	1	
Please fill in your Student Number and Name.		
Student Number :		Student Number:
	-	

Name:

University of Cape Town ~ Department of Computer Science Computer Science 1015F ~ 2008

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]

Answer: Boxing	5	
) When you use the a	assignment operator	with variables of a class type, will you be assigning a:
i. value?		
ii. primitive type?		
iii. local variable?		
iv. reference?		
Answer: iv		
Consider the follow	ving array:	
myArray[0]	7	
myArray[1]	9	
myArray[2]	-3	
myArray[3]	6	
myArray[4]	1	
myArray[5]	-1	
What is the valu	e of myArray[myAr	ray[1] – myArray[0]] ?
Answer: -3		
. W		
myDoubles?	ving initializer lists of	correctly initializes the indexed variables of an array named
•	$oles[double] = \{0.0, 1\}$	10.15.20.25\
· · · · · · · · · · · · · · · · · · ·		(0.0, 1.0, 1.5, 2.0, 2.5);
ii. double mybout		
iii. double[] myDou	1hlec — J(1) (1 1 1 5	

Answer: iii	
What is the name of the sorting algorithm that locates the smallest unsorted value is in the next sorted position of the array?	n an array and place
Answer: Selection sort	
Write a Java statement that declares and creates an array of Strings named Breeds. large enough to hold the names of 100 dog breeds.	Your array should b
Answer:	
String[] Breeds = new String[100];	
initialize the indexed variables.	

```
int[] \ wholeNumbers = new \ int[100]; for(int \ i=0; \ i<100; \ ++i) wholeNumbers[i] = i+1;
```

h) What are three ways you can use the square brackets [] with an array name?	[3]
	_
	-
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	_
	-
Answer:	
First, the square brackets can be used to create a type name, such as double[] score. Second, the square brackets can be used with an integer value as part of the special syntax Jav to create a new array, as in score = new double[5]. The third use of square brackets is to name an indexed variable of the array, such as score[1].	a uses
 i) Which one of the following is the correct syntax for passing an array as an argument in a method [1 i. a[] ii. a() 	.]
iii. a iv. a[0]a[a.length]	_
	-
Answer: iii	

Question 2 [15]

a)	Match each of the following terms to the concepts below: overriding, overloading, inheritance, composition	[2]
	 inheritance: variables and methods automatically exist in the subclasses of a base class overriding: methods in base class and subclass with same signature but different code overloading: methods in base class and subclass with same name but different signature composition: a class has an instance variable which is itself an Object 	
b)	Suppose that a 2-dimensional array sales has been declared as below. int[][] sales; Give Java code to fill sales with 1200 zeroes: there must be 100 rows each with 12 elem	[4]
	and every element must be initialised to 0	
	Answer:	
	sales = new int[100][12]; $for (int j=0; j < sales.length; j++)$ $for (int k=0; k < sales[j].length; k++)$ $sales[j][k] = 0;$	
c)	The program has changed the values in sales to contain monthly sales data from 100 sl Give Java code to print monthly totals — i.e. print the sum of the values in each colum sales. The 12 values should appear one after the other on the same single line of output.	-



Answer:

```
int sum; for (int j=0; j<12; j++) \\ \{ sum = 0; \\ for (int k=0; k<sales.length; k++) \\ if (j < sales[k].length) //not expected to check this \\ sum = sum + sales[k][j]; \\ System.out.print(sum + " "); \\ \} \\ System.out.println();
```

d) Consider the classes below, then give the output of the main program on the next page: [5]

```
public class Person
{
    protected String name;
    protected String address;
    public Person( )
    {        name = "unknown"; address = "N/A";
            System.out.println("Created unknown person");
    }
    public Person( String pname, String adr )
    {        name = pname; address = adr;
            System.out.println("Created person");
    }
}
public class Child extends Person
{
    int age;
```

```
public Child (String cname, String adr, int years )
        super ( cname, adr );
        age = years;
        System.out.println("Created child");
    }
    public Child ( )
        age = 0;
        System.out.println("Created unknown child");
    }
    public String toString( )
        return (name + " ( " + address + ") aged " + age));
    }
}
public class Test
public static void main ( String args[ ] )
      Child ann = new Child( "ann", "UCT", 6);
      Child kiddie = new Child( );
      System.out.println( kiddie );
}
Output from running Test is:
```

Answer:

Created person Created child Created unknown person Created unknown child unknown (N/A) aged 0