**Coursework Assignment Brief**

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| **Academic year and term:** | 2017/18 – Semester-1, Year 1 |
| **Module title:** | Object Oriented Programming |
| **Module code:** | QAC020C152A |
| **Module Convener:** |   |
| **Learning outcomes assessed within this piece of work as agreed at the programme level meeting** | *On successful completion of this module students will be able to*1. Gain knowledge and understanding of OOP concepts and principles and be able to evaluate and interpret within the context.
2. Demonstrate comprehensive analytical knowledge of design and implementation of object oriented programmes, taking quality and reusability into account using API’s or object repositories.
3. Employ a structural approach to test OOP based systems, using a test plan, monitoring expected and actual results.
4. Evaluate and collect information from a variety of authoritative sources to inform a choice of solutions to standard problems; advance the knowledge of OOP; and become familiar with a variety of research methods such as qualitative and quantitative.
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| **Type of assessment:**  | Coding & Report  |
| **Assessment deadline:** | . |

**Assignment Tasks**

Your assignment consists of two coursework’s: Coursework 1 is an individual software project which assesses learning outcomes 1, 2 and 3. Coursework 2 is an individual report which assesses learning outcome 4.

**Coursework** 1

**Requirements**

Your Roehampton University classmate runs a small family travel business with her husband, called Avian Flights that acts as a reseller of airline tickets for major airlines. The company has been allocated 5 seats by an airline for one flight for each of three routes (a total of 15 seats each week) including one from London to Cluj. Avian Flights paid £62.50 for each seat. This is not refundable even if the seat is not sold. Avian Flights will sell the first seat on each route for £150, where by, each subsequent seat sold on a route has its price increased by 28% reflecting the reduce availability of seats for that route.

The application will be used by your colleague and her husband who operate the telephone business and use the application to keep track of the seats they have sold each week. They want the application to be scalable to cater for future growth.

The flight booking application should be a console based menu driven application with sub-menus. An example of the main menu is shown below:



Depending on the option selected from the main menu, sub menus should branch out offering the user different options e.g. if option 1 from the main menu is selected, a sub menu should appear offering the user the choice select from a list of flights on which they wish to reserve a seat. In the case of (option 1) or (2), a sub menu should appear offering the user to opportunity to choose on which flight they wish to cancel as seat or view available seats.

The application offers the following routes:

* London to Cluj
* Paris to London
* Rome to Madrid

Each route has two flights a day.

**Data capture**

Each route should start of with 5 available seats. Each seat on each flight should have a unique booking number to distinguish it from all other bookings. The application should allow staff to enter the following information on a customer upon making a booking:

* First name and Surname.
* Date of birth.
* Address including post code.
* Phone number and email.
* Passport number

The system should automatically update the seat price increasing it by 28%.

If the passenger is under 16 then there should be space to enter the name of the parent and their contact details if they are nor the same as the child’s.

For cancelling a flight a user should enter the passport number for a passenger and the flight to find the booking, with an option to then cancel and the seat and it be made available.

**What the system should be able to do:**

* Book a flight where the customer’s details are captured.
* Cancel a booking.
* View only the available seats on a flight.
* Return the customer details when querying a seat number otherwise simply return the seat is available.
* To prevent further bookings if all 5 seats have been booked displaying a message on screen that the 5 seats you have are fully booked.
* For every booking on a flight, the price must increase by 28% for the next seat.

**On-screen reporting**

The price of a seat on one of the flights on demand should be displayed.

Return the details of a customer, i.e. first name, surname, date of birth flight route when a booking is queried.

Total profit or loss their company has made on a flight from the 15 seats they have sold per week, whether they have sold all the seats or not.

A management reporting tool to show the total profit or loss the bookings have made for the company per flight per week.

**Deliverables**

(Word Limit: 1500 -2000 words)

Your submission should consist of the following:

* ***Design* documentation:** Class, interface, enum diagrams, or description templates. Test plan to test functionality and ensure it meets requirements. Technical descriptions of your solutions i.e. how you solved each requirement (use of loops, conditional statements, use of collections etc.)
* ***Development:*** Screen shots of the application performing tasks and the original code for the program in plain text with *code comments.*
* ***The program source code:*** The full source code for the chosen solution
* ***Test documentation:*** a test table listing all the functional requirements, inputs and expected outputs and if your program produces the desired output when tested.

**Coursework** 1 is worth 60% of the overall assignment. The marking criteria are outlined below.

**Marking Criteria Coursework 1**

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| **Deliverable** | **Marks** | **Guidance** |
| Design documentation | **10** | Have you provided class/interface/enum description template detailing the role the class performs in the project?  |
| Test Evidence | **10** | Test Table? Is there evidence that full and comprehensive testing of all features has been done? |
| The full source code for the chosen solution as an appendix in your report. | **60** | **Code Specification (10 marks)**Your program executes successfully, produces the correct results and displays them in correct order. It also meets all of the specifications in the requirements.**Readability (5 marks)**Have you commented the code properly? Have you used meaningful names for your classes, variables and methods?**Efficiency (5 marks)** Is the code efficient without sacrificing readability and understanding? Is it well refactored without duplication of code?**Correctness and Completeness (10 marks)** Have you included error checks? Have you included exceptions? Have you made sure that the programme executes successfully?  |
| Screen shots of the program  | **20** | Have you provided a comprehensive set of screen grabs of the application performing different tasks? (for example attempting to book more than 5 seats on a flight) |

**Task B: Critical report**

**This is worth 40% of the final marks for this module.**

**Your second task is to write a critical report about your program design and development. This task is to be submitted separately as a report.**

Having created your program, write a report that assesses your solution, the approach taken, and your thoughts about using Java for object-oriented programming. Give examples, code samples and screen shots to back-up your comments. (Word Limit: 1000 words)

**Marking Criteria for Coursework 2:**

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| --- | --- | --- |
| **Deliverable** | **Marks** | **Guidance** |
| Use of OOP concepts | **70** | Justification for use of object oriented concepts such as inheritance, abstraction, and polymorphism. What are they? Why did you choose to use them or not, why do you think your approach is better or worse? Looking back at the project do you think you made the right choices regarding the object orientated concepts you used. Would you the same ones again in a similar project and if so why, why not? |
| Meeting the design criteria | **30** | Did you meet all of the design criteria and do you did your approach work? With the benefit of your experience would you have developed the application in any other way? If so how and why? |

Your commentary should show evidence of your reading and research and use the Harvard referencing system. Your report is a chance to assess what you have down and to revisit key design and technical decisions you made. Based on your experience were these the right decisions or would you do anything differently?