INTERNSHIP REPORT

Submitted in the partial fulfilment for the award of the degree of

BACHELOR OF ENGINEERING
IN
ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Submitted by:
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20BCS6598

AT
HCLTech

Under the Supervision of:
Mr. MAHESH KUMAR C. - GENERAL MANAGER

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

APEX INSTITUE OF TECHNOLOGY

CHANDIGARH UNIVERSITY, GHARUAN,
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JANUARY 2024

MONTHLY INTERNISHIP REPORT

A. Internship Contact Information

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Report period (start date)	04/01/2024
Report period (end date)	02/08/2024

B. Distribution of hours:

Orientation ___5_____Observing ___10_____ Meetings (e.g. staffing, working with the team, etc) ___15_____ Lectures, Seminars, Conferences ___5_____ Assessment ___5_____ Planning (activity analysis, goals and objectives, etc) ___15_____ Studying/Researching ___40_____ C. Implementation (in hours which so ever is applicable. Otherwise mention Not Applicable): a. Leadership ___Not Applicable_____ b. Counselling __ Not Applicable _____ c. Supervision ___ Not Applicable _____ d. Evaluation ____ Not Applicable ____ e. Documentation ___20_____ f. Discharge/Transition Plans ____ Not Applicable ____ g. Other (Please specify) ___65_(Data cleaning, coding, report generation, Dashboard building)____ Total clock hours during this report period __180 hours approximately_____

CHAPTER 1: INTRODUCTION

From January 4, 2024, I embarked on my journey as a Tech Associate at HCLTech within the Intel ecosystem. My role involved contributing to various projects aimed at optimizing Intel's technological infrastructure.

One of my notable contributions included collaborating on the development of innovative solutions to enhance data processing efficiency. This involved leveraging cutting-edge technologies to streamline analysis to find gaps and improve overall performance within the Intel ecosystem and other accounts globally.

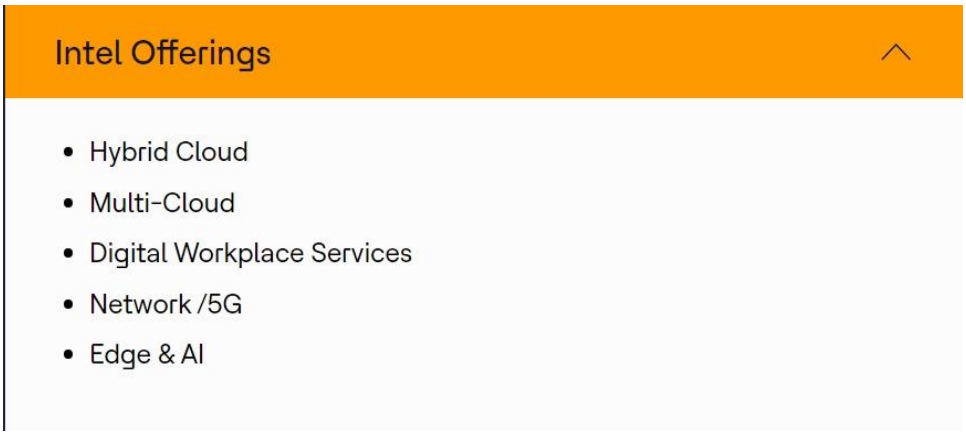
About HCLTech

HCL Technologies is a multinational IT services and consulting company known for its expertise in digital transformation, infrastructure management, and cybersecurity solutions. As a prominent player in the industry, HCLTech collaborates with leading technology partners like Intel to deliver innovative solutions to clients across various sectors. Recent industry trends show a growing demand for cloud computing, artificial intelligence, and cybersecurity solutions, areas in which HCLTech and Intel continue to innovate and excel.

About Intel-EBU

CloudSMART for Intel is HCLTech's continuous modernization experience to help enterprise accelerate their cloud business transformation journey. HCLTech's Intel ecosystem will help build focused, innovative and industry-tailored solutions for Intel clients.

The main goal is to develop a solution having Intel value adds to achieve to optimize various running workloads.



HCLTech's Intel Ecosystem Business Unit focuses on creating solutions that leverage Intel's technology and services for HCLTech's global clients. This unit aims to develop innovative offerings that address specific client needs and incorporate Intel's value propositions. By combining HCLTech's expertise in system integration and IT services with Intel's cutting-edge technologies, this unit helps clients achieve their business goals.

CHAPTER 2: JOB DESCRIPTION

As a **Tech Associate** at HCL Technologies, I play a pivotal role in the Intel Ecosystem Business Unit, where our focus is on developing innovative solutions that leverage Intel's technologies to drive business value for our global clientele. Reporting to **Mr. Mahesh Kumar C**, the role encompasses a diverse set of responsibilities aimed at delivering cutting-edge solutions and exceptional client experiences.

Key Responsibilities

1) **Solution Development**
    a) Collaborate with cross-functional teams to understand client requirements and design tailored solutions that integrate Intel's value adds.
    b) Utilize the Intel technologies to enhance solution performance, security, and scalability.
    c) Conduct thorough analysis and testing to ensure the efficacy and reliability of developed solutions.
2) **Client Engagement**
    a) Act as a primary point of contact for clients, providing expert guidance on solution capabilities and value propositions.
    b) Participate in client meetings and presentations to demonstrate the benefits of Intel-powered solutions and address any queries or concerns.
3) **Project Management**
    a) Manage end-to-end project lifecycles, from requirement gathering and solution design to implementation and post-deployment support.
    b) Coordinate with internal teams and stakeholders to ensure timely delivery of projects within scope and budget constraints.
4) **Technical Expertise**
    a) Stay abreast of the latest developments in Intel technologies and industry trends to continuously enhance solution offerings.
    b) Provide technical guidance and mentorship to junior team members, fostering a culture of learning and innovation.

INTERNSHIP TIMELINE	4th Jan 2024 – 02nd August 2024
DAILY WORK HOURS	8hrs/day

DAILY TASKS

1) **Solution Design and Development**

a) Analyze previous marketing collaterals and conduct research to refine and enhance developed solutions.
b) Incorporate insights from research and analysis into solution design and development processes.
c) Implement solution components based on identified improvements and enhancements.

2) **Client Interaction and Communication**
   a) Reach out to clients for pre-sales tasks, including gathering requirements and presenting solution offerings.
   b) Maintain regular communication with clients to provide updates on solution development progress and address queries or concerns.
   c) Act as a liaison between clients and internal teams to ensure alignment of project objectives and client expectations.
3) **Intel Partner University Courses**
   a) Completion **Intel Granulate** and **Intel Trust Authority** courses from Intel Partner University.
   b) Apply knowledge gained from courses to inform solution design and development processes, leveraging Intel technologies effectively.
4) **Documentation and Reporting**
   a) Maintain documentation of research findings, analysis reports, and solution design specifications.
   b) Prepare reports and presentations summarizing key findings and recommendations for internal stakeholders and client review.
5) **Collaboration and Knowledge Sharing**
   a) Collaborate with cross-functional teams to incorporate insights from research and analysis into solution development.
   b) Share knowledge and insights gained from Intel Partner University courses with team members to enhance collective understanding and expertise.

CHAPTER 3: Key Learnings

- **Understanding Intel's ecosystem: Insight** into Intel's partnerships, products, and technologies.
- **Collaborative teamwork**: Effective collaboration with diverse teams from HCL and Intel.
- **Technical skills enhancement**: Acquired proficiency in Intel products, solutions, and platforms.
- **Problem-solving and analytical thinking**: This involves the ability to identify issues, analyze them, and develop effective solutions. Strengthening these skills means becoming more efficient at tackling real-world challenges by breaking them down into manageable parts and applying logical thinking to solve them.
- **Adaptability and flexibility**: This refers to the capability to adjust to changing circumstances and requirements. Successfully adapting to dynamic project requirements means being open to change, quickly learning new methods or technologies, and being able to pivot strategies when necessary.
- **Effective communication: This** involves improving the ability to convey ideas clearly and persuasively to different stakeholders. Strengthening communication skills means being able to articulate complex concepts in a simple manner, actively listening to others, and tailoring communication styles to different audiences.
- **Project management**: This includes skills related to planning, executing, and monitoring projects to ensure they are completed successfully. Hands-on experience in project management means being able to create detailed project plans, coordinate resources, track progress, identify and mitigate risks, and deliver results on time and within budget.
- **Business acumen and customer focus**: Understanding business needs and aligning solutions with customer expectations involves more than just technical skills. It means having a deep understanding of the market, the industry, and the customer's pain points, and then crafting solutions that address those needs while also aligning with the company's goals.

By focusing on and strengthening these areas, one becomes better equipped to handle the challenges and demands of the professional world, ultimately leading to more successful outcomes in various endeavors.

CHAPTER 3: Project Discussion

Objectives Of Project:

The objective of the project was to implement confidential computing solutions on Google Cloud Platform (GCP) to enhance data security for sensitive workloads. This involved exploring and implementing various confidential computing technologies offered by GCP, such as Confidential VMs and Confidential GKE Nodes, to protect data while it's being processed.

How the Objectives were Achieved

- **Research and Analysis**
  - Understand the concept of confidential computing and its importance in data security.
  - Research confidential computing technologies offered by GCP, such as Confidential VMs and Confidential GKE Nodes.
  - Analyze use cases and scenarios where confidential computing can be applied effectively.
- **Requirements Gathering**
  - Collaborate with stakeholders to understand their requirements for data security and compliance.
  - Identify the types of sensitive workloads that need to be protected.
  - Determine the level of security and isolation required for these workloads.

- **Planning**
  - Develop a comprehensive plan for implementing confidential computing solutions on GCP.
  - Define the architecture and design for the implementation, including network topology, encryption mechanisms, and access controls.
  - Break down the implementation plan into smaller, manageable tasks with clear milestones and timelines.
- **Implementation**
  - Deploy Confidential VMs on GCP to host sensitive workloads.
  - Configure the VMs to use hardware-based encryption features for data protection.
  - Implement Confidential GKE Nodes to run containerized applications in a secure environment.
  - Integrate with key management systems to manage encryption keys securely.
  - Implement logging and monitoring solutions to track access and usage of confidential resources.

- **Documentation**
  - Document the implementation process, including configurations, setup instructions, and best practices.
  - Create user guides and training materials for administrators and users.

- Document troubleshooting steps and common issues encountered during implementation.

Skills Learned During the Internship

During the internship, I acquired both scientific and professional skills, including:

- **Technical Skills:** gained proficiency in implementing confidential computing solutions on GCP, understanding of encryption techniques, familiarity with GCP services, such as Compute Engine and Kubernetes Engine.
- **Problem-Solving:** developed the ability to identify and resolve technical challenges, such as optimizing performance without compromising security.
- **Communication:** improved communication skills through regular updates to the project team and stakeholders, explaining technical concepts in non-technical terms.
- **Project Management:** learned project planning, execution, and monitoring skills to ensure timely delivery of project milestones.

Results/Observations

Throughout the internship, several key results, observations, and work experiences were noted:

- Successful implementation of confidential computing solutions, enhancing data security for sensitive workloads.
- Increased awareness of the importance of data privacy and security in cloud computing environments.
- Collaborated with cross-functional teams, including security experts and software developers, to ensure the success of the project.
- Participated in knowledge-sharing sessions and workshops to enhance understanding of confidential computing technologies.

Challenges Experienced

- **Learning Curve**: Initially, there was a steep learning curve in understanding the concepts and technologies related to confidential computing.
- **Integration Complexity**: Integrating confidential computing solutions with existing infrastructure posed challenges in compatibility and configuration.
- **Performance vs. Security Trade-off**: Balancing performance requirements with security measures was a constant challenge, requiring careful optimization.

CHAPTER 3: Conclusion

In conclusion, my internship experience in implementing confidential computing on Google Cloud Platform (GCP) has been both enriching and rewarding. Through thorough research, meticulous planning, and hands-on implementation, I successfully achieved the objective of

enhancing data security for sensitive workloads.

During this internship, I acquired valuable skills in technical implementation, problem-solving, and effective communication. I gained proficiency in confidential computing technologies offered by GCP and developed a deeper understanding of data security principles and best practices.

Furthermore, working on this project provided me with invaluable real-world experience and insights into the challenges and complexities of implementing advanced security solutions in cloud environments. Collaborating with cross-functional teams and overcoming various challenges has strengthened my adaptability, resilience, and project management skills.

Overall, this internship has not only equipped me with the technical skills necessary to succeed in the field of cloud computing and cybersecurity but has also instilled in me a passion for continuously learning and improving. I am excited to apply the knowledge and experience gained during this internship to future endeavors, contributing positively to the advancement of technology and data security.

CHAPTER 3: References

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