

**HIGHER CERTIFICATE IN COMPUTING IN
INFORMATION TECHNOLOGY
BN002**

**Advanced Programming
COMP H2030**

**Year 2
Semester 4**

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**Tuesday 22nd May 2007
12.30pm - 2.30pm**

Instructions to candidates:

- 1. This paper consists of 5 questions.**
- 2. Candidates should attempt any 4 questions.**
- 3. All questions carry equal marks.**

**DO NOT TURN OVER THIS PAGE UNTIL YOU ARE
TOLD TO DO SO**

Question 1

- a) Outline TWO advantages of using an **IDE** (Integrated Development Environment) in large-scale software development. Name ONE IDE used in industry. [5 marks]

- b) Explain the function of a **JAR** file in Java. [4 marks]

- c) Add appropriate **Javadoc** comments to the following method:

```
public int square(int x) {  
    return x * x;  
}
```

[4 marks]

- d) Describe the effect of using the keyword **package** in a Java class. [4 marks]

- e) Describe briefly the function of EACH of the FOUR **access modifiers** in Java. [8 Marks]

[Total 25 marks]

Question 2

- a) Describe briefly the function of EACH of the following keywords in Java.

- i) **extends**
- ii) **implements**

[6 Marks]

- b) Using Java code create an **abstract base class** called **Animal** that contains ONE **abstract method** called **feed()** which returns a **String**. [6 Marks]

- c) Write a Java class definition called **Circle** that models a circle with x and y co-ordinates at its centre and a radius. Provide an appropriate non-blank **constructor** for circle objects. Provide appropriate **accessor** and **mutator** methods for the circle attributes. [10 Marks]

- d) Demonstrate using a Java code statement how to create an object of type **Circle** as defined in part (c) above. [3 Marks]

[Total 25 marks]

Question 3

- a) Define **class reflection**. Outline the function of TWO reflective methods available in the class **Class**.
[6 Marks]
- b) Describe briefly the function of any THREE media control methods found in the **java.applet.AudioClip** interface.
[6 Marks]
- c) Briefly describe THREE advantages of using **threads** in programming.
[6 Marks]
- d) Demonstrate how to apply **threads** to a Java class using an intuitive example.
[7 Marks]

[Total 25 marks]

Question 4

- a) Outline the function of the **Locale** class in Java.
[2 Marks]
- b) Using Java code create an instance of a **Locale object** for the US-English locale.
[4 Marks]
- c) Explain clearly the function of EACH of the following classes in Java:
 - i PropertyResourceBundle
 - ii ListResourceBundle
 - iii NumberFormat
[9 Marks]
- d) Define what is meant by a **locale sensitive** class.
[2 Marks]
- e) List TWO **locale sensitive** classes in Java. Describe the function and usage of EACH of the locale sensitive classes listed.
[8 Marks]

[Total 25 marks]

Question 5

- a) Briefly describe the function of a **finally** block in Java. [4 Marks]
- b) Explain the difference between **handling** and **declaring** an exception in Java. Use Java code examples to aid with your explanation. [10 Marks]
- c) Define what is meant by an **unchecked** exception in Java. [3 Marks]
- d) Describe the following Object Oriented Programming concepts:
- i Polymorphism
 - ii Inheritance

[8 Marks]

[Total 25 marks]