

Overview of Fancy Topics in Java

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We Have Studied

- Java's way of OOP: abstraction, encapsulation, inheritance, polymorphism
 - `class`, `static`, ...
 - `public`, `private`, ...
 - `extends`, `interface`, `implements`, ...
- Java's way of “beyond-type polymorphism”: generics
 - `<lalala>`, `?`, ...
- Java's way of error handling: exceptions
 - `throws`, `try/catch/finally`, ...

Fancy Topics in Java (1/5)

- Swing: a hierarchy of GUI components that can go cross-platform

```
1      JFrame frame = new JFrame("title");
2      JPanel panel = new JPanel( );
3      JButton button = new JButton("Press_to_Continue");
4
5      panel.add(button);
6      frame.setContentPane(panel);
```

Fancy Topics in Java (2/5)

- Applet: a small GUI application that can go cross-platform on your webpage

```
1      public class Clock extends Applet{  
2          public void init(){ ... }  
3          public void paint(Graphics g){ ... }  
4      }
```

Fancy Topics in Java (3/5)

- java.net, java.io: doing net programming similar to doing single-machine programming

```
1      try {
2          u = new URL("http://www.csie.ntu.edu.tw/");
3          /* f = new FileInputStream("my_local_file"); */
4          try {
5              DataInputStream data =
6                  new DataInputStream(u.openStream());
7              /* DataInputStream data = new DataInputStream(f); */
8              String line;
9              try {
10                 while ((line = theHTML.readLine()) != null) {
11                     System.out.println(line);
12                 }
13             }
14             catch (Exception e) { System.err.println(e); }
15         }
16         catch (Exception e) { System.err.println(e); }
17     }
```

Fancy Topics in Java (4/5)

- Java Servlet: create web services easily

```
1      public class WelcomeServlet extends HttpServlet
2      {
3          public void doGet(
4              HttpServletRequest req,
5              HttpServletResponse res)
6              throws ServletException, IOException
7          {
8              PrintWriter output = res.getWriter();
9              String name = new String(req.getParameter("name"));
10             output.println("Hello ,_" + name);
11             output.close();
12         }
13     }
```

- Multithread (concurrent) computing: letting things run together

```
1      Thread[] tarr = new Thread[10];  
2      for(int i = 0; i < 10; i++){  
3          tarr[i] = new MyThread();  
4          t[i].start();  
5      }
```