CMSC433, Spring 2007
Programming Language Technologies and Paradigms
http://www.cs.umd.edu/~atif/Teaching/Spring2007

Atif Memon

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Course Goal

- To
  - Give you a better idea of different programming paradigms
  - Develop/study higher levels of program abstractions for problem solving
- Study several real-world programming problems
- Solve them via relevant paradigms, focusing on
  - Reusability
  - Maintainability
  - Design

Approach

- We will pick three programming problems
  - And try to solve them together during the semester
    - Hence 3 (concurrent) programming assignments
- Course lectures will give you sufficient background to solve these problems
  - Focus on paradigm concepts, design, and abstraction, not programming

The Need for Abstraction

Fragment 1:

```
found = false;
for (int i = 0; i < a.length; i++)
    if (a[i] == e) {
        z = i;
        found = true;
    }
```

Fragment 2:

```
found = false;
for (int i = a.length-1; i >= 0; i--)
    if (a[i] == e) {
        z = i;
        found = true;
    }
```

Abstraction

- A better abstraction may be

```
found = a.isIn(e);
if (found)
    z = a.indexOf(e);
```

- Improves
  - Reusability
  - Maintainability
- Abstraction is the key to good design

5

The Three Problems

1. TerpOffice
2. InterComm
3. Test-matrix Analyses

- You are responsible for obtaining the problem descriptions and detailed requirements
  - Start ASAP (today)

6

Teaching Style

- Interaction
  - This is your course: what do you want to learn?
- Discussion
  - Not just professor/TA to student, but student to student, with regard to ideas, techniques, and solutions
- Learn by doing
  - If you don't put effort into the programming projects, you will learn very little

7

Communication

- Atif M. Memon (atif AT cs DOT umd DOT edu)
  - 4115 A.V.Williams building
  - Phone: 301-405-3071
- Office hours
  - .Tu.Th. (10:45am-12:00pm)
  - Or by appointment
- Don't wait, don't hesitate, do communicate!!
  - Phone
  - E-mail
  - Office hours

8

Communication

- Srinivas Kashyap
  - (raaghav AT cs DOT umd DOT edu);
- Office Hours:
  - Mon. Wed. Fri.
  - 10:00AM - 12:00PM
  - (TBD A. V. Williams Building)

9

Communication

- All e-mail will be sent to the e-mail account registered with UMEG
  - So make sure you check or forward that account!
  - Right after class: **check your e-mail address on TESTUDO**

10

Discussion and Questions

- Create your own class discussion group
  - For class discussion
    - If you give the TA access, he will read the posts regularly, but may or may not respond. Do not expect real-time responses. This is not a substitute for coming to office hours.
    - NB: As in life, don't believe everything you read!
- **Don't cross the line**
  - Know the academic integrity procedure and follow it

11

Class Accounts

- Please contact the class TA for class accounts
- You may work on any machine you like, but...
  - Make sure the TA is able to run the code

12

Software

- Will be using **Java, Mathematica, and Prolog**
- Will make use of **JUnit** testing package
- And **JavaDoc**
  - Obtain them ASAP
- Remember: I will not teach "programming"

13

Exams

- Midterm: March 15
  - Just before spring break
- Final: (during the week of) May 12-18
  - Covers all of course
  - But roughly 2/3 new material, 1/3 old material
- Do **not** schedule travel for these dates!

14

Tentative Grading Plan

	#	% each	% total
Programming Assignments	3	16.66	50
Mid-terms	1	25	25
Final	1	25	25

15

Stay up to date

- http://www.cs.umd.edu/~atif/Teaching/Spring2007
- Contains:
  - Announcements
  - Lecture notes
  - Project assignments
  - Resources
  - and more!
- Lets look at the page now …

16

Project (Getting Started)

- Download TerpOffice
  - Latest version
  - My home-page
- Download SWI-Prolog
  - Its free
- Start using Mathematica
  - OIT Machines
  - Student Licenses

17