COMP 2011
Data Organisation
2004 Session 1

Lecturer: Alan Blair
Head Tutor: Loc Huynh
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 (3rd 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 (40%)
Exam (60%)

must be entirely your own work

- DON’T copy from others
- 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 1.3 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 (Alan Blair)
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

#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

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]);
        }
    }
}

...
Copy.java

```java
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 );
    }
}
```

copy.c

```c
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
” );
        exit( 1 );
    }
    fileOut = fopen( source, “w” );
    if( fileOut == NULL ) {
        printf( “Error: file not found
” );
        exit( 1 );
    }
    while( fgets(oneLine,MAXLINE,fileIn ) != NULL ) {
        fputs( oneLine, fileOut );
    }
    fclose( fileIn );  fclose( fileOut );
}
```
Next Time

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