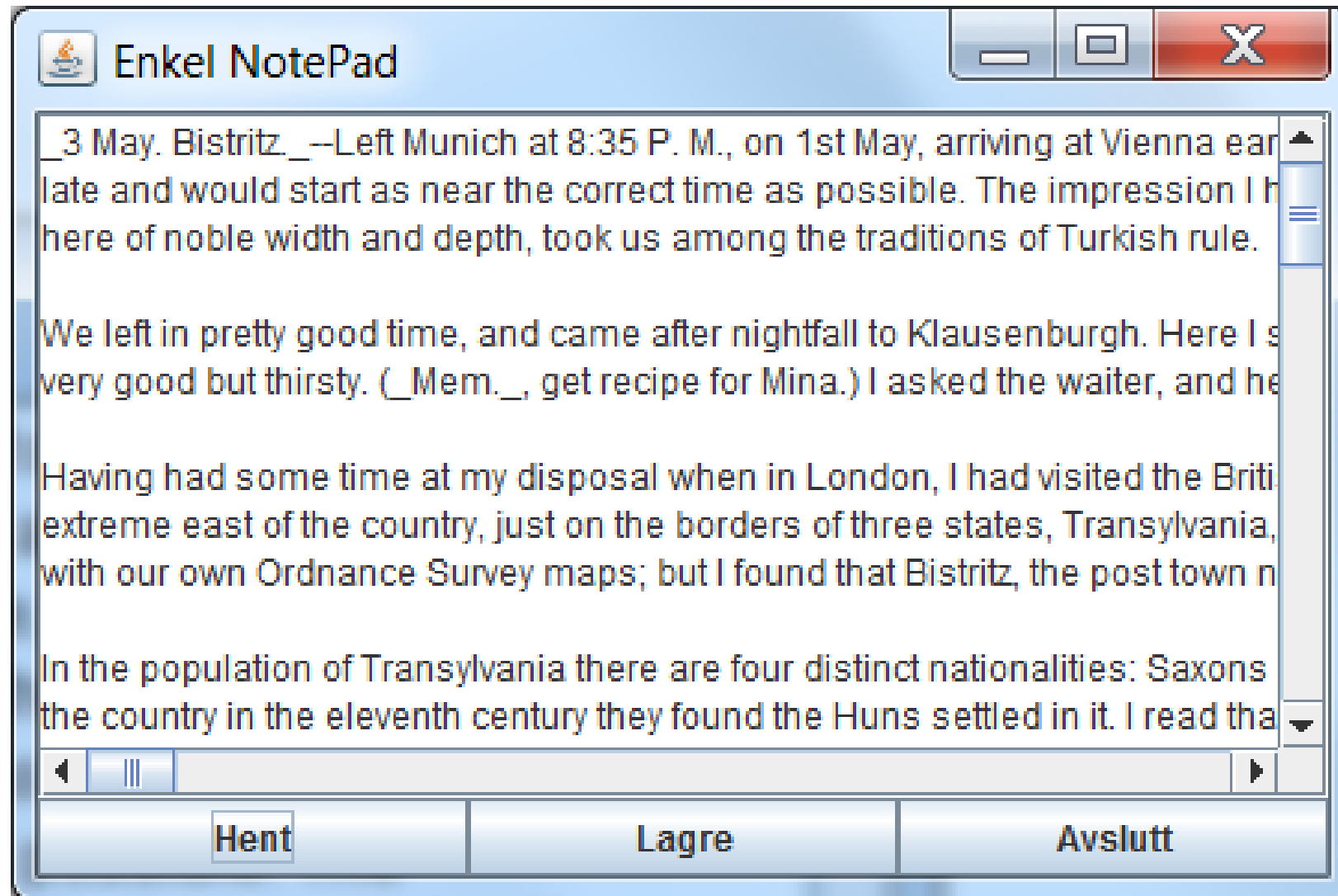
Enkel NotePad

Enda bedre – brykker linjene i forhold til *ord*:

```
txaTextArea.setWrapStyleWord(true);
```

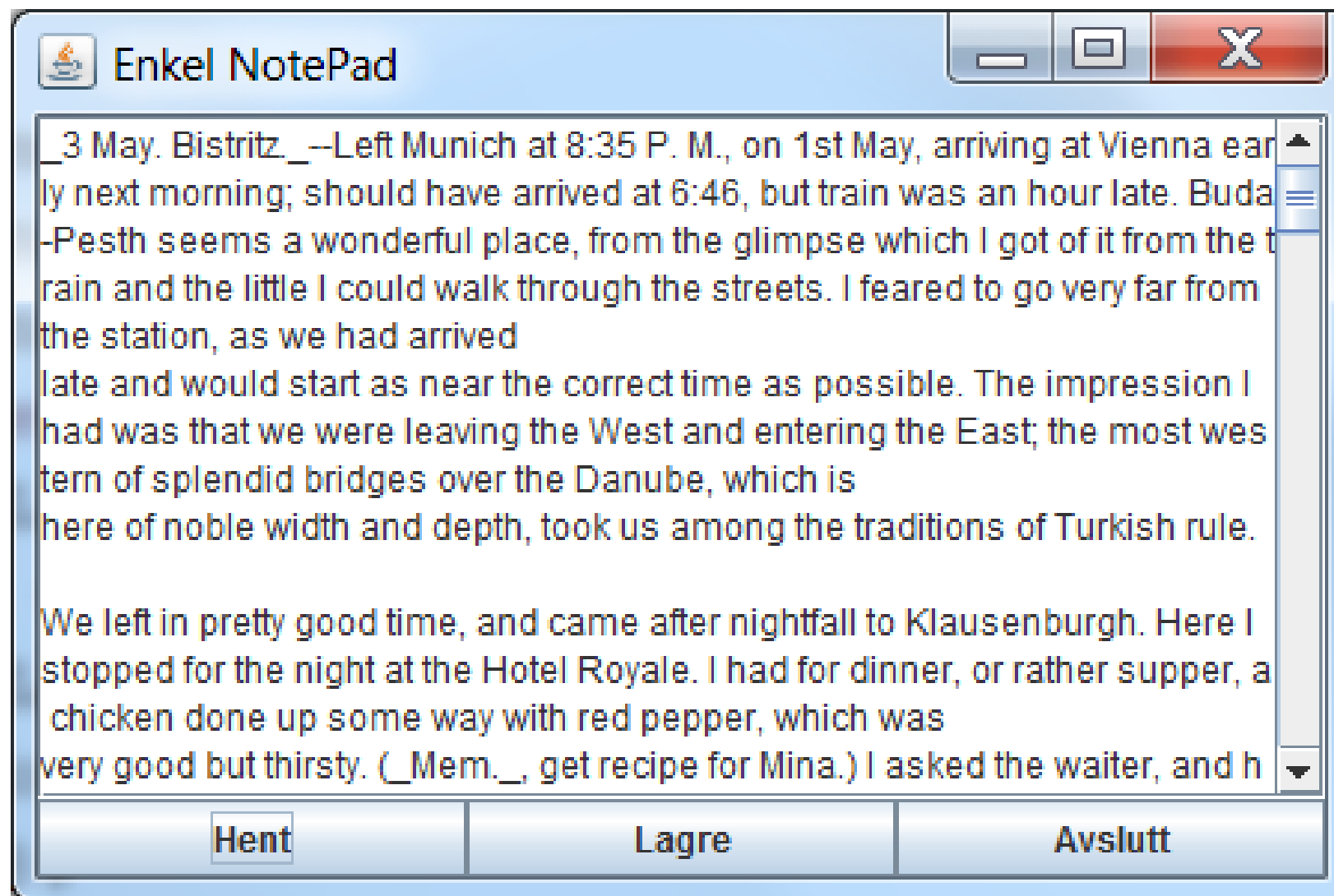
Enkel NotePad

Brekker ikke linjene (men har rullefelt):



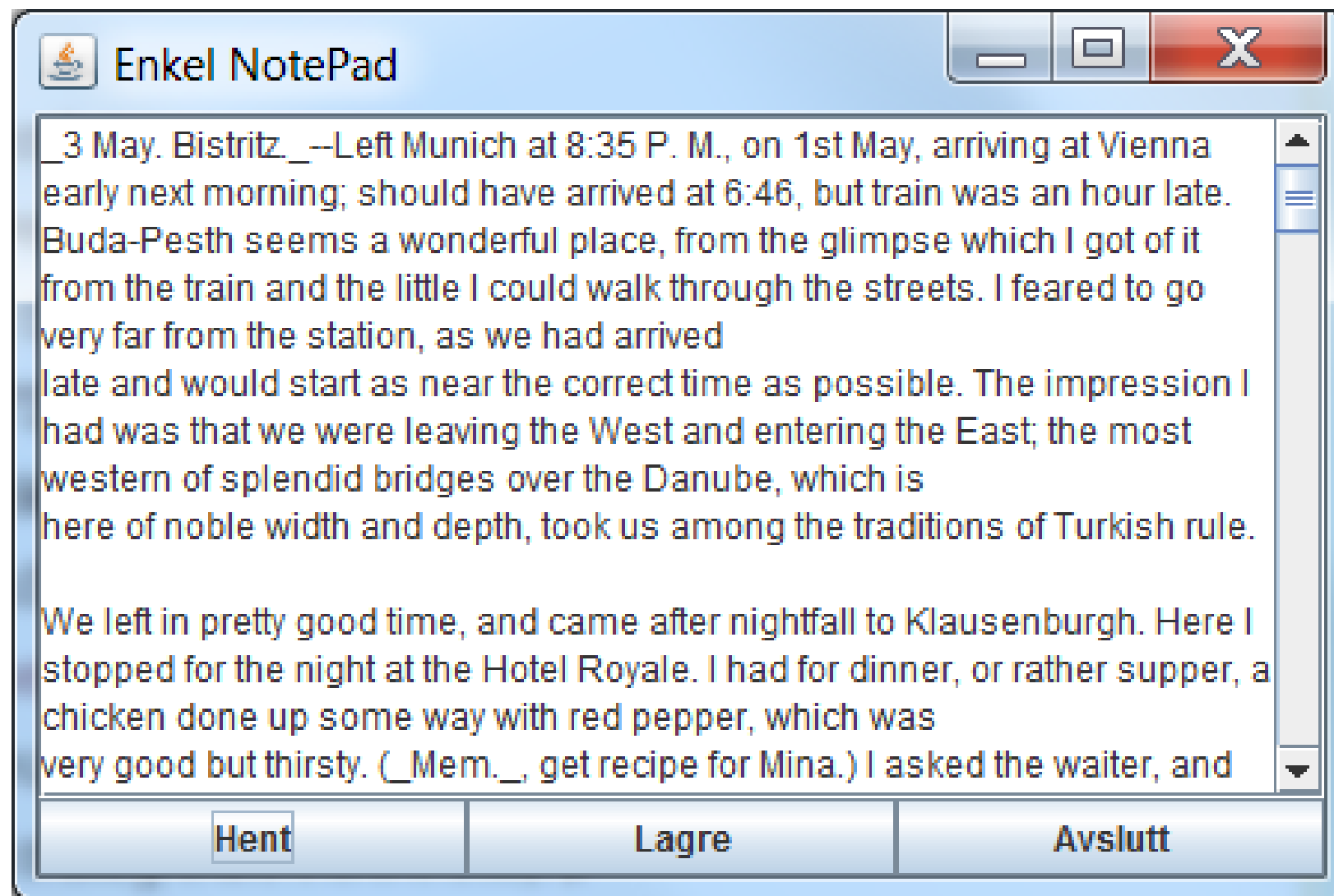
Enkel NotePad

Brekker linjene:



Enkel NotePad

Brekker linjene i forhold til *ord*



JTextArea

`void` **setFont**(Font f)
Sets the current font.

`void` **setLineWrap**(boolean wrap)
Sets the line-wrapping policy of the text area.

`void` **setRows**(int rows)
Sets the number of rows for this TextArea.

`void` **setTabSize**(int size)
Sets the number of characters to expand tabs to.

`void` **setWrapStyleWord**(boolean word)
Sets the style of wrapping used if the text area is wrapping lines

Enkel NotePad

```
import java.awt.*;           //Layout
import java.awt.event.*;     //Action handling
import javax.swing.*;        //GUI-komponenter
import static javax.swing.JOptionPane.*; //Meldingsbokser
import java.io.*;            //Input/output
import java.util.Scanner;    //For lesing av fil
```

Enkel Notepad

```
public class Note extends JFrame
    implements ActionListener {
    private JButton btnOpen;
    private JButton btnSave;
    private JButton btnExit;
    private JTextArea txaTextArea;
```

Enkel NotePad

```
public Note () {  
    super("Enkel NotePad");  
    JPanel pnlSouth =  
        new JPanel(new GridLayout(1, 3));  
    btnOpen = new JButton("Hent");  
    btnSave = new JButton("Lagre");  
    btnExit = new JButton("Avslutt");  
    btnOpen.addActionListener(this);  
    btnSave.addActionListener(this);  
    btnExit.addActionListener( skal se på en alternativ måte!)
```


Enkel Notepad

```
pnlSouth.add(btnOpen);  
pnlSouth.add(btnSave);  
pnlSouth.add(btnExit);  
txaTextArea = new JTextArea();  
txaTextArea.setLineWrap(true);  
txaTextArea.setWrapStyleWord(true);  
JScrollPane jsc = new JScrollPane(txaTextArea);  
add(jsc, BorderLayout.CENTER);  
add(pnlSouth, BorderLayout.SOUTH);  
setSize(450, 300);  
setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);  
setVisible(true);  
}
```

Knytte en lytter til `btnExit`:

Slik har vi gjort det:

```
btnExit.addActionListener(this);
```

Anonym indre klasse

Alternativ måte – oppretter en lytter idet vi knytter den til knappen:

```
btnExit.addActionListener(new ActionListener() {  
    public void actionPerformed(ActionEvent e) {  
        System.exit(0);  
    }  
});
```

Det er praktisk når `actionPerformed` ikke inneholder mye!

```
public void actionPerformed(ActionEvent e){
```

```
Object clicked = e.getSource();
```

```
if (clicked == btnOpen) {
```

```
    txaTextArea.setText("");
```

```
    try{
```

```
        String fileName =
```

```
            showInputDialog(this, "Filnavn");
```

```
        Scanner fileIn =
```

```
            new Scanner(new File(fileName));
```

```
        while (fileIn.hasNext()){
```

```
            String data = fileIn.nextLine();
```

```
            txaTextArea.append(data + "\n");
```

```
        }
```

```
        fileIn.close();
```

```
    }catch (IOException ioex){
```

```
        JOptionPane.showMessageDialog(
```

```
            this, "IO-feil: "
```

```
            + ioex.getMessage());
```

```
    }
```

```
} else
```

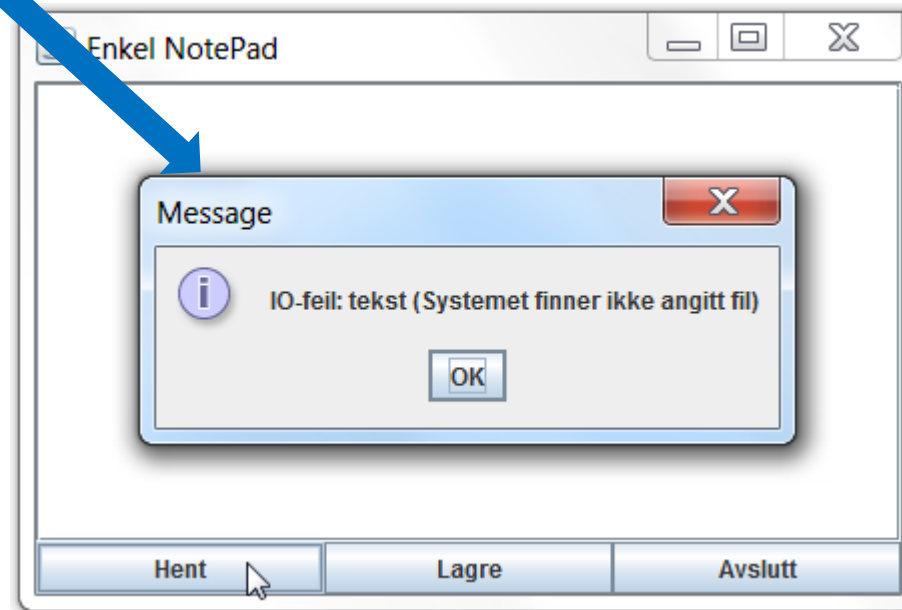
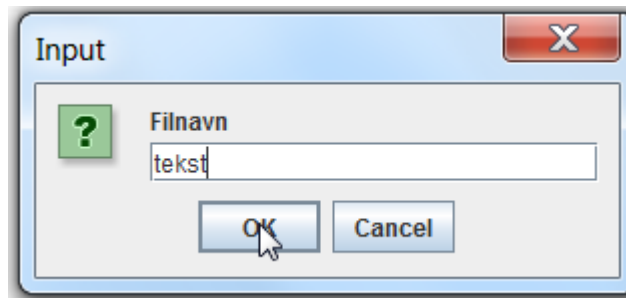
```
if (clicked == btnSave) {
```

actionPerformed
for de to andre
knappene

actionPerformed for de to andre knappene

```
}catch (IOException ioex){  
    JOptionPane.showMessageDialog(  
        this, "IO-feil: "  
        + ioex.getMessage() );  
}
```

Midt i vinduet



Alternativ - anonym indre klasse for de andre knappene

```
btnOpen.addActionListener(new ActionListener() {  
    public void actionPerformed(ActionEvent e) {  
        load();  
    }  
});
```

```
btnSave.addActionListener(new ActionListener() {  
    public void actionPerformed(ActionEvent e) {  
        save();  
    }  
});
```

```
private void load() {
```

```
    txaTextArea.setText("");
```

```
    try{
```

```
        String fileName =
```

```
            showInputDialog(this, "Filnavn");
```

```
        Scanner fileIn =
```

```
            new Scanner(new File(fileName));
```

```
        while (fileIn.hasNext()) {
```

```
            String data = fileIn.nextLine();
```

```
            txaTextArea.append(data + "\n");
```

```
        }
```

```
        fileIn.close();
```

```
    } catch (IOException ioex) {
```

```
        JOptionPane.showMessageDialog(
```

```
            this, "IO-feil: "
```

```
            + ioex.getMessage());
```

```
    }
```

```
}
```

To nye metoder

```
private void save() {
```

```
try{
```

```
    String fileName =
```

```
        showInputDialog(this, "Filnavn");
```

```
    PrintWriter fileOut =
```

```
        new PrintWriter(new File(fileName));
```

```
    fileOut.println(txaTextArea.getText());
```

```
    fileOut.close();
```

```
}catch (IOException ioex){
```

```
    JOptionPane.showMessageDialog(
```

```
        this, "IO-feil: "
```

```
        + ioex.getMessage());
```

```
}
```

```
}
```

To nye metoder

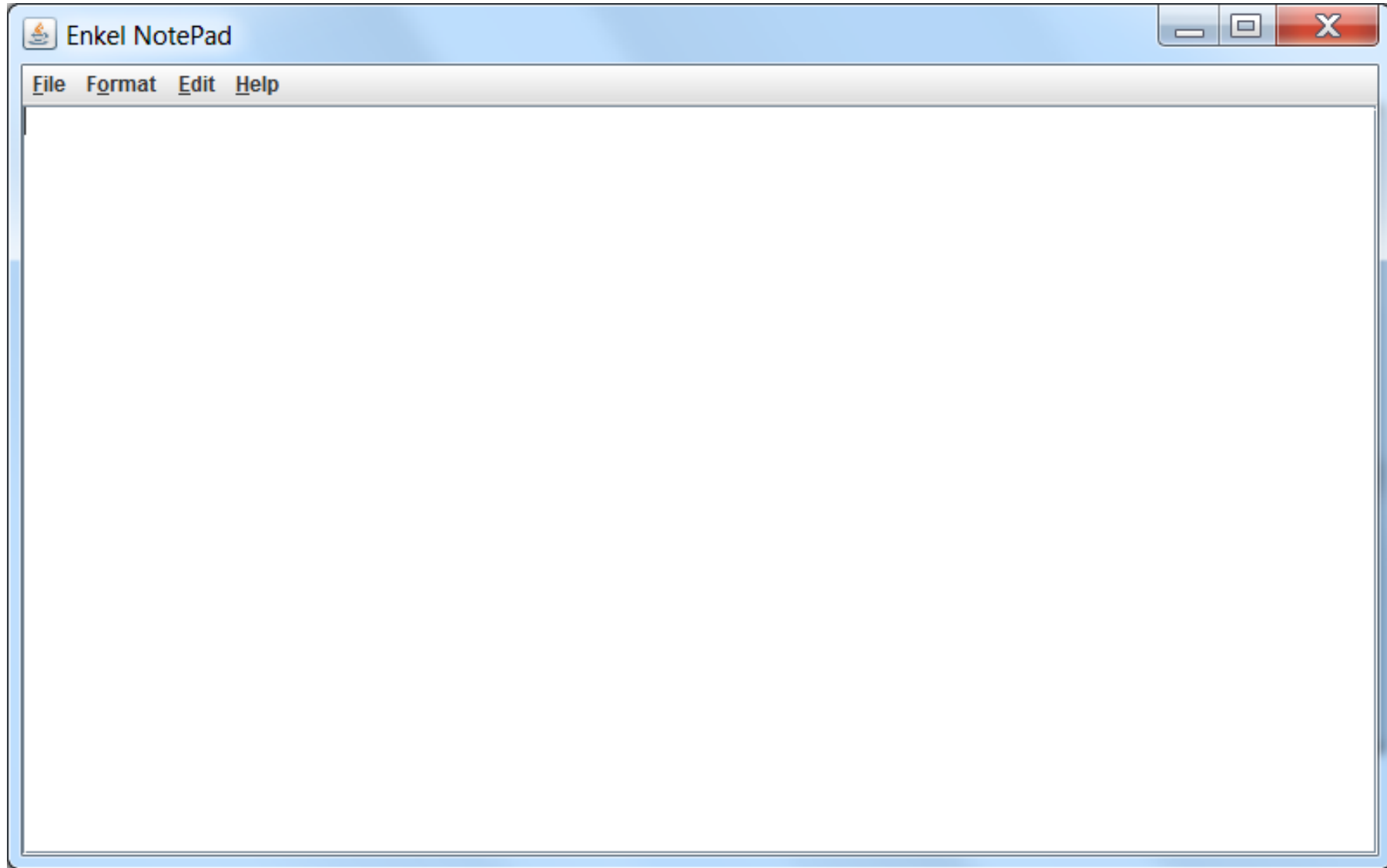
Klassen trenger ikke å være lytter!

```
public class Note extends JFrame  
    implements ActionListener {
```

```
public class Note extends JFrame {
```

Enkel NotePad med Menyer

Uten knapper...

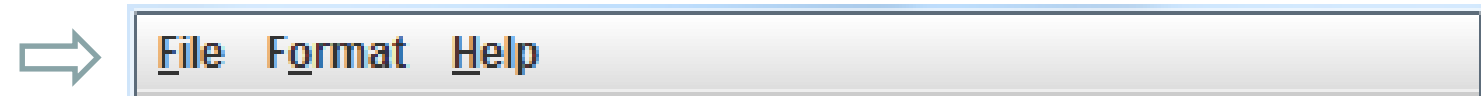


Menyer

Aktuelle klasser:

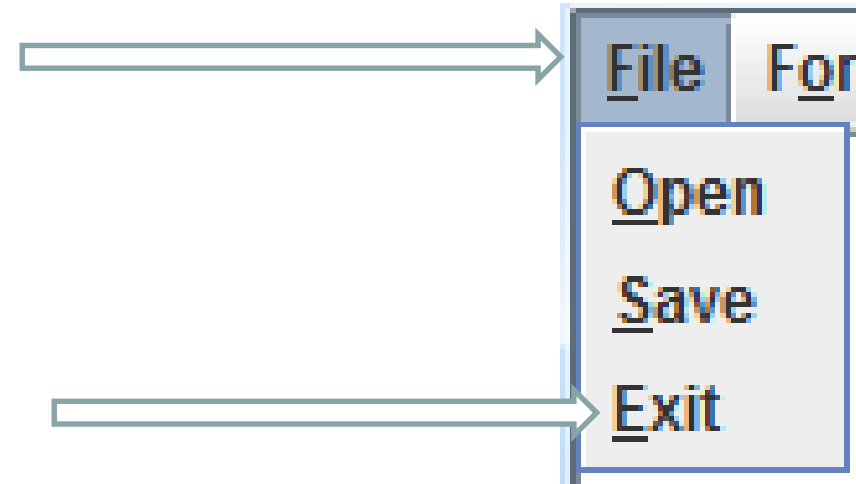
Menylinjen

JMenuBar



Menyene:

JMenu



Meny-elementene:

JMenuItem

Menyer - JMenuBar

```
public class JMenuBar  
extends JComponent  
implements Accessible, MenuElement
```

An implementation of a menu bar. You add JMenu objects to the menu bar to construct a menu. When the user selects a JMenu object, its associated JPopupMenu is displayed, allowing the user to select one of the JMenuItem on it.

For information and examples of using menu bars see [How to Use Menus](#), a section in *The Java Tutorial*.

Menyer - JMenu

```
public class JMenu  
extends JMenuItem  
implements Accessible, MenuElement
```

An implementation of a menu -- a popup window containing JMenuItem's that is displayed when the user selects an item on the JMenuBar. In addition to JMenuItem's, a JMenu can also contain JSeparator's.

In essence, a menu is a button with an associated JPopupMenu. When the "button" is pressed, the JPopupMenu appears. If the "button" is on the JMenuBar, the menu is a top-level window. If the "button" is another menu item, then the JPopupMenu is "pull-right" menu.

Menyer - JMenuItem

```
public class JMenuItem  
extends AbstractButton  
implements Accessible, MenuElement
```

An implementation of an item in a menu. A menu item is essentially a button sitting in a list. When the user selects the "button", the action associated with the menu item is performed. A JMenuItem contained in a JPopupMenu performs exactly that function.

I klassen JFrame

`void`

`setJMenuBar(JMenuBar menubar)`

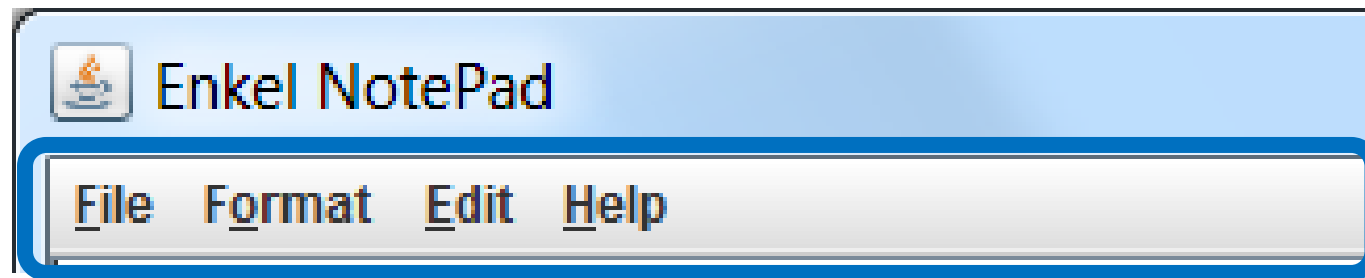
Sets the menubar for this frame.

Meny-linjen

```
JMenuBar mnuBar = new JMenuBar();
```

```
setJMenuBar(mnuBar);
```

Settes øverst i vinduet (en JFrame-metode)



Menyer

Meny:

```
JMenu mnuFile = new JMenu("File");
```

Meny-element:

```
JMenuItem mniOpen = new JMenuItem("Open");
```

Meny-element legges inn i meny:

```
mnuFile.add(mniOpen);
```

Meny-element knyttes til lytter:

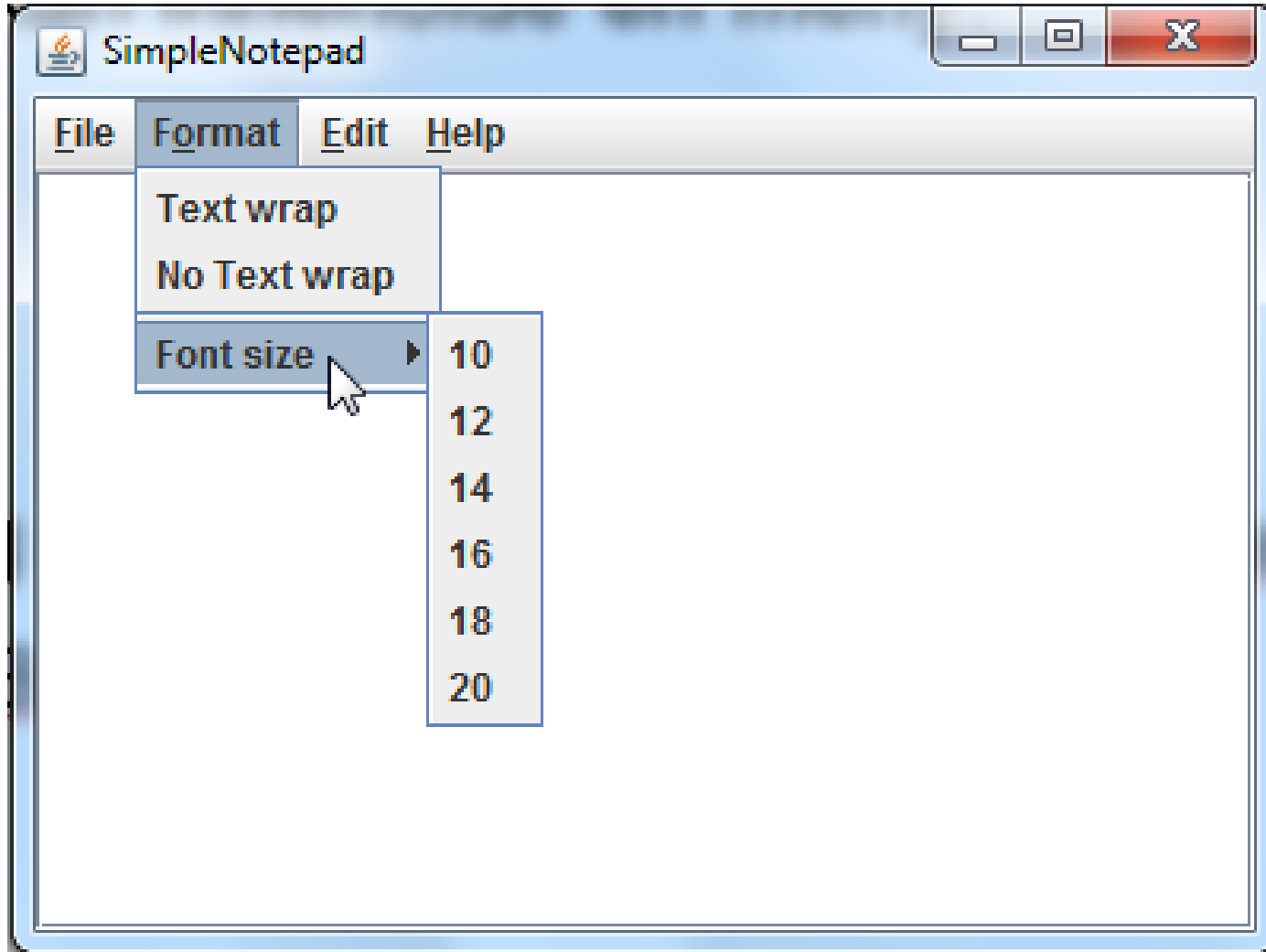
```
mniOpen.addActionListener(this);
```

Meny knyttes til menylinjen:

```
mnuBar.add(mnuFile);
```

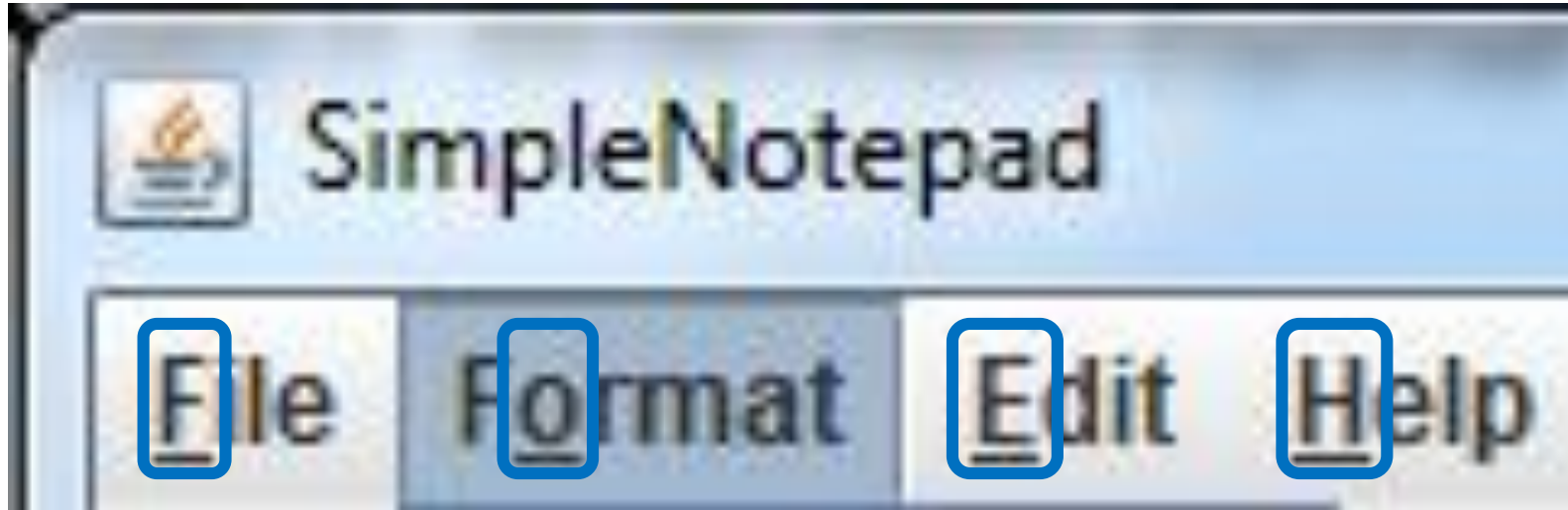
Menyer

En meny kan inneholde en meny:



Menyer

Hvordan få til dette?



Sjekk metoden `setMnemonic(...)`!

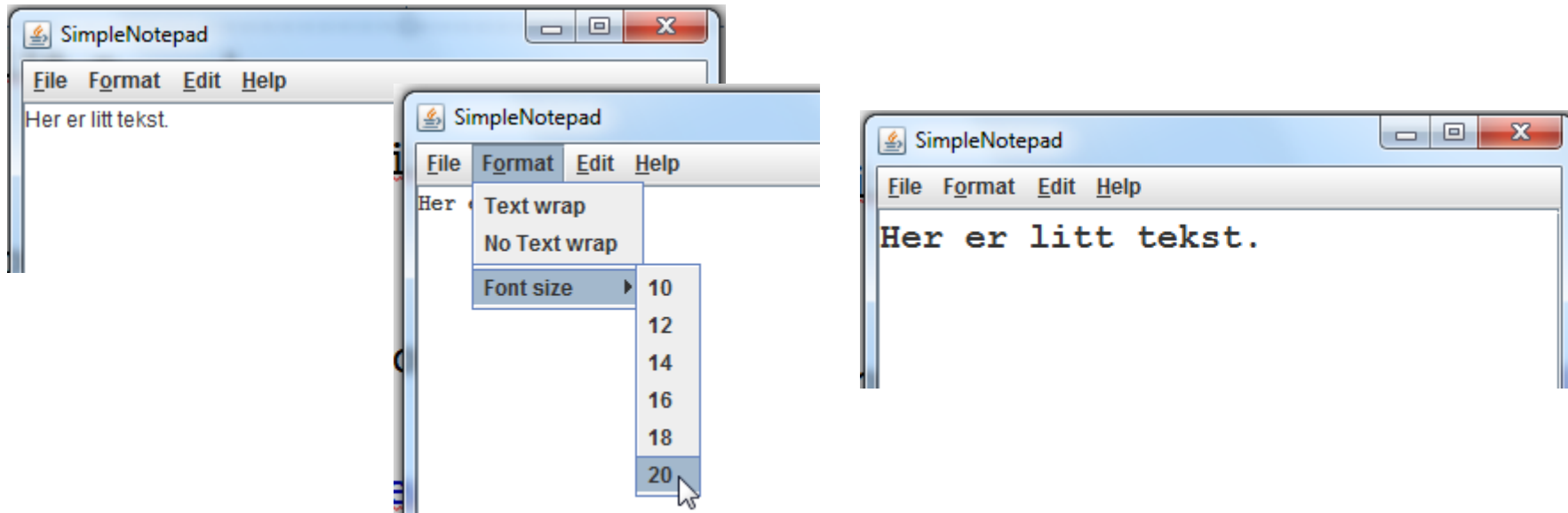
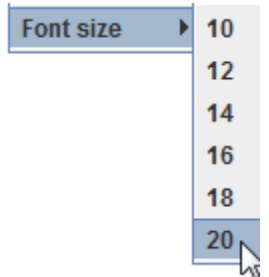
Font-størrelse

```
int fontSize = ...;    //plukker ut fra listen av størrelser
```

```
Font f =
```

```
    new Font(Font.MONOSPACED, Font.BOLD, fontSize);
```

```
txaTextArea.setFont(f);
```



JComboBox

Når man skal kunne velge fra en liste med alternativer:

Personlige opplysninger

Fødselsnummer	Mobilnummer
<input type="text"/>	<div><div>+47 ▾</div><div>Mobilnummer</div></div>
Fornavn ?	Etternavn ?
<input type="text"/>	<input type="text"/>
E-post	Bekreft e-post
<input type="text"/>	<input type="text"/>

Neste

Avbryt

JComboBox

Når man skal kunne velge fra en liste med alternativer:

Personlige opplysninger

Fødselsnummer

Fornavn ?

E-post

Mobilnummer

+47

Mobilnummer

Niger: +227

Nigeria: +234

Niue: +683

Nord-Korea: +850

Nord-Marianene: +1670

Norfolkøya: +672

Norge: +47

Neste

Avbryt

JComboBoxDemo.java

Når man skal kunne velge fra en liste med alternativer:

```
private JComboBox<String> cmbCountries;  
private String[] countries = {  
    "Albania", "Belgia", "Chile", "Danmark", "Estland",  
    "Frankrike", "Grønland", "Hellas", "Irland", "Japan",  
    "Kina", "Latvia", "Moldova", "Norge", "Oman", "Peru",  
    "Quatar", "Romania", "Sverige", "Tyskland", "USA",  
    "Venezuela", "Zambia"};  
  
...  
  
cmbCountries = new JComboBox<>(countries);
```

JComboBoxDemo.java

Noen metoder:

Antall rader som vises:

```
cmbCountries.setMaximumRowCount(...);
```

Hvilken rad som skal vises i utgangspunktet:

```
cmbCountries.setSelectedIndex(...);
```

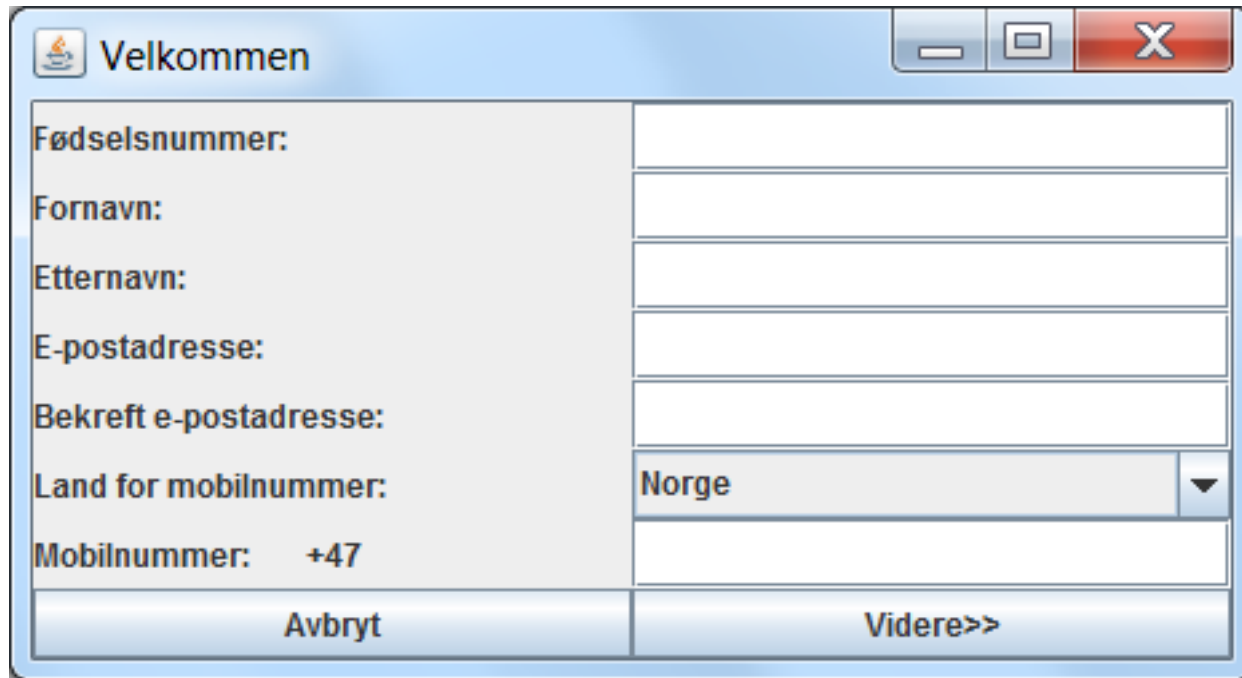
Hvilken rad som er valgt:

```
cmbCountries.getSelectedIndex();
```

Lytter:

```
cmbCountries.addActionListener(...);
```


JComboBoxDemo.java



Velkommen

Fødselsnummer:

Fornavn:

Etternavn:

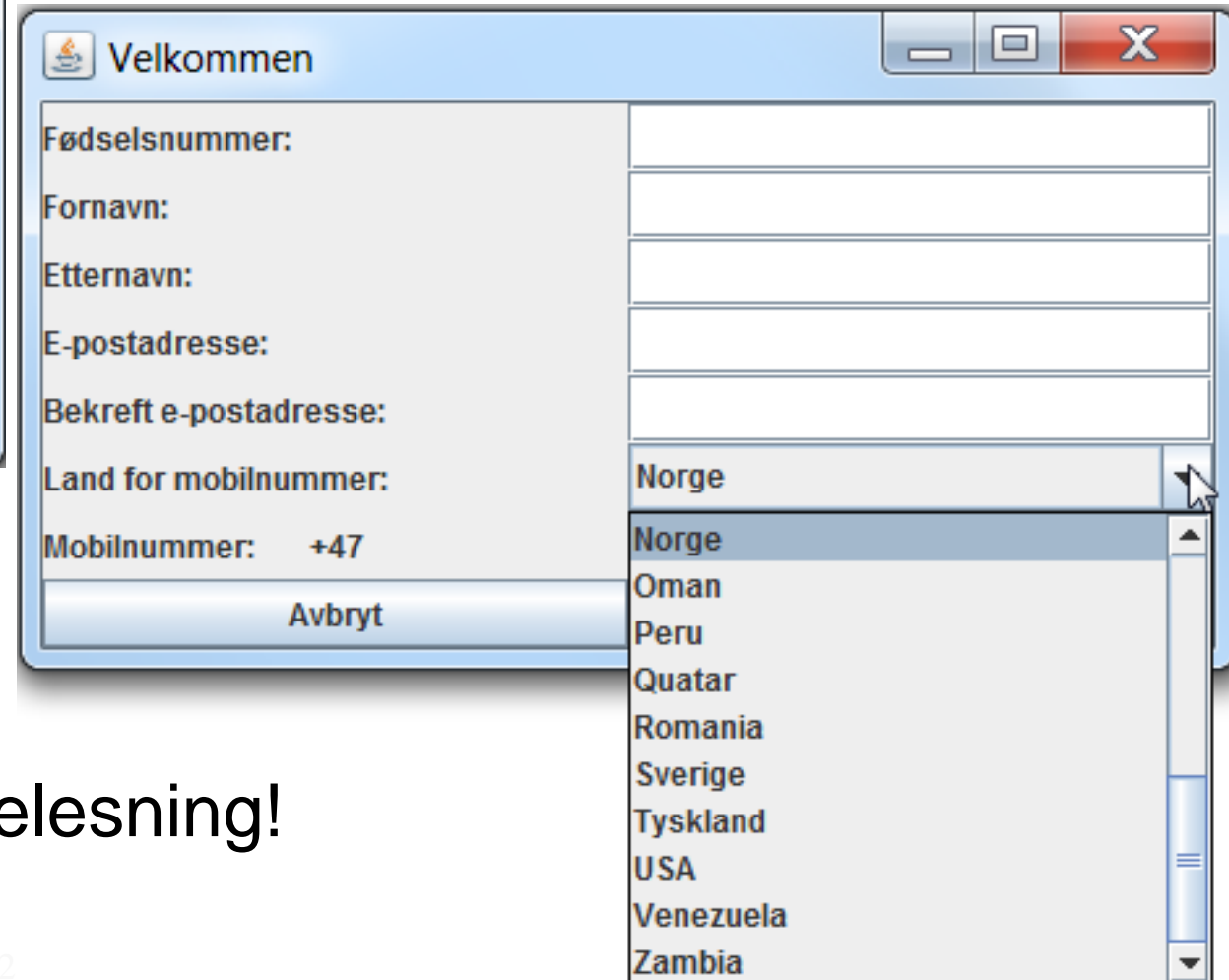
E-postadresse:

Bekreft e-postadresse:

Land for mobilnummer: **Norge** ▼

Mobilnummer: +47

Avbryt Videre>>



Velkommen

Fødselsnummer:

Fornavn:

Etternavn:

E-postadresse:

Bekreft e-postadresse:

Land for mobilnummer: **Norge** ▼

Mobilnummer: +47

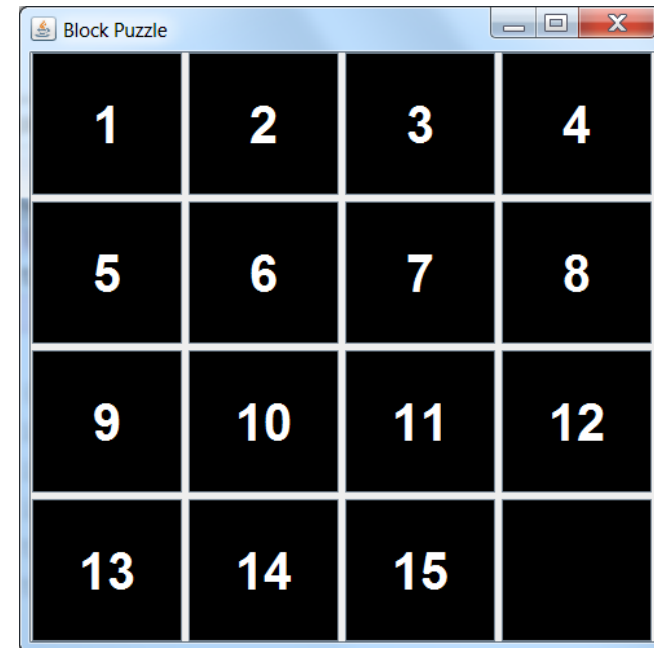
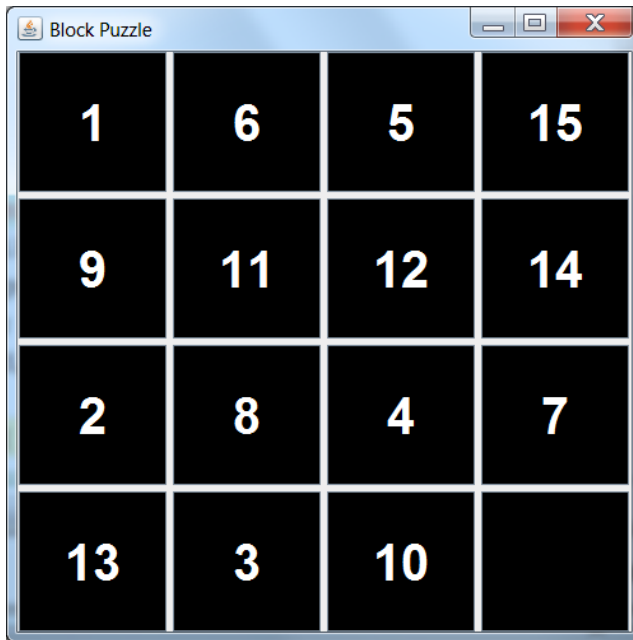
Avbryt

- Norge
- Oman
- Peru
- Quatar
- Romania
- Sverige
- Tyskland
- USA
- Venezuela
- Zambia

Se i mappen Kode under dagens forelesning!

Oppgaver

1. Jobb med innleveringen
2. Lag ferdig Enkel Notepad med menyer som beskrevet.
3. Lag en applikasjon med følgende GUI:



Denne skal fungere som det klassiske enmannsspillet som går ut på å skyve brikker til ledige plasser slik at tallene til slutt står sortert i rekkefølge.

Oppgaver

4. Hvor nært opptil følgende GUI klarer du å komme med det du har lært så langt?

Personlige opplysninger

Fødselsnummer	Mobilnummer
<input type="text"/>	<div><div>+47 ▾</div><div>Mobilnummer</div></div>
Fornavn ?	Etternavn ?
<input type="text"/>	<input type="text"/>
E-post	Bekreft e-post
<input type="text"/>	<input type="text"/>

Neste

Avbryt