

Lecture 17

Coursework 2 marking

- Friday (see timetable)
- Demonstrating software to a customer
 - Think about how you will demonstrate to the customer that you have devised a good solution to their problem
- Don't miss this marking session as you will get no marks

The exam

- Usually in week 1 or 2, Term 3
- Will use this lecture to discuss the format
- Will also cover some example questions

Thursday's lecture

Marking timetable

Marking time (IBM Lab)	Surnames	Seminar group	Tutor
9.30-10.30	s Atzal – Cebula	Thurs 5-6pm CS1.04 (CS)	Jon
10.30-11.30	1 Chan – Evans	Thurs 5-6pm E0.23 (CS)	Adam
	2 Falconer – Jarman	Thurs 5-6pm S0.28 (CS)	Ant
11.30-12.30	1 Jhutti – Lu	Friday 4-5pm CS1.01 (CS)	Andrew
	2 Mazuke – Reason	Friday 4-5pm H002 (CS)	Heechan
12.30-1.30	s Reeves – Sun	Friday 4-5pm H003 (CS)	Jonathan
1.30-2.30	1 Tanham – Whitehead	Friday 3-4pm CS1.01 (CS)	Andy
	2 Williams – Sandvik	Friday 3-4pm S0.28 (CS/MCS)	Gihan
3.30-4.30	1 Acquah – Liu	Tuesday 5-6pm CS1.04 (CBS)	Adam
	2 Lo – Yeung	Tuesday 5-6pm CS1.01 (CBS)	Nick
4.30-5.30			

Coursework 2 marking

Pre-submission

- You need to submit your work
- Instructions are in *The Guide*
- Submit as many times as you like; last submission counts

Friday

- Come to the IBM lab at set time
 - S = spread yourselves over the hour; 1 = come in the first half an hour; 2 = come in the second half an hour
- Marking will take approximately 10-15 minutes
- Take note of the surname order, e.g.
 - 11.30-12.30 1 Jhutti - Lu Friday 4-5pm CS1.01 (CS) Andrew
 - Mandeep Jhutti come at 11.30; Stuart Knight come at 11.40; Wei Lu come at 11.50

Coursework 2 marking

Part 1

- Ex19 : Explorer robot
- Ex20 : that records junction information
- Ex21 : and that then backtracks
- Ex22 : Discussion
- Ex23, Ex24, Ex25 : for the brave (a small number of extra marks)

Part 2

- GrandFinale : learning robot - that during the first run will record information; and during subsequent runs will use this information to get to the target directly
- You can select your own test mazes
- We will not interrupt the 1st run; or move the target/robot
- Does not need to work for loopy mazes

What else will be marked?

The exam

Takes place in weeks 1 or 2, Term 3

UNIVERSITY OF WARWICK
First Year Examinations: April 2003
Programming for Computer Scientists

Time allowed: **2 hours**.
Attempt **ALL** the questions.
All questions carry 25 marks each.
Total marks 125

Most answers require a single statement or a short piece of Java code to be written. Do not give complete programs or supply irrelevant declarations or input-output statements unless explicitly asked for. Number questions clearly but do NOT start each answer on a new page. Read the instructions on the answer book carefully and make sure that the particulars required are entered on each answer book.

The format for 2006 will be the same as 2003, 2004, 2005

The exam

Sample questions: Primitive types

1. **Primitive types**
 - (a) Give values and types for the following expressions: [10]
 1. $17 \% 3 * 5$
 2. $(\text{byte}) ((\text{float}) 100) * 2.0$
 3. $2 / (\text{int}) (2.0 / 4.0 * 8)$
 4. $(\text{false} != \text{true}) \&\& (1 / 0 == 0)$
 5. $(x++ != x) \& ((\text{int}) 1.2 == 1) \|\ (x-1 == x)$
 - (b) Describe how the two's complement number system works with reference to the short type in Java. Your explanation should refer to the range of values which can be represented with the short type, and how this range is calculated. [5]
 - (c) Write a program that reads a positive integer between 0 and 1000 inclusive, and prints the integer as words. For example, with the input 125, your code should output *one hundred and twenty five* [10]

The exam

Sample answers: Primitive types

1. **Primitive types**
 (a) Give values and types for the following expressions: [10]
 2. (byte)((float)100) * 2.0
 4. (false != true) && (1 / 0 == 0)

100.0 * 2.0 = 200.0, typecast this to a byte you get an overflow, as the range of byte is -128 to +127

true && (trouble!), is the logical AND strict or lazy? Does it matter?

- (b) Describe how the twos complement number system works with reference to the short type in Java. Your explanation should refer to the range of values which can be represented with the short type, and how this range is calculated. [5]

short = 2 bytes = 16 bits
 -2^{15} $+2^0$
 range therefore = -2^{15} to $+2^{15}-1$ = -32768 to +32767

The exam

Sample questions: Control statements

2. **Control statements**
 (a) What are the results of the following code fragments? [3]

(i)

```
for (int i=0; i<5; i=i+1)
{
    switch (i)
    {
        case 1 :
        case 2 :
            default : System.out.println(i);
    }
    i = i+(i % 1);
}
```

(ii)

```
int i=5;
while (i>0)
{
    for (int i=0; i<5; i=i+2)
        System.out.println(i);
}
```

The exam

Sample questions: Control statements

2. **Control statements**
 (a) What are the results of the following code fragments? [3]

So we get:

0
1
2
3
4

```
(i) for (int i=0; i<5; i=i+1)
    {
        switch (i)
        {
            case 1 :
            case 2 :
                default : System.out.println(i);
        }
        i = i+(i % 1);
    }
```

```
(ii) int i=5;
while (i>0)
{
    for (int i=0; i<5; i=i+2)
        System.out.println(i);
}
```

The exam

Sample questions: Objects and classes

4. Objects and classes

In this question you are required to design a generic class for matrix arithmetic.

- (a) Design a class Matrix that is able to represent an integer matrix of any dimension. Your class should contain private state variables to represent the matrix data; it should also contain a constructor which, when called with some suitable values, will create an appropriate matrix object. [6]
- (b) Add to your Matrix class a method called printMatrix which when called will display the matrix data on the computer screen. [5]
- (c) Add to your class a method for matrix addition. An example of matrix addition is given below. [5]

The exam

Sample answers: Objects and classes

4. Objects and classes

In this question you are required to design a generic class for matrix arithmetic.

- (a) Design a class Matrix that is able to represent an integer matrix of any dimension. Your class should contain private state variables to represent the matrix data; it should also contain a constructor which, when called with some suitable values, will create an appropriate matrix object. [6]

```
(i) class Matrix
{
    private int[ ][ ] matrix;
    Matrix (int[ ][ ] matrix)
    {
        this.matrix = matrix;
    }
}
```

Takes a 2D array and stores it in a Matrix object...
 Matrix m = new Matrix([[1,2],[3,4]]);

The exam

Sample answers: Objects and classes

4. Objects and classes

In this question you are required to design a generic class for matrix arithmetic.

- (a) Design a class Matrix that is able to represent an integer matrix of any dimension. Your class should contain private state variables to represent the matrix data; it should also contain a constructor which, when called with some suitable values, will create an appropriate matrix object. [6]

(ii)

```
class Matrix
{
    private int[ ][ ] matrix;
    Matrix (int x, int y)
    {
        matrix = new int[x][y];
        for (int i = 0; i < x; i++)
            for (int j = 0; j < y; j++)
                matrix[i][j] = IO.ReadInt("Enter ...");
    }
}
```

Takes two values representing the size, and generates a Matrix of that size...
 Matrix m = new Matrix(2,2);

The exam

Look at past papers

You have a copy of the 2003 exam

By April you will be a lot better

Thursday

Dr Simon Nash

IBM Distinguished Engineer

Member of the IBM Academy of Technology