**WIA1002/WIB1002/WXES1117 Data Structure**

**Tutorial 1 : Fundamental Programming Revision**

1. Write the definition of a class Telephone. The class has no constructors, one instance variable of type String called number , and two static variables. One is of type int called quantity, initialized to 250 ; the other is of type double called total, initialized to 15658.92. Besides that, the class has one static method makeFullNumber. The method accepts two arguments, a String containing a telephone number and an int containing an area code. The method concatenates the two arguments in the following manner: First comes the area code, then a dash, then the telephone number. The method returns the resultant string.
2. What is the output for the following? Explain.

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| --- |
| **public class** Test {  **public static void** main(String[] args) {  A a = **new** A(3);  }  }  **class** A **extends** B {  **public** A(**int** t) {  **super();**  System.out.println("A's constructor is invoked");  }  }  **class** B {  **public** B() {  System.out.println("B's constructor is invoked");  }  } |

1. What is the output for the following? Explain.

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| --- |
| public class C {  public static void main(String[] args) {  Object[] o = {new A(), new B()};  System.out.print(o[0]);  System.out.print(o[1]);  }  }  class A extends B {  public String toString() {  return "A";  }  }  class B {  public String toString() {  return "B";  }  } |

A. AB

B. BA

C. AA

D. BB

1. Write a class definition for an abstract class, Vehicle, that contains:

* a double instance variable, maxSpeed
* a protected double instance variable, currentSpeed
* a constructor accepting a double used to initialize the maxSpeed instance variable
* an abstract method, accelerate, that accepts no parameters and returns nothing.
* a method getCurrentSpeed that returns the value of currentSpeed
* a method getMaxSpeed that returns the value of maxSpeed
* a method, pedalToTheMetal, that repeatedly calls accelerate until the speed of the vehicle is equal to maxSpeed. pedalToTheMetal returns nothing.

1. Assume the existence of an interface, Account, with the following methods:

* deposit: accepts an integer parameter and returns an integer
* withdraw: accepts an integer parameter and return a boolean

Define a class, BankAccount, that implements the above interface and has the following members:

* an instance variable named balance
* a constructor that accepts an integer that is used to initialize the instance variable
* an implementation of the deposit method that adds its parameter to the balance variable. The new balance is returned as the value of the method.
* an implementation of the withdraw method that checks whether its parameter is less than or equal to the balance and if so, decreases the balance by the value of the parameter and returns true; otherwise, it leaves the balance unchanged and returns false.