Assessment Task Information (In-College delivery)

|  |  |
| --- | --- |
| Key details: | |
| **Assessment title:** | Project 1 |
| **Module Name:** | Programming Theory |
| **Module Code:** | FC723 |
| **Tutor’s Name:** | Sophie Norman |
| **Assessment will be set on:** | End of Cycle 4 |
| **Feedback opportunities:** | In class |
| **Assessment is due on:** | End of Cycle 4 |
| **Assessment weighting:** | 50% |

|  |
| --- |
| **Assessment Instructions** |
| You have been approached by the Apache airlines to develop a software product to support the expansion of their operation. The management of the Apache airlines produced a briefing of the specification as described below.  The Apache airlines purchased a new fleet of Burak757 passenger jets and requires a new software to make seat bookings. The diagram below shows the floor plan of a Burak757. The customers can book a seat or seats. If the customer books a seat then the letter "R" is stored to indicate the booking, the rest of the free seats must be indicated by storing letter “F”. A seat is booked only if a the given seat is free. The "X" denotes the isles on the floor, therefore, no booking must be made on those spaces. Likewise the “S” denotes storage area, therefore, no booking must be made on those spaces either. The Apache airline needs this software product (software and all deliverables)     |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 1A | 2A | 3A | 4A | ... | ... | 77A | 78A | 79A | 80A | | 1B | 2B | 3B | 4B | ... | ... | 77B | 78B | 79B | 80B | | 1C | 2C | 3C | 4C | .. | ... | 77C | 78C | 79C | 80C | | X | X | X | X | .. | ... | X | X | X | X | | 1D | 2D | 3D | 4D | .. | ... | S | S | 79D | 80D | | 1E | 2E | 3E | 4E | .. | … | S | S | 79E | 80E | | 1F | 2F | 3F | 4F | .. | ... | S | S | 79F | 80F |       **Part A:**  1. Describe a software development process in detail that you would choose for the development for the above description. Your answer must provide at least three rationale for the choice you make.  (3 marks)  2. As a systems analyst, study the description provided by the Apache airlines and produce a formal Functional Requirements Specification document to capture the requirements of the prospective software system of Apache airlines. At least five requirements must be identified in the Functional Requirements Specification document.  (5 marks)  3. Produce an activity diagram that will represent the identified functionalities of the prospective system.  (2 marks)  4. Develop a seat-booking application in Python that will provide the following functionalities given below. The functionalities must be listed in a menu as options. The menu must be available to the used until the program is terminated. Provide comments within your programs in such a way that the comments can be later used for producing documentation of your program.   Menu functionalities:   1. Check availability of seat    2. Book a seat  3. Free a seat  4. Show booking status    5. Exit program  (10 marks)    5. Describe and implement a common functionality that may be available in a airline booking system but not described in Apache airlines description above (you may have to update your activity diagram).  (3 marks)   6. In order to maintain version control of your code base, create a publicly accessible github repository within your account and commit your code to the remote repository. Describe in detail the steps you followed to achieve this task. Provide the link to your repository.   (2 marks)    **Part B**   In a later date, the Apache airline provided more information related to the requirements of the future software. The airline decided allocate a booking reference to each customer, therefore, when a new booking is made the system must store store a booking reference in place of letter “R” and traveller details such as passport number, first name, last name,  seat row and seat column to be maintained in a database table. **Refactor** your code from part A to satisfy the following requirements.   1. Develop a functionality based on an algorithm that will produce a random booking reference. The booking reference must have exactly eight alphanumeric characters. When a new reference is produced the system must make sure the reference is repetitive. You must comment your code and describe in detail the implementation logic of your algorithm.  (5 marks)   2. Refactor your functionalities from part A in such a way that when a booking is made the reference is stored in the data structure and customer data is stored on a database table. Likewise, when a seat is freed the letter “F” is stored and any booking details from the database is removed. On completion of this task, make the second commit to the remote repository.   (8 marks)   3. Describe the git command that can be used show the updates you have made to the program. Give an example using your own repository.    (2 marks)  **Part C**  Write a 1000 word essay, with UML diagrams. The essay should describe, referencing Use Case Diagrams, Activity Diagrams and Class Diagrams that you have drawn, what your software does and how your software works.  (40 marks)  **Please note:**  This is an individual assessment so you should not work with any other student. |
| **Learning Outcomes Assessed:**   1. Evaluate programs using fundamental programming constructs, including functions, iteration, recursion, other types of algorithms such as greedy algorithms and shortest-path algorithms, types, strings, files, sequences, maps, sets, sorting, searching, exceptions, classes and arrays; Apply procedural, functional, event-driven, and object-oriented programming to data problems and numerical analytical problems and database systems as required in a given problem and apply appropriate techniques, libraries, and algorithms to solve a given problem; 2. Identify, and select appropriate techniques, libraries, and algorithms to solve a given problem 3. Read and reason about code, and clearly articulate understanding of code in terms of structure, behaviour, correctness, efficiency, style and idiom. 4. Communicate their understanding of a problem and solution approach clearly, produce top level plans with breakdowns into sub-problems; |
| **Submission Requirements:**  **You must include the following paragraph on your title page:**  “I confirm that this assignment is my own work.  Where I/we have referred to academic sources, I have provided in-text citations and included the sources in the final reference list. “  **Academic Integrity & Misconduct Information**:  Please use this link to access more information on academic integrity and misconduct:  <https://pathways.kaplaninternational.com/course/view.php?id=3436>  Formatting (for report/documentation):   1. Use a standard academic font, size 11-12 and use 1.5 spacing between lines. 2. Each page of the assignment should have a header with the student ID number, module code (e.g. FC723) and the name of the class tutor. Student name should not be written. 3. All pages should be numbered. 4. A title page consisting of the following information should be included:    * + Module Code (e.g. FC723)      + Class/Group: (e.g. Group A)      + Module Title (e.g. Programming Theory)      + Assessment Title (e.g. Portfolio Project 1)      + Tutor Name: (name of tutor)      + Student GUID Number: (our GUID number only and NOT full name)      + Date of Submission: (date)   **Submission Guidelines:**  Submit an *electronic copy of your assignment*through Turnitin on the FC723 Programming VLE page by the due date.  All code should be submitted in .py files, all documentation should be submitted in .docx files. You should upload one zipped file (with a **.zip** file extension) to the VLE.  NB – If you experience problems submitting your assessment to Turnitin:  1. Contact College Services using this form before the deadline: [https://kicpathways.formstack.com/forms/contact\_gic](https://kicpathways.formstack.com/forms/contact_gic%20%20)  2. Under ‘What is your enquiry about?’, choose ‘assignment hand in’  3. In the ‘How can we help you?’ box, write what the assignment is (e.g. Formative 1 Research Proposal), the module (e.g. PM600), group (e.g. X EDU), tutor’s name and date it was due in  4. Attach your assignment and screenshot(s) of the error message  **Late Submission:** Late submissions should be submitted to the late submission Turnitin assignment on theFC724 Programming VLE page.  **Penalties for Work Submitted late:**   |  |  | | --- | --- | | **Number of Working Days Late** | **Penalty Awarded** | | **1** | 85% of original mark | | **2** | 80% of original mark | | **3** | 75% of original mark | | **More than 3** | Zero mark awarded | |
| **How will this assessment be marked?**  The marks for each section are given above  For more information, please view the marking criteria released with your project. |
| **How will you get feedback?**  Review of the project will be carried out in seminars or an Academic Support session, after your results have been made available and if a resit is required. |