COMP1618	**Software Tools and Techniques**	**Faculty Header ID**	**Contribution: 100% of course**
Course Leader: Hai Huang	**RESIT Coursework**		**Deadline Date: 12 April 2024 (11:30PM)**

Feedback and grades are normally made available within 15 working days of the coursework deadline

Learning Outcomes:
1 Explain the concept of Big Data and its importance in a modern economy 2 Explain the core architecture and algorithms underpinning big data processing 3 Analyse and visualize large data sets using a range of statistical and big data technologies 4 Critically evaluate, select and employ appropriate tools and technologies for the development of big data applications

Plagiarism is presenting somebody else's work as your own. It includes copying information directly from the Web or books without referencing the material; submitting joint coursework as an individual effort; copying another student's coursework; stealing coursework from another student and submitting it as your own work. Suspected plagiarism will be investigated and if found to have occurred will be dealt with according to the procedures set down by the University. Please see your student handbook for further details of what is / isn't plagiarism.

All material copied or amended from any source (e.g. internet, books) must be referenced correctly according to the reference style you are using.

Your work will be submitted for plagiarism checking. Any attempt to bypass our plagiarism detection systems will be treated as a severe Assessment Offence.

Coursework Submission Requirements

- An electronic copy of your work for this coursework must be fully uploaded before **the Deadline 12 April 2024** using the link on the Moodle page for COMP1618.
- For this resit coursework **you must submit 3 separate files (a Zip file of Java source code & a pdf report & a demo video file)**. In general, any text in the document must not be an image (i.e. must not be scanned) and would normally be generated from other documents (e.g. MS Office using "Save As .. PDF"). An exception to this is handwritten mathematical notation, but when scanning do ensure the file size is not excessive.
- There are limits on the file size (see the relevant course Moodle page).
- Make sure that any files you upload are virus-free and not protected by a password or corrupted otherwise they will be treated as null submissions.
- Your work will not be printed in colour. Please ensure that any pages with colour are acceptable when printed in Black and White.
- You must NOT submit a paper copy of this work.
- All work must be submitted as above. Under no circumstances can they be accepted by academic staff

The University website has details of the current Coursework Regulations, including details of penalties for late submission, procedures for Extenuating Circumstances, and penalties for Assessment Offences. See http://www2.gre.ac.uk/current-students/regs

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Design a London Musical Ticket System

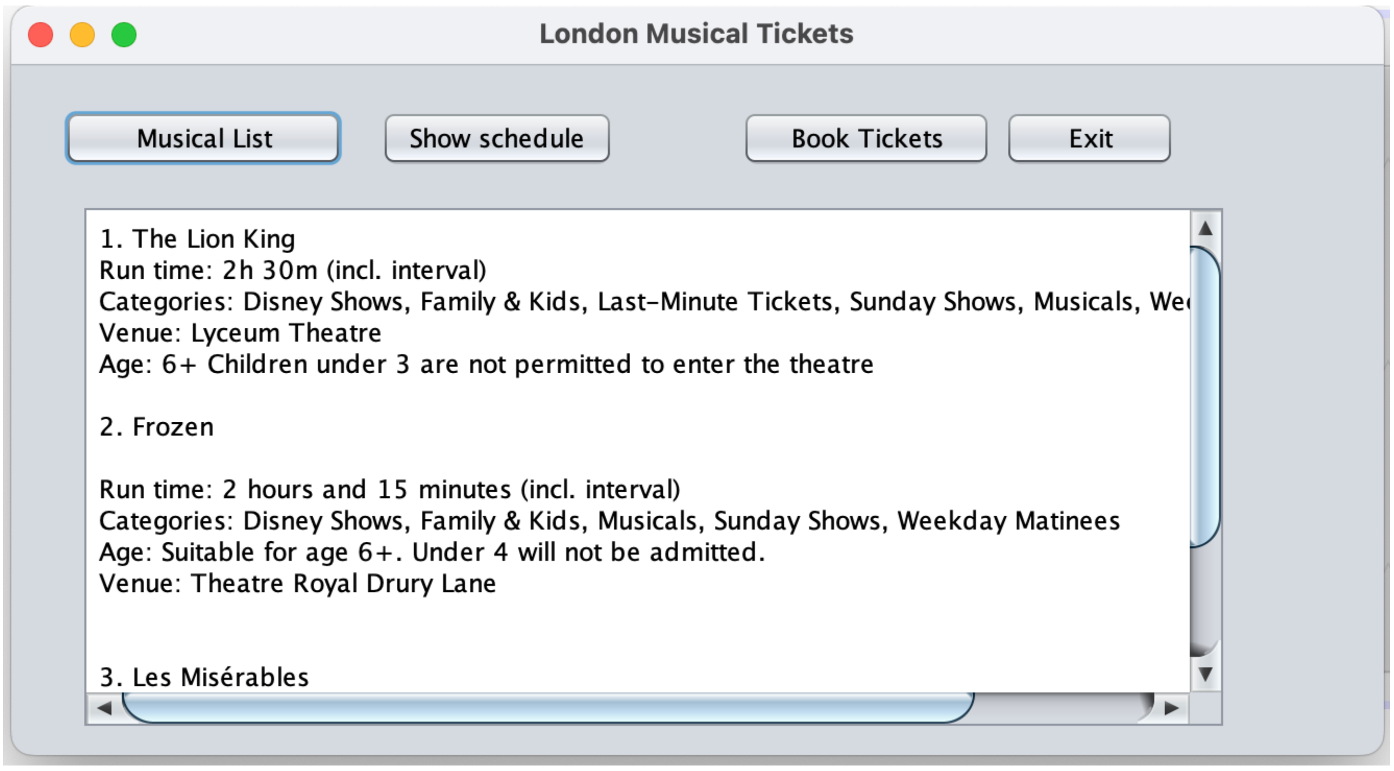
You need to work **individually**. The task is to produce a London musical ticket software by Java which allows a customer to buy musical tickets.

Each musical might have different show times within one month. Tickets have different types such as Adult, Senior or Student with the appropriate price. After buying tickets, a customer can see a printable receipt (as a text/pdf file). Please note that a customer might buy multiple tickets with different types at once.

You can access the following URL for more information about musicals which you might need to populate your dataset:

https://www.londontheatre.co.uk/whats-on/musicals?utm_source=google&utm_medium=cpc&utm_campaignid=20361528455&utm_adgroupid=&utm_adid=&utm_term=&utm_matchtype=&utm_campaign=TTG_LT_g_uk_acq_pmax_all&utm_adgroup=&gclid=Cj0KCQjw06-oBhC6ARIsAGuzdw2kYAdJXvIhYsh5Ym4pFOdt9J7FJCry0HCEUtCyniLyhUwynBiy57caAqdlEALw_wcB

The GUI of the system might look like this when running (only for reference):



```
1. The Lion King
Run time: 2h 30m (incl. interval)
Categories: Disney Shows, Family & Kids, Last-Minute Tickets, Sunday Shows, Musicals, We
Venue: Lyceum Theatre
Age: 6+ Children under 3 are not permitted to enter the theatre

2. Frozen

Run time: 2 hours and 15 minutes (incl. interval)
Categories: Disney Shows, Family & Kids, Musicals, Sunday Shows, Weekday Matinees
Age: Suitable for age 6+. Under 4 will not be admitted.
Venue: Theatre Royal Drury Lane


3. Les Misérables
```

The **Musical List** button is used to show the list of musicals. **Show schedule** button is used to show available dates, time slots, and seats of musicals. The **Book Ticket** button allows to buy musical tickets with dates, time slots, seats, and ticket types (adult, senior or student). There could have an **Exit** button in this GUI.

Coursework Stages

Stage 1 Basic understanding

Design a suitable GUI for this application with sketches of the layout. You may wish to consider real examples of ticket machines. You should allow for your design to simulate input of the selection of movies, show time, and ticket type including a way of specifying which day, time slot, seat number and ticket type.

Stage 2 Outline implementation

Implement the system which you designed in stage 1 in prototype form WITHOUT functionality (just the GUI appearance). You may use any of the examples supplied in the course material as a basis on which to get started – typically you will need radio buttons and/or a drop down menu (JComboBox), buttons, and text fields. You might also consider using spinners.

Stage 3 A basic working version

Implement the system designed in Stage 2.

Stage 4 Testing and validation

Adapt the code to perform validation, i.e. checking for bad input such as a value of ‘four’ rather than ‘4’.

Design *white box testing* of your system (using a test table) and provide evidence of both the functionality of your program and the testing results.

Stage 5 Saving data externally

Extend the program further with a class, which uses a text or CSV file to load musical data and save the receipt as text for each transaction including the number of tickets, total price, musical name, date/time, ticket type, seat number etc.

Stage 6 Innovations

Extend your program further with **two** of the following features:

- Allow listing and search for musicals by name or filter by (e.g. using a JCombobox).
- Using a database such as JavaDB (Derby): Details are to be stored in a suitably designed database, which you should design and populate with at least 20 records.
- Enhance the GUI by using images, audio.

Final Deliverables

The final deliverables include:

1. A **demo video** (compulsory) to prove your product is runnable and the functions have been implemented well.

2. A **zip file** containing working code in the form of .java and .class files, or a zipped NetBeans project folder, together with any CSV files you have used for external storage.

3. A **coursework report** in a separate pdf file (**Do not include the report in the zip file**), containing the evidence of all completed stages, which should include the following **four sections**:

   - **Introduction**
   - **Design and Development:** a description of how you designed and developed the software with suitable screenshots of technical details (such as UML design of Java classes & database design if any)
   - **Testing and Faults**: a summary of the white box testing (the actual table and results will be listed in appendix B) and a discussion of any faults and failures, including those that you managed to correct, and those which are still unresolved.
   - **Conclusions, further development, and reflection**: Give a summary of the program and discuss what you would do if you had another three months to work on the program. For the reflection you should write at least 500 words, answer either (a) or (b) from the following:
     a) What did I achieve with this element of learning? Which were the most difficult parts, and why were they difficult for me? Which were the most straightforward parts, and why did I find these easy?
     b) What have I got out of doing this element of the course? How have I developed my knowledge and skills? How do I see this element of the course helping me in the longer term?

The report should be no more than 2,000 words and there should be no more than 10 screen shots. You may lose marks if your code contains runtime errors, or your report is missing one or more sections.

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Marking Criteria

Part A (60/100) Product quality and Demonstration				
	achieved well (7 - 10)	**partially achieved (5 - 6)**	**poorly/not achieved (0 - 4)**	**Product quality (40/100)**
The functionality of the product **10/40**				
The usability of the product (easy to use?) **10/40**				
Is bad input data handled appropriately? Is the output formatted appropriately? Is the system free from crashes and uncaught exceptions? **10/40**				
Quality of the Java code (meaningful comments, naming standards, clear code layout and formatting) **10/40**				
	achieved well (7 - 10)	**partially achieved (5 - 6)**	**poorly/not achieved (0 - 4)**	**Demonstration of product (20/100)**
The clearness of application demo **10/20**				
Can the student answer the questions well during the demo? **10/20**				
Part B (40/100) Quality and completeness of the report				
	achieved well (7 - 10)	**partially achieved (5 - 6)**	**poorly/not achieved (0 - 4)**	**Quality and completeness of the report (40/100)**
Is the report clear, complete, and well-organized? **10/40**				
Design and Development (evidence on how you designed and developed the application, and results) **10/40**				
Testing and Faults (Have you included evidence of appropriate testing? Have you discussed any faults or failures?) **10/40**				
	achieved well (4 - 5)	**partially achieved (2 – 3)**	**poorly/not achieved (0 - 1)**	
Self-evaluation (Have you done a fair evaluation?) **5/40**				
Conclusions, further development, and reflection (Have you reflected on the development process?) **5/40**				