DISTRIBUTED COMPUTER SYSTEMS

Group Assignment (100%)

1. **Synopsis**

This assignment aims to evaluate students’ in terms of two skill sets: Cognitive skills and interpersonal skills. The first skill set carries 60% weightage of marks and the second skill set carries 40% weightage of marks. Research progress should be presented in Week 7, while the whole assignment should be submitted and presented towards the end of the course.

**PLO2** – Cognitive skills

|  |  |  |
| --- | --- | --- |
| CLO2 | Create sub-component of stand-alone application using RMI distributed technology (C6, PLO2) | Group Component |
| CLO3 | Explain the technique used in the development of RMI application, related to cloud computing and virtualization for distributed environment (A4, PLO4) | Individual Component |

**PLO4** – Interpersonal skills

1. **Scenario**

The CKF Group Malaysia is most commonly known as just **CKF**, is a multinational company which focuses mainly on e-commerce. The e-commerce company is best known for its top selling categories like Baby products, Accessories, Home Appliances and Mobile phones through e-commerce platform. At present, the company is using a PDS (Product Delivery System) to handle product delivery but they feel that the system did not seem to be an easy-to-use platform and it’s not able to handle product delivery as the demand for products are getting increased day by day. So, they would like to have a PDS (Product Delivery System) that eliminates the current shortfalls and take control of delivery operations, increase revenue, and delight customers with a single, easy to use platform.

**Task:** Your team is assigned with a task to design, develop & implement a PDS (Product Delivery System) for the e-commerce company CKF using RMI, a distributed computing technology. This involves writing both the server and the client program. Client program can use either a command line interface or a graphical user interface. The system should allow the customer to register an account with the First Name, Last Name and IC/Passport number. If the username already exists, then the system should notify the user to enter a different username. Once the account registration is successful, the system should allow the customers to order the items and a report should be generated accordingly. You may use any other Java collection or external database of your choice to develop the system. Also, the system should make sure that the communication between the customer and the PDS is secured.

***Notes:***

* The tools are not limited to the above scenario, you can propose any tool such as Netbeans IDE, Eclipse, IntelliJ IDEA, etc.
* You can choose only JAVA programming language to develop your system also you can choose any database or file system.
* It is required to develop client server based application using RMI.

1. **Tasks:**
   * + 1. Identify the problem statement and the background requirements for the given scenario.
       2. By doing research, design and develop a distributed application which follow the organization needs.
       3. Present a fault-tolerant distributed application also evaluate the implemented application based on quality requirements such as usability, maintainability and heterogeneity.
       4. Facilitate constructive recommendation for F&W FOS to use cloud computing / virtualization for future enhancement.

5. Explain the technique used in the development of RMI application. Also, explain how distributed system is related to Blockchain.

6. Create a project plan for the given scenario in Gantt chart.

7. Choose any type of testing to provide necessary testing manual for the RMI system.

1. **Guidelines for the Report:**

Document the results of your work in a professional and systematic manner, in the form of a computerized report. One (1) softcopy of your documentation is to be submitted in Moodle. Your documentation should include the following sections:

1. Table of contents
2. Gantt chart
3. Abstract, Introduction, Problem background and Requirements
4. Research and Design
5. Implementation
6. Testing
7. Explain the techniques used in the development of RMI application& Explain how distributed system is related to Blockchain
8. Conclusion
9. Future enhancement
10. References
11. Appendices and Workload Matrix
12. **Assessment**

The assignment will be evaluated based on the criteria explained in Table 1. You have to fill up your details in the table below, print it and include it in your final report.

**Table 1: Assessment Criteria (Marks Breakdown)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Assessment Criteria | Students | | | | |
|  | Student 1 | Student 2 | Student 3 | Student 4\* |
| Name |  |  |  |  |
| TP. No |  |  |  |  |
| Marks | | | | |
| PLO4: Interpersonal Skills (40%) | Weight | Student 1 | Student 2 | Student 3 | Student 4\* |
| Research & design | 10 |  |  |  |  |
| Presentation | 10 |  |  |  |  |
| Documentation | 20 |  |  |  |  |
| Subtotal Marks (PLO4) | 40 |  |  |  |  |
|  | | | | | |
| PLO2: Cognitive Skills (60%) | Weight | Student 1 | Student 2 | Student 3 | Student 4\* |
| Implementation | 30 |  |  |  |  |
| Evaluation & Justification | 20 |  |  |  |  |
| Testing | 10 |  |  |  |  |
| Subtotal Marks (PLO2) | 60 |  |  |  |  |
| Grand Total (PLO4+ PLO2) | 100 |  |  |  |  |

(\*) if any

1. **Submission requirements**
2. You are required to complete the assignment in the form of group work (3 to 4 members maximum in a group) and submit (Online) it through **Moodle**.
3. Your assignment will be checked for Plagiarism through Turnitin. **Plagiarism** is a serious offence and will automatically be awarded **zero** (0) marks.
4. You need to ensure that you maintain originality in all your discussions and justifications. Copy paste work will not be entertained. Your reference list should be complete and accurate. Also, make sure that you cite other people’s work properly.
5. You are allowed to refer books, including electronic books, journals, articles, conference papers and online trusted data center web sites.
6. Not allowed to refer from blogs and forums.
7. Your report must be typed using Microsoft Word with Times New Roman font. Expected length is **1,500** words. You need use to include a word count at the end of the report (excluding title, source code of program & contents pages) Report should be in 1.5 spaces.
8. The report has to be well presented and should be *typed*.
9. The report should have a one (1”) margin all around the page as illustrated below:



1. Every report must have a *front cover*. The front cover should have the following details:-
   1. Name
   2. Intake code.
   3. Subject.
   4. Project Title.
   5. Date Assigned (the date the report was handed out).
   6. Date Completed (the date the report is due to be handed in).
2. **All** information, figures and diagrams obtained from external sources **must** be referenced using the APA referencing system accordingly.