



Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2025

Centre Number

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Candidate Number

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Software Systems Development

Unit AS 1

Introduction to Object
Oriented Development



[SDV11]

SDV11

THURSDAY 29 MAY, MORNING

TIME

2 hours.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page or on blank pages.

Complete in black ink only. **Do not write with a gel pen.**

Answer **all seven** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 100.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

ADVICE TO CANDIDATES

You are advised to take account of the marks for each part question in allocating the available examination time.

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(Questions continue overleaf)

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[Turn over



24SDV1107

- 3 A class `Book` holds basic data about a library's book collection. All books in the collection are stored in an array called `BookCollection`. This collection can hold a maximum of 2000 books.

C#

```
public class Book
{
    private string title;
    private string author;
    private string genre;
    private int year;
    private string isbn;
```

Java

```
public class Book
{
    private String title;
    private String author;
    private String genre;
    private int year;
    private String isbn;
```

- (a) What do you understand by the use of the term **private** for the class fields/ attributes?

[2]

- (b) Complete the class definition for `Book` with:

- (i) A field/parameterised constructor



4 When developing software, error handling techniques should be applied.

(a) Complete the following statements by inserting the appropriate words or phrases from the list given below.

ArithmeticException	errors	FormatException	robust
catch	Exception	functionality	runtime
enclose	exceptions	handling	throw
end	finally	IOException	unexpected
EndOfStreamException	fail	invalid	try

Effective exception handling is essential for _____ software development, helping to maintain application stability. In programming, _____ blocks surround code where exceptions may occur, while _____ blocks handle specific types of exceptions. The _____ block executes code after exception handling and is always executed.

Common exceptions in object-oriented programming include _____, which handles all exceptional situations. _____ handles errors related to arithmetic operations, while _____ handles errors related to data type conversion.



In addition to handling exceptions, developers can also explicitly

_____ exceptions to signal errors within the code. This

process allows developers to indicate when _____

or _____ conditions occur during program execution. [10]

[Turn over

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- 5 Storing object data outside of a system is a key feature of object-oriented programming.

Section of C# class

```
using System.IO;  
using System.Runtime.Serialization.Formatters.Binary;
```

```
[Serializable]  
public class Customer  
{...
```

Section of Java class

```
import java.io.Serializable;  
import java.io.FileOutputStream;  
import java.io.ObjectOutputStream;  
import java.io.FileInputStream;  
import java.io.ObjectInputStream;  
import java.io.IOException;
```

```
public class Customer implements Serializable  
{...
```

Using the sample code provided, answer the following questions about object serialisation.

- (a) Explain the concept and purpose of object serialisation.





[3]

(b) Explain how object serialisation is implemented.

[2]



- 6 McWalsh's Spa is a day spa offering a one month promotion for a range of packages tailored to provide ultimate relaxation and rejuvenation. Guests can enhance their spa day experience by adding a lunch to their booking. There are two types of lunch offered, "Standard" lunch costing £16 or "Luxury" lunch costing £25. For those seeking an extended escape, McWalsh's Spa also offers an overnight stay add-on, costing £85. Guests can make the most of their overnight stay by adding a dining experience, costing an additional £65.

There are only 150 available bookings for this promotion. The information about each booking is stored in an array called **PromotionalEvent**.

Information about the spa packages can be found below.

Package	Package Name	Cost
A	Relaxation Bliss	£150
B	Rejuvenation Escape	£175
C	Ultimate Pampering	£250
D	Serenity Escape	£300

Inheritance diagram for McWalsh's Spa

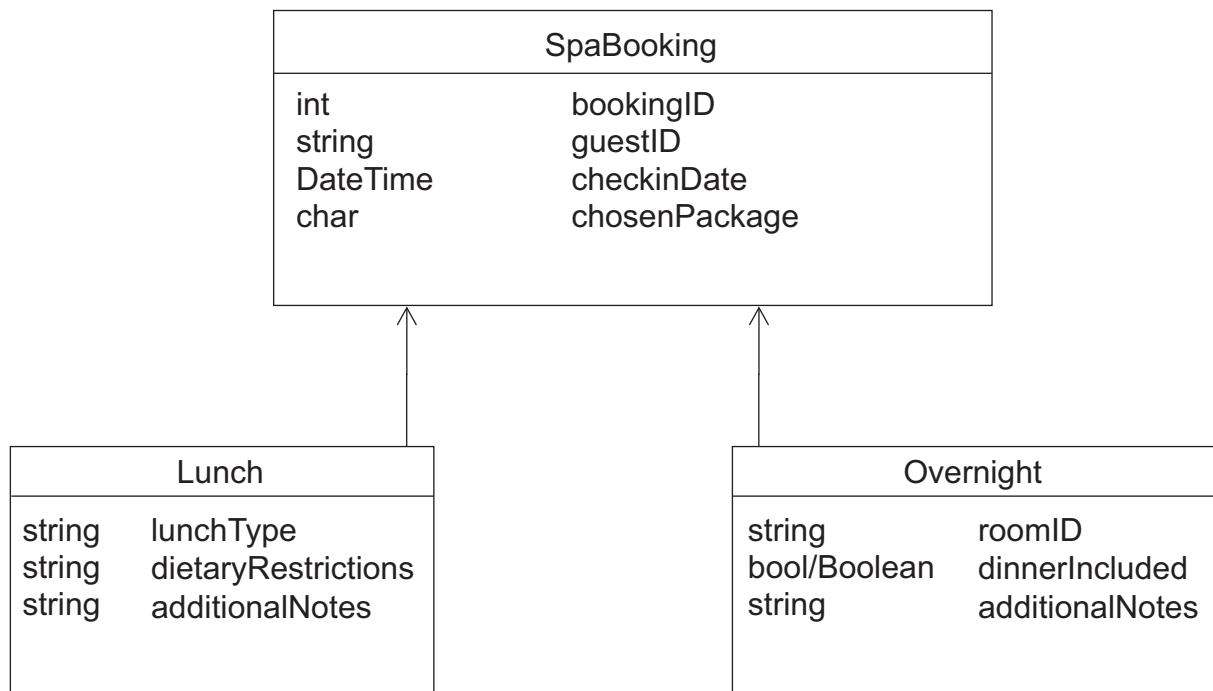


Fig. 1



[10]

(ii) Write the method called **calculateLunchCost()** for the class **Lunch** to return the price of a guest's lunch.

[4]

All classes in **Fig. 1** require a method called **totalPrice()**, to calculate the cost of each part of a guest's experience at McWalsh's Spa.

(b) (i) Write the method called **totalPrice()** for the class **SpaBooking** to return the cost of a guest's chosen spa package.



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Question Number	Marks
1	
2	
3	
4	
5	
6	
7	

Total Marks	
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Examiner Number

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