

**Applied Science Private University**

**Faculty of Information Technology**

**Department of Software Engineering**

**Field Training**

**FINAL REPORT**

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Future Applied Computer Technology (FACT)

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# Acknowledgment

*I would like to express my sincere gratitude to [Future Applied Computer Technology -FACT] for providing me with the opportunity to complete my training within their organization. The support, guidance, and resources offered during my time here have been instrumental in my personal and professional development.*

*I would particularly like to thank my supervisor, [Atyah Abu Baqi & Heba Azem], for their continuous encouragement, invaluable advice, and patience throughout the training period. Their mentorship has played a crucial role in helping me navigate through various challenges and gain deeper insights into the field of software engineering and database management.*

*Additionally, I am grateful to my colleagues and team members for their collaboration, shared knowledge, and willingness to assist me whenever needed. Their professionalism and expertise have greatly enhanced my learning experience.*

*Finally, I would like to thank my university (Applied Science Private University ASPU) and professors for providing a strong foundation of knowledge that I was able to apply and expand during this training. The combination of academic learning and practical application has been a rewarding experience that I will carry with me as I move forward in my career.*

# Introduction

## Company Background

Fact is an information technology company affiliated with the Bahraini Al-Baraka Group. This group also has many other institutions and is spread across many Arab countries and Turkey. Among these institutions in Jordan are Al-Omaryah Schools, Islamic Insurance Company, Jordan Islamic Bank, FACT company, as FACT company is responsible for all IT services for these institutions.

Its location in Amman, Wasfi Al-Tal Street, Jordan Islamic Bank Building #23, 5th Floor.

## Company Products

1. ORA-BANK the future of Islamic banking Secured

ORA-Bank System is a fully integrated banking system designed to handle, control and support financial institutions’ front office and back-office operations. Functionally, and technically ORA-Bank System is a product of 25 years of extensive banking expertise and development of core banking solutions. This permanent collaboration allowed FACT to constantly develop new features and modules in order to meet challenging and continuously evolving markets capabilities.

* Covers all banking activities by being comprehensive and integrated
* Facilitates all banking needs, easy to customize and fully parameterized
* Enhances business performance
* Speeds up transactions
* Supports customer relationship activities by providing all the information a teller needs about a customer at his fingertips Inter-branch operations
* Secure and maintains confidentiality
* complies with the Islamic Shari'a principles in accordance with AAOIFI standards
* ORA-Bank is web-based, secure, efficient, proven, multi-lingual (English, Arabic and French), multi-currency, real time on-line, 24x7, fully integrated, user friendly, menu driven, completely GUI, flexible, evolving, fully parameterized and easily customizable in order to meet the bank’s current and future requirements.
* ORA-Bank is aligned to the International Standards including Accounting Standards, AAOIFI and SWIFT messages formats while meeting the local specifications.
* ORA-Bank offers automated capabilities with default values based on user’s defined standard business rules and particular conditions.

2. Al-Haris General Insurance

Nowadays, insurance is considered as an incredibly big business. It plays a significant role in every aspect of life and business. The industry promotes investment in the future economic growth of the whole region by using the premium income received to provide long-term capital for investment. It helps to fund public services and company expansion, earn foreign currency and generate tax. FACT Software Solution AL-HARIS A team of insurance business and IT experts developed AL-HARIS system to provide the highest quality of cost effective insurance management in the most appropriate setting.

Al-Haris provides general insurance and TAKAFUL solution, which cover underwriting, claims and re-insurance modules; through complying with the highest international standards and Islamic Shari'a. Al-Haris is a general insurance and TAKAFUL solution marked as a comprehensive and integrated solution with a wide range of insurance applications that involve all classes of business managed and handled by:

Underwriting:

-Manages multi location and fleet policies

* Follow up premiums side by side with broker commissions
* New class of business can be created through policy administration module
* Predefined endorsements' wording according to endorsements' types

-Claims:

* Keeps history of outstanding claims
* Manages claims transactions on claim party level

-Reinsurance:

* Manages proportional treaties, XOL and Facultative reallocation
* Efficiently handles difference in rate regarding facultative reallocation
* Monthly or Quarterly reinsurer statements

3. Al-Haris TPA

Al-Haris TPA is a comprehensive fully integrated healthcare management system that manages the relationship between the insurance company, the providers, the insured and the re-insurance company. Al-Haris TPA requires a small number of staff to run the product, reduces time and effort needed to process claims and payments, verifies claims validity automatically and catches false claims, thus eradicating unnecessary payments. Al-Haris TPA offers great benefits to the bottom line. It saves on administrative costs, personnel costs, and disbursement costs. In summary, Al-Haris TPA provides excellent technical results by combining, outstanding underwriting and product design, along with exceptional network management, top of effective claims and case management, and extraordinary MIS and data management.

* Al-Haris TPA controls the redundancy to adhere to the rising need of performing a single logical preserving information consistency
* Al-Haris TPA high level of security protects confidential information ensuring privacy and grant access only to authorized users
* Al-Haris TPA features real-time and accurate information at enterprise level leading to availability of up-to-date information
* Al-Haris TPA provides reporting and tracking capabilities, with full view on current business status and supports the inspection of the trend over a long period of time.

## Company Organizational Structure

According to company policy, this is private information that cannot be published.

# Projects/Tasks/Assignments

## Instagram Feature Functionality Testing (14/7/2024 – 18/7/2024)

The task involved testing key Instagram features, including login/signup, posting photos, and direct messaging, to ensure they functioned correctly.

* Test case 1: Login/Signup Functionality.
* Steps:
* Attempted to login using valid credentials.
* Tested the signup process while a new email.
* Checked the password recovery feature.
* Result:
* Login and signup processes worked as expected.
* Password recovery emails were received promptly.
* Test case 2: Posting a photo
* Steps:
* Selected a photo from the device gallery.
* Applied filters and edited the photo.
* Added a caption and hashtags before posting.
* Results:
* Photo was successfully uploaded and appeared on the profile feed.
* Filters and editing tools functioned correctly.
* Test case 3: Direct Messaging
* Steps:
* Sent a direct message to a user.
* Tested sending photos and videos through direct messages.
* Checked the read receipt functionality.
* Result:
* Messages, photos, and videos were sent and received without issues.
* Read receipts were accurately displayed.

## Technical Support and Troubleshooting (21/7/2024 – 25/7/2024)

During my training period, I was actively involved in providing technical support and troubleshooting services within the IT department. This role encompassed a variety of responsibilities aimed at ensuring the smooth operation of the organization’s IT infrastructure and assisting end-users with their technical issues. My contributions included:

* Hardware and Software Installation: I assisted in setting up new workstations, which including installing and configuring operating systems, essential software applications, and ensuring that all hardware components were functioning correctly. I also updated existing systems with the latest software patches and security updates.
* Network Troubleshooting: I helped diagnose and resolve network-related issues, such as connectivity problems, slow internet speeds, and VPN access difficulties.

## Health Insurance Claims processing system (28/07/2024 –01/08/2024)

For the Health Insurance company, I was involved in the development of a Claims processing system, aimed to automating and streamlining the insurance claims process. My work included:

* Web Services Development: I designed and developed web services using ASP.NET core to handle various stages of the claims process, such as claim submission, core to handle various stages of the claims process, such as claim submission, validation, review, and approval. These services were built to be secure, scalable, and capable of handling high volumes of transactions.
* Data Validation and Processing: I wrote PL/SQL scripts for data validation and processing in the Oracle database. This involved implementing business rules for claim eligibility, calculating claim amounts, and checking for potential fraud.
* User Interface Design: I contributed to the design of the user interface tor the claims processing system. The UI was developed using ASP.NET MVC, focusing on user-friendly navigation, real-time data updates, and responsive design to ensure compatibility across various devices.

## Development of a student management system for Al-Omaryah schools (04/08/2024 – 08/08/2024)

In this project, I was involved in the design and development of a comprehensive Student Management System (SMS) for Al-Oamaryah Schools, utilizing .Net technologies. My contributions included:

* System Design and Architecture: I participated in designing the overall architecture of the SMS, which included various modules such as student registration, attendance tracking, grade management, and parent-teacher communication. The system was designed to be scalable and modular to allow easy future enhancements.
* Development of Student Registration Module: I worked on the development of the student registration module, where I implemented features like online registration forms, document upload functionality, and automated email notifications. The module was integrated with the Oracle database to store and retrieve student records efficiently.
* Attendance Tracking and Reporting: I developed the attendance tracking module, where I implemented functionality for teachers to mark attendance, view attendance history, and generate reports. This module was linked with the Oracle database to ensure real-time data synchronization and reporting.
* Integration with Existing Systems: I worked on integration the SMS with existing legacy systems used by the schools, ensuring seamless data flow between different systems. This involved writing custom APIs and using Oracle PL/SQL to handle data transforming and loading.
* Testing and Deployment: I participated in unit testing and integration testing to ensure that the system met the required functionality and performance standards. I also assisted in the deployment process, configuring the application on the school’s servers, and providing post-deployment support.

## Designing and implementing database schema (11/08/2024 – 15/08/2024)

The objective of this task was to design and implement a relational database schema using Oracle SQL.

This involved creating two tables, “Customers” and “Addresses”, and ensuring data integrity and proper relationships between the tables.

* Database Schema Design:
* Customers Table: Designed to store customer information, including customer\_id, first\_name, family\_name, date\_of\_birth, gender, and nationality. The customer\_id field was set as primary key.
* Addresses Table: Designed to store address details linked to customers table, including customer\_id, country, city, phone and street. The customer\_id field in this table was defined as foreign key referencing the customer table.
* Data Constrains:
* Ensuring Data Integrity: Applied constrains to enforce data integrity, including setting phone as NOT NULL to ensure that every address record has a phone number.
* Preventing Duplicate Entries: Implemented checks to avoid duplicate data by using appropriate constraints and validation.
* Data Insertion and Verification:
* Inserting Data: Used INSERT statements to populate the customer and addresses tables with sample data, ensuring relationships between records were correctly maintained.
* Verification: Ran SELECT queries to verify that the data was correctly inserted and was visible in the respective tables.
* Troubleshooting and Adjustments:
* Addressed Issues: Handled cases where data was not displaying or was being duplicated by checking for existing records, using appropriate data types, and ensuring correct transaction commits.

Successfully created a well-structured database schema with enforced data integrity. Ensured that the data insertion process was smooth and verified the accuracy of the stored data. The task demonstrated proficiency in database design SQL scripting within the Oracle environment.

## Oracle Function Development for Email validation and Age Calculation (18/08/2024 – 22/08/2024)

This week, I focused on studying Oracle functions and implementing them to handle email validation and age calculation for employees.

* Task 1: Email Validation Function
* The first task was to create an Oracle function to validate employee email addresses. The function checks whether the email follows a specific format and belongs to one of the allowed domains: @gmail.com, @yahoo.com, or @hotmail.com.
* I utilize the SELECT CASE statement to evaluate the email domain. The function returns a Boolean value: TRUE if the email domain matches one of the specified domains and FALSE if does not. This ensures that only valid email addresses are accepted in the database.
* The function was successfully implemented, and it accurately identifies valid and invalid email addresses. This improves the data integrity of the employee records.
* Task 2: Employee Age Calculation
* The second task involved calculating the age of each employee based on their date of birth.
* I created a function that calculates the employee’s age using a SELECT statement. Additionally, a new column was created in the database to store and display the calculated age for each employee. This column is automatically updated whenever the function is executed.
* The function accurately calculates the employee’s age and display it in the new column, providing a quick reference to this important information.
* Throughout the week, I deepened my understanding of Oracle’s SELECT CASE statement and how to effectively structure functions within Oracle databases. I also improved my skills in handling real-world data validation and calculations.

## Oracle Procedure for Email Validation and Introduction to Packages (25/08/2024 – 29/08/2024)

This week, my focus was on understanding Oracle procedures and starting explore Oracle packages. I worked on integrating the email validation function from the previous week into the procedure for updating employee records.

* Task 1: Email Validation Procedure:
* This first task was to create a procedure that integrates the email validation function I developed earlier. The purpose of the procedure is to add an email address to the employee’s record based on their ID, but only if the email format is correct.
* The procedure accepts the employee’s ID and email address as input. It then calls the email validation function to check if the provided email follows the correct format. If the email is valid, it is inserted into a newly created column in the database called “Email”. If the email is invalid, the procedure displays an error message: “Wrong Email Format”.
* The Procedure was successfully implemented and tested. It correctly adds valid emails to the employee records and prevents invalid emails form interested by displaying the appropriate error message.
* Task 2: Studying Oracle Packages:
* In addition to working on the procedure, I began studying Oracle packages. The goal is to understand how packages can group related procedures, functions, and other elements to improve code organization and reusability.
* I studied the structure of packages, including how to create package specifications and bodies. I also learned how packages can encapsulate logic and allow for more efficient management of database operations.
* Although still in the learning phase, I have gained a foundational understanding of Oracle packages. They will enable me to explore how I can use packages to streamline future development tasks.

## PL/SQL Loops & Cursor Implementation for Employee Data Management (01/09/2024 – 05/09/2024)

This week, I focused on deepening my understanding of loops and cursor in PL/SQL. By working through various tasks such as retrieving employee details, processing records based on specific conditions, and performing salary updates, I gained practical experience in controlling program flow and managing data retrieval using cursor.

* Tasks completed:

1. Loop implementation for employee name retrieval

Implemented a loop in PL/SQL that retrieves and prints the name of each employee from the employee table. The loop is designed to process up to 10 employees and then exit after completion.

1. Salary Retrieval by Employee\_ID

Developed a loop that retrieves the salary of each employee, beginning with employee id 1, and continues processing until reaching employee id 10.

1. Employee ID Processing with Automatic Increment

Created a loop that processes employees with ids from 1 to 15, using automatic incrementation of the employee id counter for efficient retrieval of employee details.

1. Salary Update using Cursor

Calculated a 5% bonus for all employees in department 10 and update their salaries in the employee table using a cursor.

# Formal Training Received

During my training period, I received formal instruction in several key areas, which greatly enhanced my technical skills and understanding of professional software development and database management practices. The formal training included: Oracle Database Management: Received structured training on Oracle SQL and PL/SQL, covering topics such as data manipulation, schema design, and the creation of stored procedures, functions, and packages. This training provided a solid foundation for managing relational databases, ensuring data integrity, and implementing business logic within the database. .NET Development: Underwent training on.NET technologies, particularly focusing on web development using ASP.NET MVC and ASP.NET Core. This included both front-end and back-end development, with emphasis on building scalable, secure, and user-friendly applications. Software Testing and Debugging: Received formal instruction on the principles and practices of software testing, including the creation and execution of test cases for functional testing (e.g., login/signup, file uploads, messaging), as well as troubleshooting techniques for identifying and fixing bugs in both web applications and database systems. Web Services and API Development: Attended training sessions on designing and developing web services, focusing on creating RESTful APIs using ASP.NET Core. This included handling various operations such as claim submission, validation, and approval in a scalable and secure manner. Data Validation and Processing: Formal training was provided on the principles of data validation and processing, especially in the context of insurance claims and student management systems. This training involved understanding business rules and implementing them within the Oracle database using PL/SQL. Technical Support and IT Infrastructure: Received hands-on training in IT support, including hardware and software installation, network troubleshooting, and user support. This training emphasized problem solving and quick-response tactics to maintain organizational IT systems.

# Relate Training Experience to your Study

Throughout my training, I have been able to connect the theoretical concepts from my university studies with practical, real-world applications. The experience has significantly enhanced my understanding of various technical and allowed me to apply and deepen my knowledge in several ways.

My academic background provided a foundation in software development and database management, which I have been able to build upon during my training. For instance, while my studies covered fundamental principles of programming and database design, the hands-on projects I worked on offered a deeper, more practical insight into these areas. I was able to see how theoretical concepts are applied in real-world scenarios, from developing functional software solutions to managing complex databases.

Working on diverse projects, such as software testing, system development, and database management, allowed me to practice and refine skills that were introduced during my studies. For example, task related to software testing improved my understanding of quality assurance processes, while working on database schema design and data validation expanded my knowledge of database management beyond the basics taught in my coursework.

Additionally, my training involved using technologies and methodologies not covered in university curriculum, such as advanced database functions and specific programming languages. This exposure has broadened my technical skill set and provided experience that complements my academic learning.

Overall, my training experience has been a valuable extension of my university education, offering practical applications of the concepts I learned and enhancing my ability to address real-world technical challenges.

# Conclusion

My training experience has been immensely valuable in providing real-world exposure to the technical skills and concepts learned during my studies. Over the course of my training, I developed a stronger understanding of software development, database management, and IT support, all of which deepened my technical competence.

Training Analysis: The training provided me with a hands-on approach to various technologies and real-world systems, allowing me to apply theoretical knowledge to practical situations. This combination of theory and practice was crucial in reinforcing my understanding of core concepts, especially in software development, database design, and data management.

Skills Developed: I significantly improved my programming and database management skills, particularly in areas such as Oracle PL/SQL, .NET technologies, and web services development. I also gained new skills in technical support, system troubleshooting, and quality assurance testing, which further rounded out my technical abilities. Additionally, I enhanced my problem-solving and analytical thinking through complex project tasks.

Other Knowledge Gained: Beyond the technical aspects, I developed a better understanding of how software systems function in real-world business environments. I learned about project management, collaboration in a team setting, and the importance of maintaining high standards in coding and documentation.

Suitability: This training reinforced my belief that I am well-suited for a career in software engineering and database management. I enjoyed the problem-solving aspects of the work and found satisfaction in developing solutions that improved system functionality and user experience.

Weaknesses and Ways to Improve: While I strengthened many skills, I also identified areas for improvement. One weakness is my limited experience with certain advanced technologies and methodologies. To improve, I plan to pursue additional learning and certification in areas such as advanced database systems and modern development frameworks. Time management is another area I aim to improve, as handling multiple tasks simultaneously can be challenging.

Recommendations: To future trainees, I would recommend fully immersing yourself in every task and seeking out opportunities to explore new technologies. Be proactive in asking questions and taking on responsibilities beyond your comfort zone, as this is the best way to grow. Additionally, maintaining good documentation and keeping an organized workflow will help manage your projects effectively.

# References

<https://fact.com.jo/Index.aspx>

<https://www.tutorialspoint.com/plsql/index.htm>

# Appendix

https://github.com/SadeelAboalrub/Training24.gitss