

University of Cape Town
 Department of Computer Science
 Computer Science CSC115F

Class Test 2

- Answer all questions.
- All questions that refer to elements of programming make reference to the Java programming language as studied in class.
- Good luck !

Marks: 40

- Approximate marks per question are shown in brackets

Time: 40 minutes

- The use of calculators is permitted

	Surname		Initials
NAME:	<input style="width: 100%;" type="text"/>		

STUDENT NO: <input style="width: 95%;" type="text"/>	COURSE CODE: <input style="width: 95%;" type="text" value="CSC"/>
---	--

This paper consists of 1 questions and 3 pages (including this cover page).

Mark Allocation							
Quest	Marks	Internal	External	Quest	Marks	Internal	External
1	[10]						
Total				Total			
Grand Total							
Final Mark							
Internal Examiner:				External Examiner:			

Section 1. Selection

Question 1. [10 marks]

- a) Write a method for the XOR operation, which is true if exactly one argument is true using only “if” statements, tests for equality where needed and “return” statements. Use the following template:

```
public boolean xor ( boolean a, boolean b )
{
    if (a) if (b==false) return true;
    if (b) if (a==false) return true;
    return false;
}
```

Marking negatively: -1 for wrong operation for any boolean input combination. [2]

- b) Assume choice is a character variable. Write a switch statement to execute method1() and method3() if choice has a value of ‘b’; method2() if choice has a value of ‘c’; and method1() if choice has a value of ‘d’. The order of statements is not important - reorder them so that your switch statement uses a minimum number of break statements.

```
switch (choice)
{
    case 'c' : method2();
              break;
    case 'b' : method3();
    case 'd' : method1();
}
}
```

Marked negatively: -1 for each of {wrong switch variable, error in switch structure, more or less than one break, wrong position for break, wrong constant(s), wrong statements}

[4]

c) With reference to the *dangling else problem*:

- i. Explain what it is.
- ii. Write a fragment of code to illustrate where it occurs.
- iii. Fix your code to prevent/avoid the pitfall.

i. Explain what it is.
When the compiler does not know which unfinished if to match an else to.
[1]

- ii. Write a fragment of code to illustrate where it occurs.

```
if (a)
    if (b)
        c();
else
    d();
```

[2]

- iii. Fix your code to prevent/avoid the pitfall.

```
if (a)
{
    if (b)
        c();
}
else
    d();
```

[1]

[4]