Please fill in your Student Number and Name.

Student Number : _____

Name:

_____

_____

Student Number:

_____

University of Cape Town ~ Department of Computer Science

Computer Science 1015F ~ 2008

Supplementary Test 3

Question	Max	Mark	Internal	External
1	15			
2	15			
TOTAL	**30**			

Marks : 30

Time : 40 minutes

Instructions:

a) Answer all questions.

b) Write your answers in the space provided.

c) Show all calculations where applicable.

Question 1 [15]

(a) Which of the options below refer to the individual variables that together make up an array? [1]

i. indexed variables
ii. subscripted variables
iii. elements of the array
iv. all of the above

(b) Can a program change an array's length instance variable value? [1]

_____

_____

(c) What is the correct expression for accessing the 5th element in an array named colors? [1]

i. colors[3]
ii. colors[4]
iii. colors[5]
iv. colors[6]

(d) How are arrays tested to see if they contain the same contents? [3]

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(e) Write code to declare and create an integer array that will contain the numbers 1 through 100. Use a for loop to initialize the indexed variables. [5]

(f) Consider two variables x and y. Write the code to swop the values in these two variables so that x contains y's value, and y contains x's value. [4]

```
int x = 4;
int y = 7;
```

Question 2 [15]

a) Suppose that a 2-dimensional array `teams` has been declared as below. [4]

```
int[ ][ ] teams = new int[4][4];
```

Give Java code to fill array `teams` with values by putting 0 (**zero**) in all the elements that are **not** on the diagonal and -1 in all elements that are on the diagonal, as shown below:

-1	0	0	0
0	-1	0	0
0	0	-1	0
0	0	0	-1

b) The program has changed the values in `teams` to contain match results. Give Java code to print out all the values in `teams`. The 4 values in each row should be printed in order on the same line, and you should start a new line of output after each row. [4]

c) Consider the classes below, then answer the questions that follow: [5]

```
public class Person
{
   protected String name;
   protected String address;
// many methods not shown here
   public void show ( ) { // code not shown }
   public void tell ( ) { // code not shown }
}

public class Child extends Person
{
    int age;
    // many methods not shown here
    public void show (  ) { // code not shown }
    public void tell ( String m ) { // code not shown }
}
```

Fill in the missing word below (if there is more than one, ***any one*** correct answer will do):

_____ is an instance variable of Person inherited by Child

_____ is an instance variable of Child objects but not of Person objects

_____ is a method of Person inherited by Child

_____ is a method of Person that is overridden in Child

_____ is a method of Person that is overloaded in Child

d) Match each of the following statements to the concepts below (just give the statement number in each answer): [2]

(1) this(x);

(2) super(x);

(3) this.construct(x);

(4) super.construct(x);

_____ calls a constructor in the superclass (parent class)

_____ calls a constructor in this same class

_____ calls a method in the superclass (parent class)

_____ calls a method in this same class