IS 413
Course Introduction

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Agenda

- Instructor Introduction
- Student Introductions
- Syllabus Review
- Swing Overview
- Quiz # 0
- Hello World Exercise

Instructor

- Benjamin Houdeshell houdesh1@umbc.edu
  - Career
    - Financial Engineer
    - Systems Developer
    - ETL Engineer
  - Education
    - BS Business Administration
    - MBA
    - MS Information Systems
    - Ph.D. Student Information Systems
      - Systems & Software Research Area
        - Software Testing
        - Verification & Validation

Student Intros

- Student Intros
  - You will work with a partner this semester
  - Always useful to have contact info for someone in the class

- Introduce yourself
  - Major
  - Prior experience (if any) in programming
  - Outside Interests
  - Personal goals for this course
  - Reason for taking this course
  - Personal info (hobbies, favorite baseball team, WOW realm etc.)
  - You will introduce your neighbor to the class

Syllabus Review /Course Requirements

- Course Focus
  - UI programming
    - Java Swing
    - Android
- First half of each class
  - Lecture and new material
    - **Please do not log on to a computer or use a smart phone during the first half of class. Playing games, using Facebook etc. will result in a deduction from your grade.**
    - **Please read for next week: "Should Students Use a Laptop in Class?"**
- Second half of each class
  - Hands-on
    - This is a skills course
- Activities
  - Reading, Writing Code, Quizzes, and Projects
  - You will work with a partner on most assignments

Course Requirements

- Use of your own laptop for the programming assignments is ***highly recommended***
  - Use your laptop during the second half of class

- Experience with Java and OO technology is required

  - Programming assignments
    - Java Development Kit (either 1.6 or 1.7 is fine)
    - Text Editor (I like VIM)
      - You will do your early work in a command line environment using the JDK and an editor
    - IDEs – after you can build from the command line
      - Eclipse Classic http://www.eclipse.org/downloads
    - Android SDK and Eclipse Plugin
      - http://developer.android.com/sdk/index.html

Grading and Homework

- Grading
  - Project 20%
  - Quiz 1 through 4 40%
  - Homework 40%

    - Quizzes 1 through 4 are 10 points each
      - All material from the readings and homeworks
    - Project
      - A ***significant*** graphical project written in java
      - Working with a partner **is required**
        - Example Graphical Version of The Game of Life
          - See http://www.math.com/students/wonders/life/life.html
      - One page abstract due mid-semester

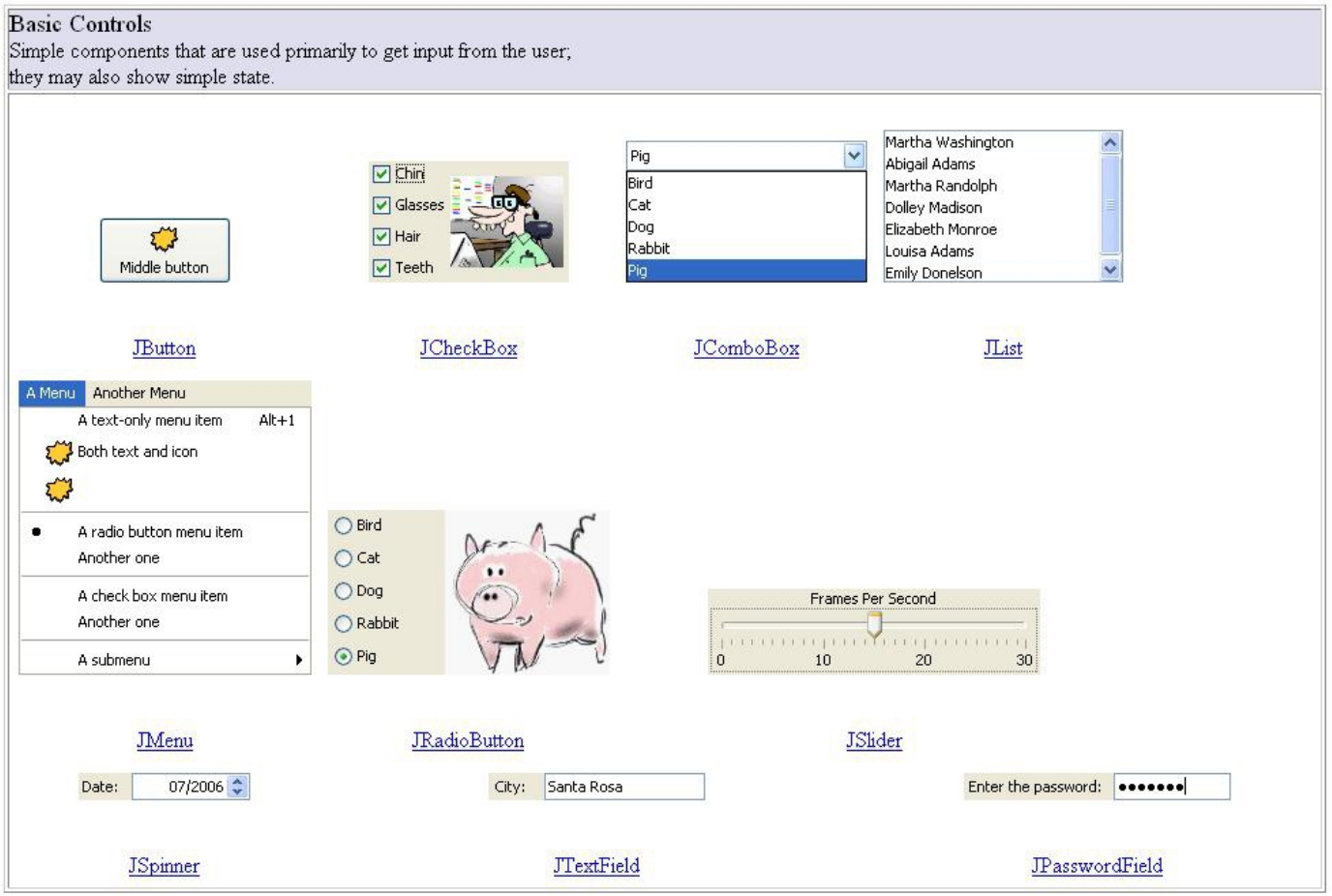
Homework

- Homework is an important part of this course
  - 40% of your grade
- Late homework will not be accepted
  - Extraordinary situations – please see me in advance
- A ***hardcopy*** of all source code is required, the night the homework is due
  - No homework will be accepted without hard copy
    - **Emailed homework will not be accepted**

Expectations

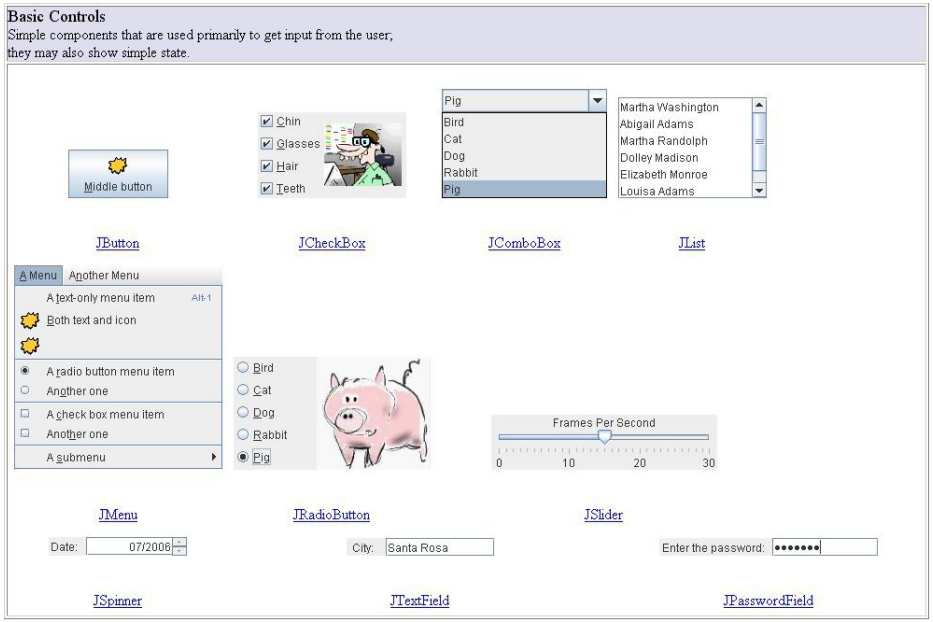
- 400 level Course
  - An *honors* university
- Students can
  - Read documentation
  - Research problems and find solutions
  - Work together with other students
- Read and write java code
  - Compile, run, and debug simple java programs
- Do your own work

Swing – A Widget Toolkit for Java



Swing Context

- **History**
  - Replace the AWT
    - Abstract Window Toolkit
  - Initially part of JFC
    - Java Foundation Classes



- **Selected JFC Features**
  - GUI Components
  - Java 2D API
  - Pluggable Look and Feel
  - Data Transfer
  - Internationalization

Swing Environment

- Many public packages
  - javax.swing
  - javax.swing.event
  - e.g. `javax.swing.JFrame`, `javax.swing.JButton`, `javax.swing.JApplet etc.`

- Best Practice : Run Swing components on their own thread
  - Event Dispatch Thread

Getting Started Exercise

- Hello World

  - http://java.sun.com/docs/books/tutorial/uiswing/start/compile.html
- Use a text editor
  - Enter the code (do not simply download and compile)
    - `HelloWorldSwing.java`
  - Compile
  - Run
  - Change Title to "`Hello IS 413`"
  - Compile and Run
  - **Please complete through the week. You will need to be able to compile and run java programs from the command line in order to complete the week 1 homework.**

Event Dispatch Thread

- HelloWorld example uses the Swing EventDispatch Thread

```
public static void main(String[] args)
{
    //schedule a job for the event-dispatching thread
    javax.swing.SwingUtilities.invokeLater(new Runnable()
    {
        public void run()
    {
      createAndShowGUI();
    }
     }
    );
}//main
```

Annonymous Inner Class

Setting up a Basic Environment on Windows

- To compile and run a java program, the **J**ava **D**evelopment **K**it, must be installed
  - The jdk is available for free
  - Java Development Kit
- Once installed, the following environment variable must be set:
  - From a DOS command prompt, enter:

```
PATH=%PATH%;E:\jdk1.6.0_11\bin;
```

    - assuming the JDK is installed in the directory E:\jdk1.6.0_11
  - You may set this permanently with My Computer|Properties|Advanced|Environment Variables
  - See http://www.oracle.com/technetwork/java/javase/documentation/install-windows-152927.html
    - See Update the Path Variable

Note: All of the above applies to java 7 as well. Also – java 6 is the same as java 1.6 and java 7 is the same as java 1.7.

Setting Up a Basic Environment

- To use the JDK try the following simple exercise:
- Using a text editor enter the following Java Source code

```
public class Hello {
   public static void main(String args[]) {
      System.out.println("Hello IS 413") }
      }
```

  - Save the program in a file called `Hello.java`
  - From a DOS window, cd to the directory where you saved the file `Hello.java`
  - To compile the program type `javac Hello.java`
    - if no errors, a file called `Hello.class` will be produced
  - To run the program type: `java Hello`
  - Congratulations, you just wrote a java program
  - Lesson: The Hello World Application
    - Do "HelloWorld! for Microsoft Windows " (or whatever environment you use)

Observations

- **Writing code is fun**
  - Java is fun
  - Visually oriented programming is fun
    - ***IS 413 is fun !!!***
- **Your mileage may vary**
  - We usually have a diverse set of educational backgrounds
    - For some the work will be easy, others will find it more challenging
      - This is normal – don't worry
- **Tutoring has been available in the past**
  - Make use of it if need be

Recommendations

- Do the homework
  - The number 1 reason for poor grades is a failure to submit the homework assignments
  - Submit the assignments on time
    - Late assignments are not accepted
- Come to class
  - Students that come to class get better grades
  - Students with poor attendance get lower grades
- Work with a partner

Summary

- Focus on applied use of Java
- Format : Lecture plus Lab
- Grading 4 x 10% quizzes, homework 40%, project 20%
- Work with a partner on most homework/project
- **Homework (part 1)**
  - Quiz #0
  - Do the getting started exercise (Hello World)
  - Reading
    - Getting Started with Swing
      - About the JFC and Swing
      - Compiling and Running Swing Programs