COMP 2011/2711
Data Organisation
2006 Session 1

Lecturer: Norman Foo
Head Tutor: Loc Huynh; others to be nominated
Prerequisites for 2011

**COMP1011 Computing 1A**
- Haskell
- structured problem decomposition
- abstract data types

**COMP1021 Computing 1B**
- procedural programming with C
- control flow (if, for, while, switch)
Resources

◆ Textbook
  - Data Structures and Algorithms in Java (4th Ed.) by Goodrich & Tamassia

◆ www.cse.unsw.edu.au/~cs2011
  - lecture slides, announcements
  - links to Java API
  - assignments, tutorial exercises

◆ Other Reference Books
  - Java Programming Language (3rd Ed.)
  - Core Java 2
  - Java in a Nutshell
Syllabus

- Java & Object-Oriented Programming
- Analysis of Algorithms
- Stacks, Queues, Trees
- Heaps, Hash Tables, Search Trees
- Sorting Algorithms
- Text Processing
- Graphs
Assessment

3 Assignments (30%)

Exam (70%)

must be entirely your own work

- Can discuss ideas, but DON’T copy code
- DON’T let anyone see your code
- we use plagiarism detection programs, which work very well
  - first detection: negative mark for assignment
  - second detection: failure of course
  - third detection: possible expulsion from Uni
What TO DO in general

- keep up with lectures and tutorials
  - read textbook and lecture slides
  - attempt tutorial questions before the tutorial
- read Java programming guides and tutorials
  - books or online
- practice Java programming
  - labs (tues 2-3, thurs 2-4)
  - use tutorial exercises for practice
  - assignments alone are not enough
What TO DO this week

- buy the textbook, and read chapter 1
- register with sirius (in CSE labs)
- install Java 2 SDK on own PC (JDK1.4 or 1.3)
  - may need to set PATH and CLASSPATH
- Java 2 online tutorial
  - Your first cup of Java
  - Getting Started
  - Learning the Java Language
- Week 2 tutorial questions
For Help

- **Java installation at home**
  - JDK home computing CD from CompSoc, or online
  - CSE helpdesk
  - Java online docs

- **Java programming**
  - labs
  - consultations
  - your tutor
  - friends

- **Tutorials/Assignments**
  - Check FAQ on 2011 website
  - 2011 consultants
  - email alias
  - then your tutor
  - then the lecturer

- **Admin problems**
  - email: cs2011@cse.unsw.edu.au
  - always use your CSE mail account, or include your student ID
  - last resort, contact the lecturer-in-charge
Example Program

Copy.java (program for copying a file)

$ ls
Copy.java  file1

$ javac Copy.java

$ java Copy file1  file2
$ ls
Copy.class  Copy.java  file1  file2

$ diff file1  file2
$
### Copy.c

```c
#include <stdio.h>

#define MAX_LINE 256

void copy(char *source, char *dest);

int main(int argc, char *argv)
{
    if (argc != 3) {
        printf("Usage: copy <source> <dest>\n");
    } else {
        copy(argv[1], argv[2]);
    }
    return 0;
}
```

### Copy.java

```java
import java.io.*;

public class Copy
{
    public static void main(String[] args)
    {
        if (args.length != 2) {
            System.out.println("Usage: java Copy <source> <dest>");
        } else {
            copy(args[0], args[1]);
        }
    }
}
```

void copy( char *source, char *dest ) {
    FILE *fileIn;
    FILE *fileOut;
    char oneLine[MAXLINE];
    fileIn = fopen( source, "r" );
    if( FileIn == NULL ) {
        printf( "Error: file not found\n" );
        exit( 1 );
    }
    fileOut = fopen( source, "w" );
    if( fileOut == NULL ) {
        printf( "Error: file not found\n" );
        exit( 1 );
    }
    while( fgets(oneLine,MAXLINE,fileIn ) != NULL ) {
        fputs( oneLine, fileOut );
    }
    fclose( fileIn );  fclose( fileOut );
}

public static void copy(String source, String dest) {
    BufferedReader fileIn;
    PrintWriter fileOut;
    try {
        fileIn = new BufferedReader( new FileReader( source ));
        fileOut = new PrintWriter( new FileWriter( dest ));
        String oneLine;
        while(oneLine = fileIn.readLine() != null ) {
            fileOut.println( oneLine );
        }
        fileIn.close();  fileOut.close();
    } catch( IOException e ) {
        System.out.println( "Error :" + e );
        System.exit( 1 );
    }
}
Next Time

- Why Java?
- Object Oriented Design
- Classes, Types, Objects
- Methods
- Expressions
- Control Flow
- Arrays
- Input / Output
- Packages