# INTERNSHIP IN UPSKILL CAMPUS

Submitting in partial fulfilment of the requirements
for the Award of the Degree of

## BACHELOR OF COMPUTER APPLICATIONS

By
**DARREN IMMANUEL FERNANDES**
**21BCAD18**

Under the Mentorship of
Dr. Kalaiselvi K



**KRISTU JAYANTI COLLEGE (AUTONOMOUS)**
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**BANGALORE - 560077**
**2023 – 2024**

## CERTIFICATE FROM MENTOR

This is to certify that this internship work titled **HUMAN RESOURCE MANAGEMENT SYSTEM IN CORE JAVA** is based on an original project study conducted by **DARREN IMMANUEL FERNANDES (21BCAD218)** of IV semester BCA D under my mentorship.

This internship work has not formed the basis for the award of any degree/ diploma by Bangalore North University or any other university

.

Place:                                                          Dr. Kalaiselvi K

Date:                                                          Name of the Mentor
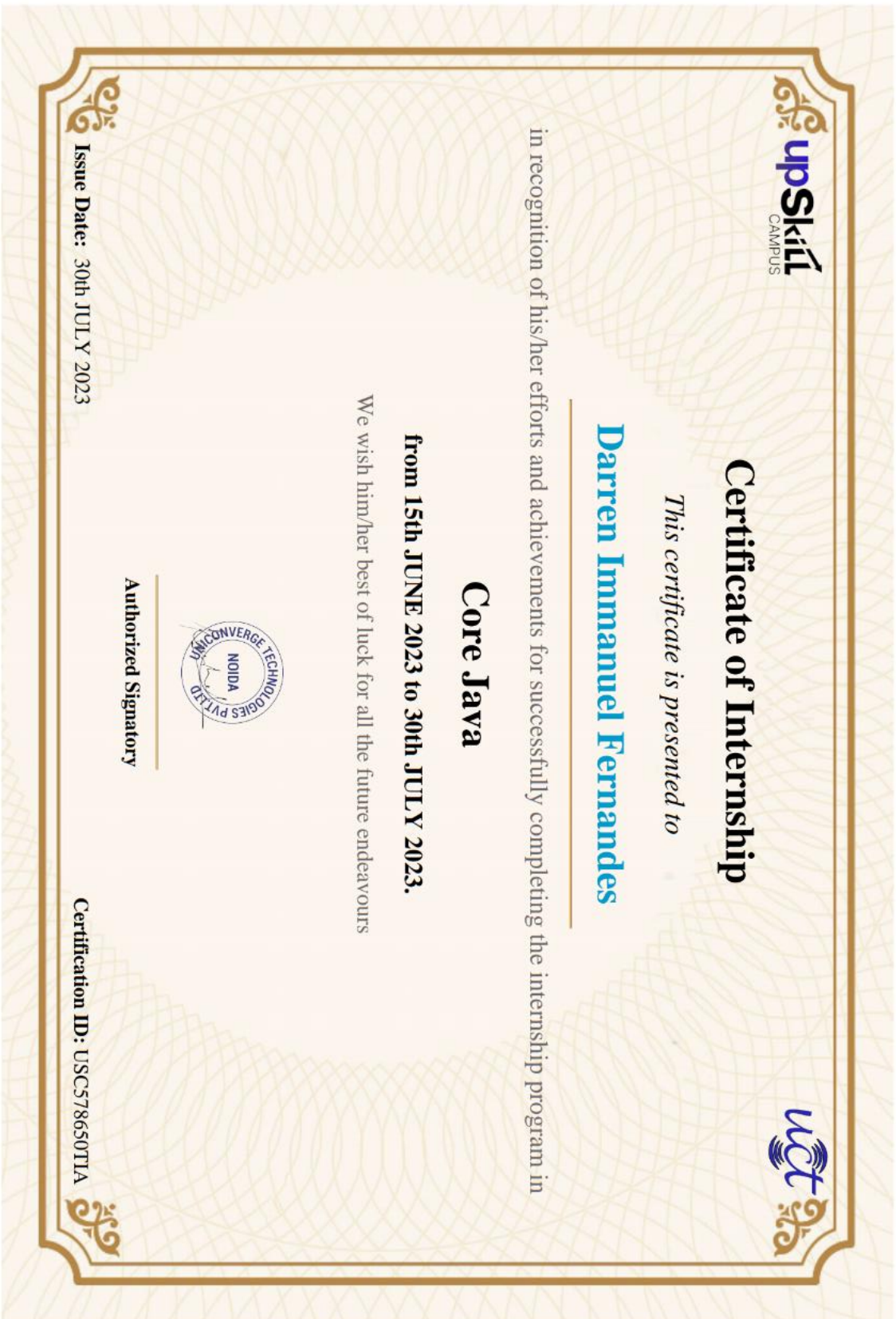
## CERTIFICATE FROM DEPARTMENT

This is to certify that this internship works titled **INTERNSHIP IN UPSKILL CAMPUS** is based on an original project study conducted by **DARREN IMMANUEL FERNANDES (21BCAD18)** of IV semester BCA D under mentorship **Dr. Kalaiselvi K**

This internship work is based on the original and has not formed the basis for the award of any degree/diploma by Bangalore North University or any other University.

Head of the Department

# CERTIFICATE FROM COMPANY

**upSkill** CAMPUS

**Certificate of Internship**

*This certificate is presented to*

**Darren Immanuel Fernandes**

in recognition of his/her efforts and achievements for successfully completing the internship program in

**Core Java**

**from 15th JUNE 2023 to 30th JULY 2023.**

We wish him/her best of luck for all the future endeavours

Authorized Signatory

UNICONVERGE TECHNOLOGIES PVT LTD NOIDA

**Issue Date:** 30th JULY 2023

**Certification ID:** USC578650TIA

UCT

## DECLARATION FROM CANDIDATE

I **DARREN IMMANUEL FERNANDES**, hereby declare that this internship work titled **INTERNSHIP IN CORE JAVA** is based on the original project conducted by me under the guidance of **Dr. Kalaiselvi K.**

This has not been submitted earlier for the award of any other degree/diploma from Bangalore North University or any other University.

Place:

Date:

Roll. No: **21BCAD18**                              **DARREN IMMANUEL FERNANDES**

# ACKNOWLEDGEMENT

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# INTRODUCTION

This report provides details of the Industrial Internship provided by Upskill Campus and The IoT Academy in collaboration with Industrial Partner UniConverge Technologies Pvt Ltd (UCT).

The primary objective of this internship experience revolved around delving into a series of project/problem statements presented by UCT and deciding on one to undertake. As such, I chose to create a Human Resource Management System. As a participant of the Core Java Internship offered by Upskill Campus, I had to develop a Human Resource Management System application using Java, which would enable the user in-order to manage the Human Resources, which includes the employee's management, attendance, and leave. Utilizing the functionality of a Java AWT and Swing, the project aimed to streamline the process of creating a software to help the user in-order to manage them.

The scope of my project extended fairly beyond Java AWT and Swing. The project's requirements necessitated the implementation of a database infrastructure to seamlessly store and manage the correlation between the project and its database. The development process also involved the creation of specific functional design and code while appropriately handling the functionality of the project.

This internship gave me an invaluable opportunity to get exposure to Industrial problems, and to design and then implement solutions for them. It was, overall, a great experience to have this internship.

# INDUSTRY PROFILE

**UniConverge Technologies Pvt. Ltd.** has a rich history that dates back to its inception in 2013. The company was incorporated on 28 May, 2013. It is a private unlisted company and is classified as a 'company limited by shares'. The company quickly established itself as a leading provider of innovative and high-quality digital solutions. Their team consists of talented and experienced professionals who are passionate about delivering exceptional results for their clients. With a focus on customer satisfaction and a commitment to excellence, they have built a reputation for being a trusted and reliable partner for businesses of all sizes.

The founder and CEO of UniConverge Technologies, Kaushlendra Singh Sisodia, is an experienced entrepreneur with over 20 years of experience in the Internet of Things, AI/ML, Industry 4.0 and Wireless Solutions. He has a passion for technology and a commitment to helping businesses succeed in the digital age. He has assembled a team of talented system designers & developers who share his vision and are dedicated to delivering exceptional solutions to their clients.

The company's mission is to empower businesses to succeed in a rapidly evolving digital landscape. They do this by providing innovative and customized solutions that meet the unique needs of each of their clients. They believe in building long-lasting relationships with their clients based on trust, transparency, and mutual respect.

Their vision is to offer organizations across the world, a wide gamut of services and solutions in the Wireless Communication and IoT domain. They are committed to continuously evolving and staying ahead of the curve to provide the best possible solutions to their clients.

UniConverge Technologies provides expertise in 'Wireless Communication' and 'Internet of Things, product development and consulting services to companies working in Small Cells, Mobile Platforms, Healthcare, Medical Devices, Logistics, Transportation and Manufacturing domains.

Over the years, UniConverge Technologies has developed a range of products and solutions in the Wireless Communication and IoT domain. They offer products and solutions for 5G systems, smart meters, smart agriculture, smart healthcare, and smart transportation. They also provide value-added products and solutions helping customers to embrace Industry 4.0. The following is some information on the technologies they employ as well as the services they offer.

Services and Solutions: UniConverge Technologies provides a wide range of services and solutions in the Wireless Communication and IoT domain. They offer products and solutions for 5G systems, smart meters, smart agriculture, smart healthcare, and smart transportation.

5G Systems: 5G will enable enhanced traffic management by supporting a massive number of IoT connections to traffic lights, cameras, and traffic sensors. Smart meters, supported by 5G low-cost IoT sensors and connections, will monitor energy usage and help reduce consumption.

Industry 4.0: Industry 4.0 transformation is inevitable. The transition does not happen overnight but rather step-by-step. With 4 steps of machine automation, equipment connectivity, process visualization, and predictive maintenance for achieving business transformation, UniConverge Technologies provides value-added products and solutions helping customers to embrace Industry 4.0.

Digital Transformation: Digital transformation is the process of using digital technologies to create new or modify existing business processes, culture, and customer experiences to meet changing business and market requirements. This reimagining of business in the digital age is digital transformation.

Predictive Maintenance: Improve manufacturing asset efficiency and avoid unplanned downtime with data analytics. Avoid manufacturing machine failures and reduce maintenance costs with machine learning.

Products: UniConverge Technologies offers a variety of products such as D.A.M.S., Lora Ethernet Gateway, and Rs485 to Lora. These products are designed to monitor and control physical processes using sensors, actuators, and processors.

**UpSkill Campus** is an online platform under UCT (UniConverge Technologies) that aims to redefine practical education and professional networking. Established in 2022, it is a fast-growing ed-tech platform designed to Upskill students, freshers, working professionals, faculty, entrepreneurs, and more. It offers a variety of online courses and internships. Some of the top courses include Cyber Security, Internet of Things, Python, Cloud Computing, and Edge AI. They also offer live recorded courses from IIT Guwahati. In addition to paid courses, they offer several free courses in various domains.

UpSkill Campus positions itself as a career growth partner, providing online learners with career assistance, industry updates, and opportunities to interact with industry experts. They claim to have over 6,000 online learners, with an average salary earned of over 5 lakhs, and an average salary hike of over 40%. The platform has also received positive reviews from learners. They appreciate the detailed content, responsiveness of the trainers, and the industry-related knowledge imparted by the working professional trainers.

# PROJECT DESCRIPTION

The online summer internship offered by **UpSkill Campus** (under **UniConverge Technologies**) gave potential interns the opportunity to take up internships in various fields like Java, Python, Data Science, General App Development, Digital Marketing etc.

I chose to undertake an internship in Core Java since I was very interested in the language and didn't have much experience and knowledge prior to the internship. Since completing the 'Software Engineering' course offered to us in the Fourth Semester, I have also been of the firm belief that making a project (regardless of scale) in any language is the best way to learn it and really grasp the language's working and functionality.

The Core Java internship's overall objective involved making a project with a central function and purpose, and us interns were given the following options to choose from:

**Banking Information System**: A Core Java project that provides a working preview of the key functionalities of a real banking system which consisted of elements such as user registration, account management, deposit and withdrawal, fund, account statements etc.

**Music Player Application**: A Core Java project that allowed the user to play, manage, and enjoy their music collection. This project included various elements such as music file import, music playback, playlist management, music library organization, audio equalizer etc.

**Human Resource Management System**: A Core Java project that allowed an organization to manage employee information, attendance, and leave records efficiently. This project included various elements like employee management, attendance tracking, leave management, employee search, user authentication etc.

**Console-Based Tracker Application**: A Core Java project that allowed the user to manage their personal expenses. The application should provide functionalities to record and track expenses, view spending summaries, and manage categories for better organization.

From the options presented to us, I elected to develop a **Human Resource Management System** entirely in Java with the help of a specialized API to create this project.

The outline of the Human Resource Management System as specified by UpSkill Campus outlined the following core objectives:

- Develop **Functions** to create a unique **Human Resource Management System** This project should contain all the various elements like employee management, attendance, leave, and employee search.
- Design an aesthetically pleasing, modern and intuitive **User Interface**.
- Implement a **Database** to store all the relevant data related to the employees, such as their information, attendance and leave.

To start off with, I searched for an appropriate text editor to use for my work. I decided to use VSCode since it was considered the most popular text editor to use for coding, programming and working with projects.

Similar to other well-known languages like Python and C, there are multiple libraries in Java that act as modules for enhanced functionality and convenience. Some of these libraries are built directly into framework, while others are created by third parties and can be imported into the same. Java AWT and Swing is a technology in Java (of the former category mentioned earlier) that I sued for this project. It was a way of creating and running the Java projects and programs in a text editor. The final output is a software application with a user interface following that of the Java AWT and Swing framework. The following is a simple syntax for creating Swing window.

```
1    import java.awt.*;
2    import javax.swing.*;
3    import java.awt.event.*;
4    public class A extends JFrame
5    {
6        JFrame f;
7        A()
8        {
9            f = new JFrame("Title");
10           f.setLayout(null);
11           f.getContentPane();
12           f.setVisible(true);
13           f.setSize(900,500);
14           f.addWindowListener(new WindowAdapter()
15           {
16               public void windowClosing(WindowEvent e)
17               {
18                   f.dispose();
19               }
20           });
21       }
22       public static void main(String[] args)
23       {
24           new A();
25       }
26   }
```

With the base functionality figured out, I now had to implement it into a **User Interface** of my design. For this, I used AWT and Swing, a standard built-in library that is mainly used for creating graphical components such as text fields, buttons, labels and so on into containers entirely within Java.

AWT and Swing are standard built-in library that are mainly used for creating graphical components such as text fields, buttons, labels, radio buttons and so on into containers entirely within Java. It comes with different variations of existing elements in AWT and Swing like Button, Text Fields, Labels, Radio Buttons etc. The following code snippet and its output display the basic controls used by AWT and Swing.

```java
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.*;
public class A extends JFrame
{
    JFrame f;
    JLabel l1;
    JTextField t1;
    JButton b1;
    A()
    {
        f = new JFrame(title:"User Interface");
        f.setLayout(manager:null);

        l1 = new JLabel(text:"This is a Label");
        l1.setBounds(x:150,y:50,width:200,height:50);
        f.add(l1);

        t1 = new JTextField(text:"This is a Text Field");
        t1.setBounds(x:100,y:120,width:200,height:50);
        f.add(t1);

        b1 = new JButton(text:"This is a Button");
        b1.setBounds(x:100,y:190,width:200,height:50);
        f.add(b1);

        f.getContentPane();
        f.setVisible(b:true);
        f.setSize(width:500,height:300);
        f.addWindowListener(new WindowAdapter()
        {
            public void windowClosing(WindowEvent e)
            {
                f.dispose();
            }
        });
    }
    Run | Debug
    public static void main(String[] args)
    {
        new A();
    }
}
```
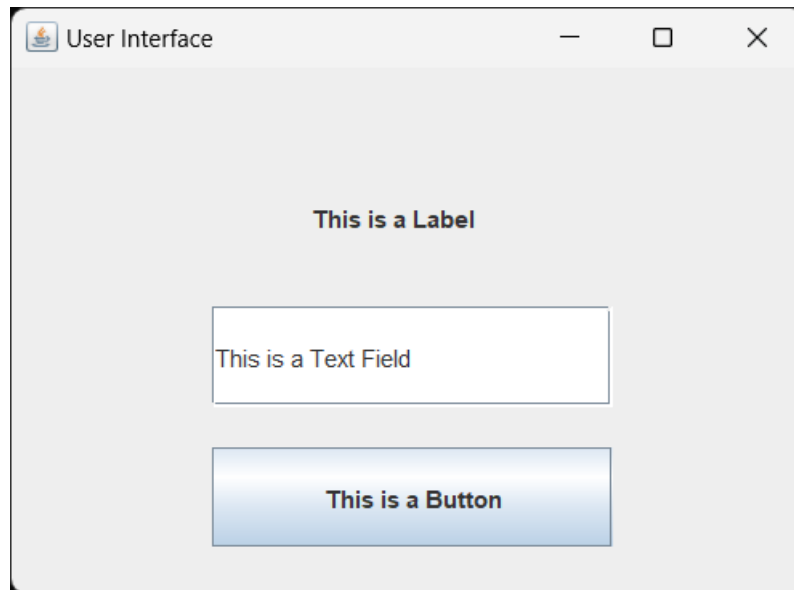
Having acquired the base functionality of the project, and a functional UI upon which to display relevant controls on, I still had to work on how to implement a Database in my project. Any and all details, such as employee management, attendance and leave using this application made in Java should be stored and retrieved from the database to the project and vice-versa. For this I used MYSQL, a relation database management system with Java through JDBC.

MySQL is a relational database management system written in C and C++. It is a standalone app that runs as a server and can be accessed by multiple clients. It is one of the most popular database systems in the world, as it is used by many of the top websites, applications, and platforms. Notably, MySQL is a client-server database and is not self-contained. It is better suited to developing large-scale apps and projects that require high performance and scalability. It also comes with a variety of features and extensions that can be customized according to the needs of the users. It has a standard SQL syntax with some deviations and additions. I ran one of the following employee management module and its code to test the functionality of the MYSQL in Java.

```
1   b1.addActionListener(new ActionListener()
2      {
3          public void actionPerformed(ActionEvent e)
4          {
5              if (isvalid())
6              {
7                  try
8                  {
9                      String eid,ename,dept,dob,gender,address,phoneno,emailid,position,experience,qualification;
10                     ConnectionClass obj = new ConnectionClass();
11                     eid =t1.getText();
12                     ename = t2.getText();
13                     dept = (String)cb1.getSelectedItem();
14                     dob = t3.getText();
15                     gender = a;
16                     address = t4.getText();
17                     phoneno = t5.getText();
18                     String query ="Insert into empmang (eid, ename, dept, dob, gender, address, phoneno, emailid, position,
                           experience,qualification) values (?, ?, ?, ?, ?, ?, ?, ?, ?, ?,?)";
19                     PreparedStatement stmt = obj.con.prepareStatement(query);
20                     stmt.setString(1, eid);
21                     stmt.setString(2, ename);
22                     stmt.setString(3, dept);
23                     stmt.setString(4, dob);
24                     int rowsInserted = stmt.executeUpdate();
25                     if (rowsInserted > 0)
26                     {
27                         JOptionPane.showMessageDialog(imageLabel,"Added Successfully","Success",JOptionPane.
                               INFORMATION_MESSAGE);
28                         clr();
29                     }
30                     else
31                         JOptionPane.showMessageDialog(imageLabel,"Not Added","Error",JOptionPane.ERROR_MESSAGE);
32                     }
33                     catch (Exception k)
34                     {
35                         k.printStackTrace();
36                     }
37                 }
38             }
39      });
```

And it added all information that I gave into one of table i.e., employee management table in the database, which I was able to view with the help of an app called MYSQL Workbench:

| | eid | ename | dept | dob | gender | address | phoneno | emailid | position | experience | qualification |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ▶ | 101 | Dave | Sales | 06/09/2002 | Male | New York | 0123456789 | fernel71@gmail.com | Manager | 5 | BCA |
| * | NULL | NULL | NULL | NULL | NULL | NULL | NULL | NULL | NULL | NULL | NULL |

By this point, my project had all the **functions for all the modules i.e., Employee Management, Attendance, and Leave that included, a fully functioning database implementation** for storing and retrieving the details of the project, and an adequate **User Interface**, all of which I improved iteratively through the course of the project's development. The final product is as follows:

**Login Page**

**Dashboard**



**Employee Management**

**Employee Management View**



**Attendance**

**Attendance View**



**Leave**

**Leave View**



By the completion of the project, I had successfully

    o   Created specific functions that enabled the functionality and working of all the elements of the Human Resource Management System using various AWT, Swing Toolkits and various logics and reasoning statements,

    o   Designed an adequate and modern looking User Interface that contained all the necessary modules and elements that were required, as well as a view of the modules of the information, and

    o   Implemented the functionality of working database into the project, capable of storing and retrieving the information from the database to the project and vice-versa.

# OVERALL INTERNSHIP EXPERIENCE & LEARNING OUTCOMES

The internship I undertook over the course of six weeks was coordinated and provided by UpSkill Campus, an Online Educational Platform meant for learning and technical skill acquirement and in industrial partnership with UniConverge Technologies or UCT. UniConverge Technologies is based in Noida, Uttar Pradesh; specifically Block C- 56/11, Sector 62 Ground Floor, Noida, 201301.

The internship took place completely online. All interns were given many internship courses to choose from like Python, Java, Digital Marketing, Machine Learning, Cloud Computing, Cybersecurity, Edge Computing and AI, etc. These courses mostly catered to branches like Software Development, Technical Skills, and Online Commerce.

The internship followed a timed batch system. I was an intern in the batch that was doing their internships in the slot between 15-06-2023 and 26-07-2023, or simply the $15^{th}$ June batch. Other batches had started on dates of two-week intervals from our slot, like the $1^{st}$ June batch before us and the $30^{th}$ June batch after us. Interns in a batch had the option to choose between multiple problem statements and core objectives for their project as mentioned before. We were also allowed to develop our projects in groups; however, I developed my project individually.

All interns were required to familiarize themselves with a curriculum prepared by UpSkill Campus that was tailored to the Internship course we had chosen, which in my case was the Core Java internship.

In the first week we were introduced to Java as a language with its conception and history. I did some research on Java and how it worked in comparison to the other programming languages I had worked with so far. I also analyzed all the options for projects we were given to choose from, and elected to work on creating a Human Resource Management System. Consequently, I kept the project's primary goals and its problem statement in mind as I began to develop my chosen project. In this week we also completed a quiz that was assigned to us during the first week, below is a screenshot of it.
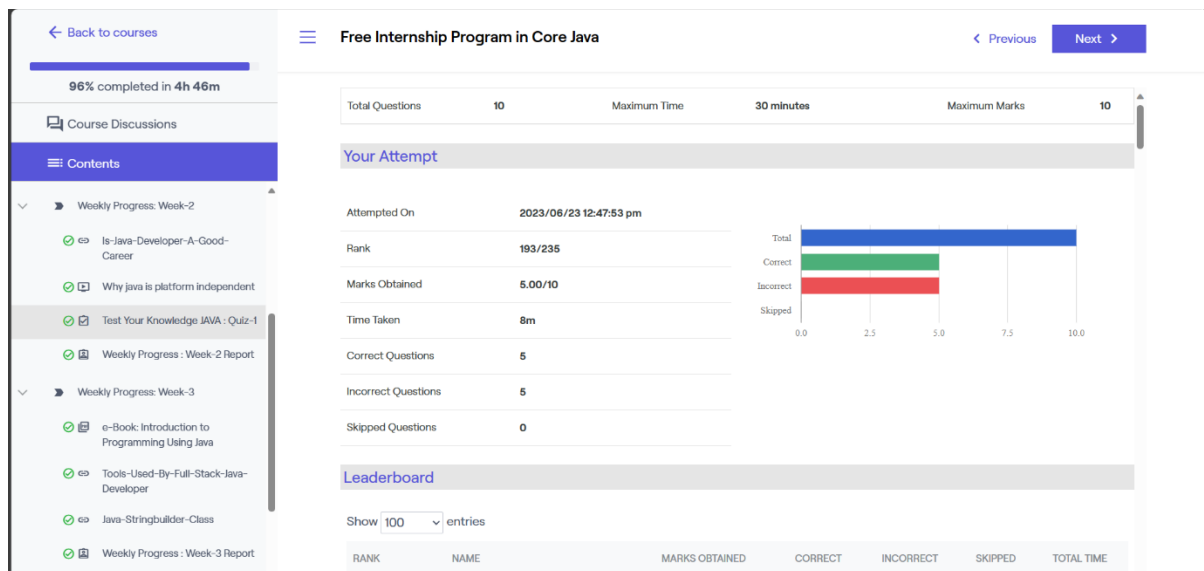
In the second week we were taught the basics of Java with the help of an e-book titled 'Learning Java'. We also focused on learning how to use simple conditional statements like if, if-else and if-else, if-else statements. I decided to solidify the core functionality of my project, namely the Human Resource Management System functionality. After familiarizing myself with the AWT and Swing in Java, I created a test program to see if it functioned as intended, which it did. I also decided to primarily use the Java Swing for creating the UI my project as needed.

In the third week we learnt how Java could be utilized to. We also learnt how Java is applied in real world applications in the context of the field of apps, and software development. Lastly, we also referred to an e-book titled 'Java for Everybody' for additional learning. I got to work on the appearance of my application, and the implementation of the Human Resource Management System features in it. Much of the components that were used in AWT and Swing are very similar to the ones I used in Visual Basic, a language that I have some experience with. I learnt how to use simple components like Labels, Text Fields, Buttons, Radio Boxes, Panels etc. and created a simple project using all these. With the knowledge I then had, I made a simple Human Resource Management System with a basic but adequate user interface that accepted inputs in the form of employee's details, attendance, and leave, and gave output in the form of a table and validation. Besides the Human Resource Management System function, I also created a function that validated the inputted data by checking if they matched the required format and constraints. This was made possible by using the built-in methods and classes of Java and by using various logic statement. In this week we also completed a quiz that was assigned to us during the third week, below is a screenshot of it.
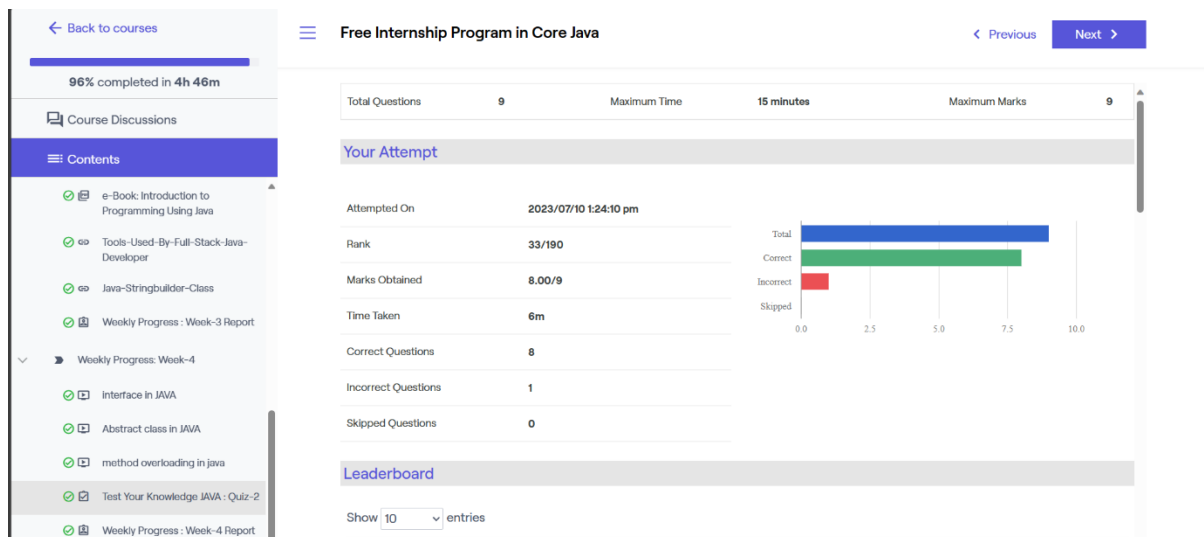
In the fourth week we reviewed an insightful roadmap consisting of everything we had learnt in Java as well as everything else we had yet to learn. We also studied the relationship between AWT and Swing, two very important technologies commonly used in Java. This was the week where I addressed my project's requirement of database functionality. Through the use of the java.sql package, I was able to use some standard SQL commands in Java, which I tested out in a sample program. In the sample program, I inserted some information into my Human Resource Management System module. And the information was clearly viewable in the MYSQL database. I was now able to successfully add this database functionality to the code I had developed the previous week, allowing for the storage as well as the retrieval of employee's details, attendance and leave in relational database.

In the fifth week we took a closer look at both AWT and Swing, mainly from an introductory standpoint and concerning some basic operation you can perform using each technology. I neared finalization of the coding aspect of my project in the fifth week and added some non-functional requirements as well, since I had satisfied all the functional requirements. I improved the application by adding more elements, and used a different method to more effectively place most of them. I also reworked the data validation function I added earlier, enabling it to check the inputted employee details, their attendance and their leave more accurately. In this week we also completed a quiz that was assigned to us during the first week, below is a screenshot of it.
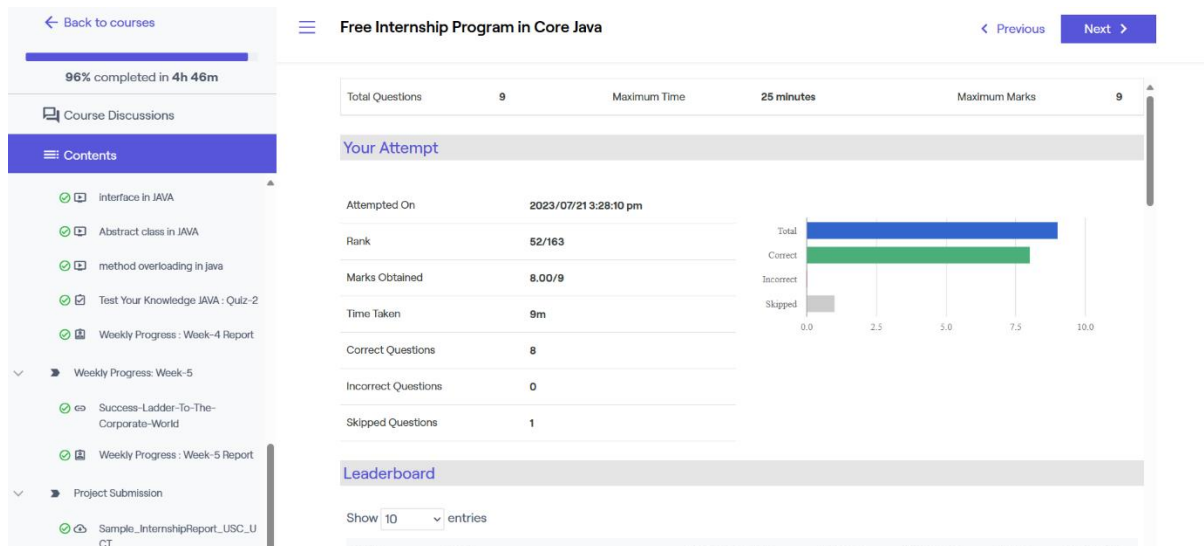
The sixth week was the overall conclusion of our internship. The sixth week is when I thoroughly reviewed all of my progress thus far. I conducted various tests to gauge the real-world performance of my application. I made minor changes to my code after extensive troubleshooting. This is also the week in which I will submit my final report detailing all of my work and progress so far, which brings me to where I am right now, as of the time I am writing this report.

Supplementarily to the curriculum material, every intern was required to complete a series of simple assignments in the form of quizzes consisting of several multiple-choice questions. There were three of these quizzes in total. They were featured in the first, third and sixth weeks. Failure to complete any one of these quizzes would result in the complete and irreversible halting of the internship regardless of the intern's progress in it, and would render the same null and void, stripping the intern of their qualification to receive a completion certificate for their internship. The purpose of these quizzes was to test our understanding of the curriculum provided by UpSkill Campus for our learning in relation to the internship.

Additionally, all the interns had the responsibility to submit a comprehensive report every week. This report's content would entail the following things:

- How far we'd come overall in terms of the progress we'd made in the development of the project that we chose.

- The obstacles or challenges we faced during the week with descriptions of the nature of their difficulties and how exactly we approached them. We also had to include any strategies or solutions we implemented to overcome these hurdles.

- Information about our work during the week in the form of some highlights on the tasks we completed, milestones achieved, and any significant advancements we made to our project, along with specific details and examples to effectively illustrate the same.

- Reflections on the lessons we learned from the challenges encountered. We also had to share the insights that we gained from tackling these obstacles, such as new skills acquired, problem-solving techniques, or valuable experiences that would benefit us in our future endeavours.

- UpSkill Campus described the weekly report as an opportunity to showcase our achievements, your growth, and to communicate any challenges we encountered.

The sixth week's report was vastly different to the other reports. It was a report detailing everything we had done in the course of our internship

All of the material required for our understanding of the concepts and techniques directly relevant to our internship was provided online by UpSkill Campus themselves via their website. This website also provided a means for us to track our progress learning and completing chapters and keeping abreast of deadlines, as in when to complete quizzes and reports and other important updates.

The website was also where we were finally given our internship completion certificates via a download link when we had successfully completed our internship by satisfying all its requirements.

Resource people from UpSkill Campus also organized multiple groups on WhatsApp for interns under different courses segregated across different batches. Here we were able to ask our mentors doubts in regard to the internship directly without any hassle. UpSkill campus's assigned resource people were more than happy to answer any query we had.

Apart from the curriculum material, UpSkill Campus organized a number of online meetings where they talked about important concepts relevant to out internships. The links to the meetings were shared on the WhatsApp groups that they had set up. In these meeting we were given useful information and valuable insights into various topics. These meetings were held every Sunday. A few prominent highlights of the several meeting they held were.

- The meeting where they discussed the job prospects that we would expect with the skills that we would gain from completing these internships.

- Orientation for all the interns and a brief introduction to UpSkill Campus and UniConverge Technologies as a whole.

- A meeting created solely to clear the doubts that interns had related to the creation and submission of the final report.

As interns we were all required to take up a particular task assigned by UpSkill Campus, the task in my case being to make a fully-fledged project in a certain language that followed and satisfied set requirements posed by them. As specified by this internship course, all interns had to undertake the completion of a project in the language/domain of the course of their choosing, which in this case would be Core Java. We were given four projects to choose from to perform this task:

- **Banking Information System**: A Core Java project that provides a working preview of the key functionalities of a real banking system which consisted of elements such as user registration, account management, deposit and withdrawal, fund, account statements etc.

- **Music Player Application**: A Core Java project that allowed the users to play, manage, and enjoy their music collection. This project includes various elements such as music file import, music playback, playlist management, music library organization, audio equalizer etc.

- **Human Resource Management System**: A Core Java that allowed organization to manage employee information, attendance, and leave records efficiently. This project included various elements like employee management, attendance tracking, leave management, employee search, user authentication etc.

- **Console-Based Tracker Application**: A Core Java project allowed the user to manage their personal expenses. The application should provide functionalities to record and track expenses, view spending summaries, and manage categories for better organization.

As mentioned before, I chose to make a functional Human Resource Management System. From my understanding of the problem statement posed by UpSkill Campus, I knew that from my end, I had to:

- Develop **Functions** to create a unique **Human Resource Management System** This project should contain all the various elements like employee management, attendance, leave, and employee search.

- Design an aesthetically pleasing, modern and intuitive **User Interface**.

- Implement a **Database** to store all the relevant data related to the employees, such as the information, their attendance and leave.

During my internship, I had the opportunity to explore the real-world applications of Java, especially in fields such as App and Software Development. This experience highlighted its importance in domains like Software Development, demonstrating the concrete impact Java has in these areas. I worked on a project that involved creating a Human Resource Management System using AWT, Swing and MySQL. This project allowed me to use various Java technologies and libraries to design and implement a user-friendly application.

One of the most enriching aspects of my internship was the hands-on experience I gained while crafting a project entirely in Java. This project holds significance as it underwent evaluation by industry professionals. Through this endeavour, I acquired the skill set to construct a fully functional user interface application, relying solely on code without the aid of pre-existing GUI tools like Visual Studio. Additionally, I honed my abilities in incorporating a functional database directly into the application's framework.

The culmination of this internship was the creation, development, and design of the aforementioned application, which provided me with a comprehensive understanding of the entire process from inception to execution. However, that's not to say that there weren't quite a few challenges I faced while developing my project.

Building a user interface in something outside of Visual Studio using Visual Basic was a completely foreign concept to me in the beginning stages of my project's development. At that stage, I thought that it might be a bit of a challenge to build and design a fully functional user interface in Java, a language that I had some basic knowledge. Regardless of that, I tried my best to get more accustomed to the language and its intricacies. And as time proceeded, my thinking that this was subject to change through the course of this internship was proven true. I found out that Java had a built-in technology called AWT and Swing that allowed me to create and run these GUI elements.

AWT and Swing prominently featured various elements that enabled me to create this project, such as Labels, Text Fields, Buttons, Radio Buttons etc. Although it was a bit complex to work with at first, I managed to achieve a satisfactory result with the final product. With the help of it, I was able to create the UI for my project as shown above.

If I had a little more experience in AWT and Swing concepts, controls and functionalities, I could have achieved an even better result. But due to limitations in time and a lack of other resources, I had to settle with a simple looking project that ultimately functioned by its means.

While I was creating the input for the date of birth in the Employee Management Module and the to and from date in the leave management, I ran into a slight hiccup. The drop-down calendar options are a popular option that could be used to enter these dates. I found myself unable to use the drop-down calendar option as that option was not available in the AWT and Swing that I've used. And the calendar logics options also were difficult to implement. Implementing this in my project would have forced me to create entire new logic statements for their functionality. Fortunately for me, I also found option to add the dates using the Text Field options, rather than using a calendar, which saved a lot of time and effort that it took into building it. And it worked perfectly fine and I didn't have any problems with working with it. So that was what I used to add the dates and it helped me into using easier logic statements and code that was way simple to implement and use and overall helped in completing this project.

One of the major challenges that I faced in this project was to design and develop a system that could handle various HR tasks and processes, such as employee management, attendance, and leave. The system had to store, update, and analyse the data in a reliable and efficient way. The system also had to be user-friendly, meaning that it had to have a simple and intuitive interface that allowed users to access and manage their information and requests easily. I was able to solve this challenge successfully using AWT, Swing elements, and MYSQL, as I had experience with a similar project that dealt with the same. My experience with this project was great, as it allowed me to explore a new language and get a chance of developing a Human Resource Management System in Java using AWT and Swing for the UI designs, Java for implementing the various logics for this project, and a MYSQL database for storing and retrieving the information to and from the database to the project and vice versa.

As mentioned before, I had experience in designing and developing a project in the past, which had helped me multiple times during my development of this project in Core Java. In the fourth semester of my second year of pursuing my Bachelor of Computer Applications degree, I undertook a pivotal course titled 'Software Engineering.' Led by the proficient guidance of Prof. Ashwin Herbert, this course was a comprehensive learning of the methodologies and paradigms essential for software and hardware development across a spectrum of project sizes, ranging from small-scale to significantly large-scale and other scales in between. Prof. Ashwin Herbert adeptly curated the curriculum, imparting invaluable insights and practical knowledge that equipped us with the expertise needed to tackle diverse projects independently or within a collaborative team setting.

This coursework provided a foundational understanding of the intricate techniques commonly employed by developers across the software and hardware domains. It was structured to address various facets of project development, emphasizing the significance of methodical approaches, design patterns, and project management strategies adaptable to projects of different magnitudes.

The immersive nature of this educational experience extended beyond theoretical concepts, encouraging hands-on learning and practical implementation. Through assignments, case studies, and practical exercises, I acquired a concrete understanding of the various concepts of software engineering principles. This exposure proved instrumental in shaping my approach toward project development.

The practical counterpart of this course, titled 'Software Engineering: Practical', was designed to let us apply everything we'd come to learn during the invaluable time we spent under our teacher's mentorship. The practical course was entirely based in a designated computer lab, unlike the theory course that primarily took place in our classroom. The core requirement to pass this course was to create a fully-functioning project in Visual Basic with database functionality of our won implementation. This project was considerably large-scale compared to anything else I had ever done before.

The syllabus stated that we had to develop our project to serve a specific purpose perform one of more central functions relevant to its purpose. After some quite prolonged deliberation and careful consideration, I and my friend decided to create a project titled 'SIS', short for 'Sales Inventory Management'. SIS primary purpose was to solve the problem presented as follows.

Before the advent of software-based solution, Sales Inventory management was done manually using paper-based records, ledgers, invoices, receipts, and other documents. This method has several drawbacks such as being time-consuming, error-prone, difficult to access, vulnerable to loss, and inefficient in tracking and sales metrics.

The solution presented by that it was a software-based solution that automates, validates, and secures the data related to inventory and sales. It also provides easy access, analysis, and sharing of the data, as well as real-time and accurate information that helps improve the inventory management, sales performance, and profitability.

As such, SIS followed the following scope. SIS is a software-based solution that allows the Admin / Employee to manage the product information, employee registration, stock, purchase, sales, and payment records. It also provides the Admin with the access to the Log-in and Log-out activity of the users.

As specified by the project's own fundamental requirements, it was developed completely in Visual Basic using the VB .NET framework as it's base. It also used Microsoft SQL Server for the database functionality allowing the application to store vital information like login credentials, product details, supplier details, sales details, company details, payments details, etc.

The project's functionality as a whole was divided into eight modules that would enable the Admin/Employees to manage the login, registration, product, purchase, sales, payment, log, and report functions of the SALES INVENTORY SOFTWARE.

The knowledge and expertise cultivated from this course served as a springboard, providing me with a solid foundation and a comprehensive toolkit essential for navigating the intricacies of software development, a foundation that has continued to resonate and contribute to my growth as a proficient developer. This course ultimately laid the groundwork that significantly aided me in undertaking projects of my own, including the project I would come to develop for the purpose of UpSkill Campus's Internship that I had taken.

During my internship, I had the invaluable opportunity to explore the real-world applications of Java. I delved into diverse areas, such as App and Software development, where Java plays a pivotal role in creating software's. I also explored AWT and Swing, and how they could be used to create the GUI for my project.

An area where I experienced significant growth was in developing functional user interfaces from scratch, exclusively through code and not through other GUIs like I did previously in Visual Basic. This aspect of the internship sharpened my skills in crafting intuitive and user-friendly interfaces that cater to end-users' needs.
Another aspect that enriched my learning journey was the implementation of a fully functional database within the application. Integrating the database provided insights into the intricacies of data management and storage, crucial aspects of any real-world software application. It was really satisfying, personally, to see how a well-designed database could locally facilitate efficient data retrieval and manipulation, enhancing the overall user experience.

A defining aspect of my internship was the hands-on experience I gained in Java. The practical approach allowed me to grasp Java's nuances, enhancing my problem-solving abilities and coding proficiency. This was a wonderful opportunity to develop a real-world project using Java, a task that required creativity, critical thinking, and meticulous planning. The process not only enhanced my technical prowess but also instilled in me a sense of ownership and accomplishment. As I iteratively refined the application, I grew more confident in my abilities as a Java developer, ready to take on future challenges with enthusiasm and expertise.

My internship journey provided me with an immersive experience in the world of Java, its real-world applications, and its potential to transform ideas into functional software solutions. The combination of theoretical knowledge and practical application allowed me to grasp Java's usefulness and significance in various domains.

# CONCLUSION

After having finished a fully-fledged internship and even receiving a legitimate certification for my efforts, I have come to realize the significance and usefulness of internships.

Internships, such as the one offered by Upskill Campus that I am undertook, play a significant role in career development and can have various benefits for individuals seeking to build their professional paths. First and foremost, they provide an opportunity to gain hands-on experience in a specific field or industry. They will allow individuals to apply theoretical knowledge obtained from academic studies to real-world situations. Internships offer a chance to gain valuable insights into a particular industry or professional field. You can learn about industry practices, trends, and the day-to-day operations of the workplace. This knowledge can help you make informed decisions about your career path and develop a better understanding of the industry's expectations.

Internships allow you to explore different career paths and industries. They help you understand your interests, strengths, and weaknesses in a practical setting. This practical experience can help you make more informed decisions about your future career and prevent potential career changes down the road. Internships also provide excellent networking opportunities. Building relationships with professionals in your chosen field can lead to mentorship, future job opportunities, and references. Networking with colleagues, supervisors, and industry professionals can expand your professional network and open doors for future career growth.

Internships also help develop a wide range of skills, both technical and soft skills. Technical skills may include specific software proficiency, data analysis, project management, or laboratory techniques, depending on the field. Soft skills such as communication, teamwork, time management, and problem-solving are also honed through internships. In addition to the skill you've acquired, having internships on your resume demonstrates to potential employers that you have practical experience and are proactive in pursuing professional development. Internships showcase your ability to apply classroom knowledge to real-world scenarios and make you a more competitive candidate when applying for jobs.

During the period when my college mandated an internship during my vacation, I encountered a rewarding opportunity offered by Upskill Campus, an organization presenting a range of free internship programs spanning diverse subjects such as Core Java, App Development, and Digital Marketing. Among these offerings, the Core Java course piqued my interest significantly, aligning perfectly with my desire to familiarize myself with the language during my vacation period. The prospect of studying Java in detail and then practically applying what I learnt afterwards was particularly enticing, motivating me to seize this chance to gain proficiency in a language I had long desired to explore.

Participating in this internship through Upskill Campus has been immensely advantageous, offering a multitude of invaluable benefits. The collaboration between Upskill Campus and UniConverge Technologies manifests in internship programs meticulously curated to emphasize high-demand skills and technologies, especially in the expansive domain of IoT (Internet of Things). Beyond IoT, these programs encompass a broad spectrum, describing the various facets of programming and application design crucial in contemporary industry landscapes.

One of the standout attributes of these internship initiatives is the emphasis placed on equipping interns with directly applicable knowledge and skills pertinent to industry needs. This practical orientation ensures that participants not only grasp theoretical concepts but also gain hands-on experience relevant to real-world scenarios. The partnership between Upskill Campus and UniConverge Technologies underscores a commitment to providing a comprehensive learning environment where interns can foster their expertise, acquire industry-relevant skills, and prepare themselves for the dynamic challenges prevalent in today's technology-driven landscape.

Partnering with reputable entities such as UniConverge Technologies within the internship framework offered an enriching environment steeped in collaboration with seasoned professionals and subject matter experts. This interaction with seasoned industry professionals presented a unique opportunity for me to glean insights, receive mentorship, and acquire first-hand knowledge of industry best practices.

The engagement with these experienced professionals served as a catalyst for my potential growth and development. By tapping into the wealth of expertise possessed by these professionals, I gained a nuanced understanding of the subject matter that extends beyond textbook knowledge. This exposure to practical applications and real-world scenarios cultivated in me a more profound comprehension of the field of app development, elevating my overall learning experience.

Moreover, the guidance and mentorship provided by these industry experts will serve as a cornerstone for my professional development. The opportunity to observe, collaborate, and learn from individuals deeply ingrained in the industry imparts a wealth of practical wisdom and fosters a more holistic comprehension of the subject matter. This direct exposure to industry professionals not only supplements theoretical learning but also equips interns with the acumen and insights crucial for navigating the complexities of the professional landscape.

Having experience with recognized organizations such as the likes of UniConverge Technologies will definitely make my resume stand out and demonstrate my ability to work in a professional setting. It also signifies that I have received training and exposure to industry-specific skills, making me a more attractive candidate to potential employers.

I believe that building connections with such industry experts and like-minded individuals, can and will open doors to future career opportunities, mentorship, and professional references. As such, the internship provided my UpSkill Campus certainly met my expectations.

In regards to how I visualize the potential extension of my project, I think it that could have been fairly improved if I had more time to develop it.

Being the sole developer of my project, I can clearly identify its immediate advantages over it alternatives (other URLs shortening services like websites). These are the advantages of my project:

- Full Control: Since I built the Human Resource Management System myself from scratch, I have complete control over the application's functionalities, security, and user experience.

- Privacy: As the AWT and Swing technology is used for creating the software, users' privacy concerns are addressed since the actual data of the employees is stored in the database and any information collected by the application itself will only be stored locally on an embedded MYSQL database.

- Customization: Developing a custom GUI with AWT and Swing allowed me to design a user interface tailored to specific needs and branding.

- Lightweight: Using MYSQL as the database provided a fast and reliable storage solution that can be easily configured.

- Debugging: The entire application is written in Java, making it easy to maintain and extend by Java developers.

Due to technical limitations and a lack of sufficient time, I unfortunately wasn't able to implement a few features that I wanted to add to my final product, such as:

- To create a dashboard that displays key metrics and statistics of the human resources, I could use a library like JFreeChart to create various charts and graphs. I could also use a framework like Apache Wicket to create a web-based user interface for the dashboard. For this I would need to define the metrics and data sources that I would want to display, such as employee turnover, retention, performance, satisfaction, etc.

- To create a payroll module that calculates and manages the salaries, taxes, deductions, and benefits of the employees, I could use a library like Joda-Money to handle money and currency operations. I could also use a library like Apache POI to generate and read Excel files for payroll data. For this I would need to define the rules and formulas for calculating the salaries, taxes, deductions, and benefits of the employees, as well as the frequency and mode of payment.

- To create a recruitment module that handles the hiring process, from posting job openings, screening candidates, conducting interviews, to sending offer letters, I could use a library like Apache Lucene to perform text search and indexing for job openings and resumes. I could also use a library like JavaMail to send and receive emails for communication with candidates. For it I would need to define the workflow and stages of the hiring process, as well as the criteria and methods for screening and evaluating candidates.

- To create a training and development module that provides online courses, assessments, feedback, and certificates for the employees to enhance their skills and knowledge, I could use a library like JUnit to create and run tests and quizzes. I could also use a library like iText to create and manipulate PDF files for certificates. For this I would need to define the content and structure of the online courses, as well as the scoring and feedback mechanisms for the assessments.

- To create a chatbot or a voice assistant that can answer common queries and requests from the employees, such as leave balance, salary slip, attendance report, etc., I could use a library like Dialog flow to create and manage natural language understanding and conversational agents. I could also use a library like Google Cloud Speech-to-Text to convert speech to text and vice versa. For this I would need to define the intents and entities that your chatbot or voice assistant can handle, as well as the responses and actions that it can perform.