

Question

- What's nice about this interface? What are some possible challenges in implementation?



Two big advantages:

- flexible: can provide input in several ways
- contextual: remembers useful/ recent locations

Challenges:

- intelligence required to interpret flexible input
- dealing with erroneous or strange input

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1

Question

- Name three reasons that GUIs are hard to implement (rather than design).

- 50% of design, implementation, maintenance, code size, ...
- Multiprocessing: UIs are inherently concurrent
- Must deal with abort, undo, redo anytime (state information)
- Real-time requirements
- Must be robust (users do lots of odd things!)
- API & UI logic complexity
- Reactive instead of proactive
- Hard to modularize (OOP interface design)
- Exhaustive testing of UIs is hard - how to ensure robustness?
- Evaluation with users is time consuming

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2

Question

- What is the output? (3 strings)

```
public class Animal
{
    public String foo ()
    { return "Animal"; }
}

public class Platypus
extends Animal
{
    public String foo ()
    { return "Platypus"; }
}

public static void main (String[] args)
{
    Animal x = new Animal ();
    System.out.println (x.foo());

    Platypus y = new Platypus ();
    System.out.println (y.foo());

    Animal z = new Platypus ();
    System.out.println (z.foo());
}
```

Animal

Platypus

Platypus

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3

Question

- Describe the model, view, and controller components of a menu.

- Model: hierarchy of functions
- top-level groupings
 - within each grouping, a set of logically related functions
 - perhaps subgroupings (submenus) within these
- View:
- menu bar across top or bottom
 - menus as vertical lists, optionally with icons
- Controller:
- pull-down: have to click and drag
 - "sticky" menus: can click and then select
 - once selected, fires related action
 - optionally, keyboard mnemonics, shortcuts

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4

Question

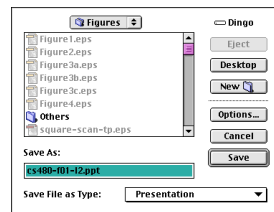
- In pseudocode as close to real code as possible, write a program to lay out the window below:

```
center = new JPanel ();
center.setLayout (BoxLayout(Y_AXIS));
center.add (new JComboBox());
center.add (new JList());
center.add (new JLabel());
center.add (new JTextField());
```

```
east = new JPanel();
east.setLayout (BoxLayout(Y_AXIS));
east.add (new JLabel ("Dingo"));
<< for all buttons >>
east.add (new JButton (<<name>>));
```

```
south = new JPanel();
south.setLayout (BoxLayout(X_AXIS));
south.add (new JLabel("Save..."));
south.add (new JComboBox ());
```

```
pane = frame.getContentPane ();
pane.add (center, BorderLayout.CENTER);
pane.add (east, BorderLayout.EAST);
pane.add (south, BorderLayout.SOUTH);
```



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Question

- What's the use in having "Adapter" classes?

```
public class WindowAdapter implements WindowListener {
    public void windowActivated(WindowEvent e) { }
    public void windowClosed(WindowEvent e) { }
    public void windowClosing(WindowEvent e) { }
    public void windowDeactivated(WindowEvent e) { }
    public void windowDeiconified(WindowEvent e) { }
    public void windowIconified(WindowEvent e) { }
    public void windowOpened(WindowEvent e) { }
}
```

Instead of implementing the listener interface and having to specify & implement every single method, you can just extend the adapter class and override the functions you want to redefine.

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Question

- For a calendar program, you have the option of representing *Hours* with a combo box, text field, or radio buttons. Name one advantage and disadvantage for each.

ComboBox:

- A- small space
- D- fair number of options (not too big, but...)

TextField:

- A- don't have to lift hands from keyboard assuming other input
- D- need to check for errors

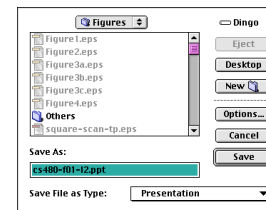
RadioButtons:

- A- ?? maybe, user can see all the options??
- D- lots of space!

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Question

- Name the components that do require or might require a listener and, for each, state briefly what each listener would need to do.



- "Figures" JComboBox: update the List, disable "Eject"
- List: ActionListener (double-click) updates List and JComboBox (different from ListSelectionListener, which isn't needed here)
- all buttons: do related action, and often update List
- "Save As" ComboBox: update file name??

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