 Faculty *of* Engineering & Technology

Department *of* Computer Science

Coursework Title: **Seat Discount System**

Module Name: **Introduction *to* Programming**

Module Code: **4100COMP**

Level: **4**

Credit Rating: **20**

Weighting: **40%**

Maximum Mark Available: **100**

Lecturer: **Dr. Bo Zhou**

Contact: *If you have any issues with this coursework you may contact your lecturer as listed below:*

|  |  |  |
| --- | --- | --- |
| **Lecturer** | **Course Taught** | **Room**, **Phone** & **eMail** |
| Dr Denis Reilly | **Computer Studies** | 731 0151 231 2279 d.reilly@ljmu.ac.uk |
| Dr Denis Reilly | **Computer Networks** | 731 0151 231 2279 d.reilly@ljmu.ac.uk |
| Dr Gabor Kecskemeti | **Computer Science** | 701 0151 231 2855 G.Kecskemeti@ljmu.ac.uk |
| Dr David Lamb | **Software Engineering** | 711 0151 231 2636 d.j.lamb@ljmu.ac.uk |
| Dr Bo Zhou | **Computer Security** | 719 0151 231 2122 b.zhou@ljmu.ac.uk |
| Dr Sorren Hanvey  Dr Dr Michael Mackay | **Computer Forensics** | 645 0151 904 6160 S.C.Hanvey@ljmu.ac.uk  721 0151 231 2276 M.I.Mackay@ljmu.ac.uk |
| **MultiMedia Computing** |
| **Data Science** |

*If there are any outstanding issues you may contact the module co-ordinator whose contact details are:*

eMail: **b.zhou@ljmu.ac.uk**

Room: **719**

Hand-Out Date: **14th October 2019**

Hand-In Date: **8th November 2019 by 5PM**

Hand-In Method: **Canvas**

FeedBack Date: **29th November 2019**

FeedBack Method: **eMail**

Programme(s): **CS, CSc, SE, MC, CF, CSe, CN, DS**

Introduction:

This coursework is to be attempted ***individually***.

You are required to apply basic computer programming concepts and techniques to solve a computing problem. The coursework is supported by tutorial sessions up to the submission date.

Learning Outcome(s) Being Assessed:

1. Apply knowledge *of* programming constructs and basic algorithms.
2. Demonstrate problem solving skills by producing simple programming solutions.
3. *<not assessed in this coursework>*
4. *<not assessed in this coursework>*
5. *<not assessed in this coursework>*

Details *of* Task:

A new seat discount system is required to help managers *of* a railway company determine how much discount they have given out. Every time the system runs, the discount rate may be specified by the managers or set to a suitable default. You are thusly required to produce a console application (*using Java*) that is ready to open the file ***M:\data\seats.txt*** which contains the seat’s data.

*NOTE : The* ***seats.txt*** *file (i.e. Appendix A) is provided on* ***Canvas*** *in the* ***Assignments*** *section.*

*You should download the file to a new folder called* ***data*** *on your* ***M:*** *drive.*

*It contains four sample seats. The format of each seat’s data is as follows :*

*seat type*

*seat price*

*number of bookings*

Upon application launch, the system should ask the managers if they wish to specify a custom discount rate, this should be in the form *of* a yes / no question. When the managers say yes, the system should request the discount rate as input (*from the keyboard*) which will then overwrite the default discount rate (*i.e. Appendix B*). When the managers say no, the system should report (*to the screen*) the default discount rate (*i.e. Appendix C*). Next, the system should loop through the seat’s data, calculating and printing (*to the screen*) the seat type, seat price, number *of* bookings, discount and income following discount, the latter two requiring some basic calculations.

Finally, the running totals for the discount and income following discount should be calculated and printed before the application gracefully exits.

What you should hand in:

The properly formatted & commented code in a ZIP file. Specifically, a single Java (.java) file.

Instructions will be provided on how to use Canvas Assignment Handling.

Marking Scheme/Assessment Criteria:

|  |  |  |  |
| --- | --- | --- | --- |
| **Assessment** | **Assessment Criteria** | | **% weighting *for* part** |
| 1 | Solution’s Functionality   * *Constants & Variables* * *Reading Input* * *Formatting Output* * *if, if-else Statements* * *while, for Statements* | *10*  *20*  *20*  *15*  *15* | 80 |
| 2 | Best Practice | | 10 |
| 3 | Commenting | | 10 |

Guidelines:

* It is not necessary to develop your system outside the specification above, marks are available for answering the question, the whole question and nothing but the question, that said see below regarding best practice.
* This coursework is explicitly assessing the following aspects *of* programming:
  + Constants & Variables (*int, double & string*)
  + Reading Input (*from keyboard & files*).
  + Formatting Output (*to screen*).
  + Selection Statements (*if, if-else*).
  + Iterative Statements (*while, for*).
* The code should employ best practice (*i.e. indentation, spacing & camelCase*).
* The code should also be suitably commented (*i.e. non self-explanatory*).

Resources Required:

You may use the computing labs on the 6th & 7th floors *of* the Byrom Street Campus as well as the 1st floor *of* the Henry Cotton Campus.

You should make use *of* these specific tools & resources:

* Eclipse.
* Lecture Materials.
* The Internet.
* Malik’s Java Book.

Extenuating Circumstances:

If something serious happens that means that you will not be able to complete this assignment, you need to contact the module leader as soon as possible. There are a number *of* things that can be done to help, such as extensions, waivers and alternative assessments, but we can only arrange this if you tell us. To ensure that the system is not abused, you will need to provide some evidence *of* the problem.

More guidance is available at:

[*https://www.ljmu.ac.uk/about-us/public-information/student-regulations/guidance-policy-and-process*](https://www.ljmu.ac.uk/about-us/public-information/student-regulations/guidance-policy-and-process)

Any coursework submitted late without the prior agreement *of* the module leader will receive 0 marks.

Academic Misconduct:

The University defines Academic Misconduct as ‘any case *of* deliberate, premeditated cheating, collusion, plagiarism or falsification *of* information, in an attempt to deceive and gain an unfair advantage in assessment’.

This includes attempting to gain marks as part *of* a team without making a contribution. The Faculty takes Academic Misconduct very seriously and any suspected cases will be investigated through the University’s standard policy (*https://www.ljmu.ac.uk/about-us/public-information/student-regulations/appeals-and-complaints*).

If you are found guilty, you may be expelled from the University with no award.

It is your responsibility to ensure that you understand what constitutes Academic Misconduct and to ensure that you do not break the rules. If you are unclear about what is required, please ask.

For more information you are directed to following the University web pages:

* Information regarding academic misconduct:

*https://www.ljmu.ac.uk/about-us/public-information/student-regulations/appeals-and-complaints*

* Information on study skills:

*https://www.ljmu.ac.uk/students/supporting-your-study*

Appendix A

1ST(Table)

48.50

2

1ST

44.50

3

STD(Table)

28.50

3

STD

24.50

5

Appendix B

- - Seat Discount System - -

Specify Custom Discount Rate [Y|N] : **Y**

Specify Discount Rate (%) : **17.5**

Seat Type : 1ST(Table), Seat Price : £48.50, Bookings : 2, Discount : £16.97, Income : £80.03

Seat Type : 1ST, Seat Price : £44.50, Bookings : 3, Discount : £23.36, Income : £110.14

Seat Type : STD(Table), Seat Price : £28.50, Bookings : 3, Discount : £14.96, Income : £70.54

Seat Type : STD, Seat Price : £24.50, Bookings : 5, Discount : £21.44, Income : £101.06

Total Income : £361.76

Total Discount : £76.74

Appendix C

- - Seat Discount System - -

Specify Custom Discount Rate [Y|N] : **N**

Assuming Discount Rate = 20.0%

Seat Type : 1ST(Table), Seat Price : £48.50, Bookings : 2, Discount : £19.40, Income : £77.60

Seat Type : 1ST, Seat Price : £44.50, Bookings : 3, Discount : £26.70, Income : £106.80

Seat Type : STD(Table), Seat Price : £28.50, Bookings : 3, Discount : £17.10, Income : £68.40

Seat Type : STD, Seat Price : £24.50, Bookings : 5, Discount : £24.50, Income : £98.00

Total Income : £350.80

Total Discount : £87.70