IFS 354

Emerging Trends in Information Systems

Individual Assignment – Case Study

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Marks	100
Due date	1st June 2024 – 23:59
Submission	**Submit the following via iKamva:** APEX Login Credentials Python Script(s) Documentation
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Department	Information Systems

Company Overview

TechInnovators Inc. is a rapidly growing engineering firm that has established itself as a leader in the design and development of cutting-edge Internet of Things (IoT) devices and high-end computing equipment. Founded in 2010, the company has experienced tremendous growth, expanding from a small team of 10 engineers to over 100 employees across multiple offices and development labs.

TechInnovators Inc. prides itself on its innovative spirit and commitment to pushing the boundaries of technology. The company's diverse portfolio includes smart technology devices, industrial automation solutions, and high-performance computing systems for data analysis and product development. With a strong emphasis on research and development, TechInnovators Inc. heavily invests in state-of-the-art equipment and tools to ensure its engineers and developers have access to the resources they need to create revolutionary products.

Challenges

As TechInnovators Inc. continues to grow, the company has encountered significant challenges in managing and tracking its extensive inventory of equipment and devices. With multiple development teams working on various projects simultaneously, the efficient allocation and utilization of resources have become increasingly complex.

The company's inventory consists of a wide range of specialized equipment, including:

1. Prototyping boards and development kits for IoT devices
2. High-performance computing systems
3. Testing and measurement equipment for quality assurance
4. Specialized tools and instruments for hardware and software development

With no centralized system in place, employees often struggle to locate the specific equipment they need for their projects. This has led to significant delays and inefficiencies, as engineers and developers spend valuable time searching for the necessary resources instead of focusing on their core tasks.

Additionally, the lack of visibility into equipment usage patterns makes it challenging for TechInnovators Inc. to optimize resource allocation and plan for future equipment needs effectively. Without accurate data on which equipment is being utilized and how frequently, the company faces the risk of either over-investing in unnecessary resources or facing shortages that could hinder product development. Furthermore, the absence of a tracking system increases the risk of equipment loss or misplacement, which could result in substantial financial losses and further delays in project timelines.

As TechInnovators Inc. continues to expand and take on more ambitious projects, the need for a robust and efficient equipment tracking system has become increasingly apparent. The company recognizes that addressing this challenge is crucial to maintaining its competitive edge and delivering innovative products to market on time and within budget.

Requirements

As the lead software engineer at TechInnovators Inc., you have been tasked to develop a functional equipment inventory tracking system to address the challenges faced by the company in managing its extensive inventory of specialized equipment. The proposed solution should leverage the company's existing enterprise software built on Oracle APEX and utilize Python for integration and lightweight applications.

The solution should involve the following components:

Oracle APEX Integration:

- Develop an Oracle APEX application to serve as the central inventory management system.
- Implement functionality to add new equipment and manage existing equipment quantities.

- Create user interfaces for checking out equipment, tracking equipment usage, and generating reports. This interface must be built for the admin personnel who are responsible for assigning equipment to employees.

Python-based Integration:

- Develop a Python-based application which must be used by employees to interface with the Oracle APEX back-end through custom-built APIs.
- The application should allow employees to view a report of the equipment they've used in the past and the equipment they are currently using.
- Employees must be able to return/check-in equipment by inputting the Booking ID associated with specific equipment and scan a QR code embedded with their employee ID to record that the equipment has been returned/checked in.

Documentation

Ensure that you have included the relevant documentation and submit it as a PDF. This includes the following:

1. **Technical Documentation:**
   - System architecture and design
   - API documentation
   - Database schema and data dictionary
   - Third-party libraries and dependencies
2. **Setup and Configuration Guides:**
   - Hardware and software prerequisites
   - Setup instructions
   - Configuration settings and options
3. **User Manuals and Guides**
   - End-user documentation (features, usage scenarios, screenshots)
   - Administrator guides (system management, backup, monitoring)

Points to note

- Make use of the assessment rubric and recorded system demonstration to guide you through the development process.
- No late submissions will be accepted for this assessment.
- Handwritten work will not be accepted.
- If you are uncertain about any of the aspects of this assessment, you are welcome to consult with your lecturer.
- For documentation, take note of the following:
    - Images and screenshots are allowed.
    - Adhere to Font Type: Arial Font Size: 12; 1.5 Line Spacing with margins of 2.54 CMs on all sides of pages.