



Internship Report

SWE-420

Submitted By:

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Performed at:

DreamAspect Software(StartUp)



Institute of Information and Communication
Technology,
Shahjalal University of Science and Technology

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Letter of Transmittal

Date: July 16, 2022

Prof. M. Jahirul Islam, PhD., PEng.

Director,

Institute of Information and Communication Technology,
Shahjalal University of Science and Technology, Sylhet.

Subject: **Letter of Transmittal**

Dear Sir,

I am glad to present the internship report for your thoughtful review. I have been working as an Intern at 'DreamAspect Software', 4/1 semester as a part of our course, SWE - 420.

This report describes my work experience in the organization. During this period (1st September 2021 - 31th December, 2021), I worked under the supervision of Jewel Kader, CEO, and Sohel Kader, Associate Software Engineer at DreamAspect Software.

I hope this report will match up to your expectations and be highly interesting. I have attempted to give my best efforts to prepare a detailed report. I will be grateful if you accept my report and your kind consideration will be highly appreciated.

Sincerely Yours,

Gourab Saha

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4th Year, 1st Semester,

Department of Software Engineering,

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Acknowledgment

At the beginning of all, I would like to thank my **SWE Department**, Institute of Information Communication and Technology, Shahjalal University of Science and Technology for arranging the internship program for me and for all of us.

I would like to convey my sincere gratitude to **Prof. M. Jahirul Islam, PhD., PEng**, Director of the Institution of Information and Communication Technology for providing the internship program and giving me the opportunity.

I would also like to express my gratitude to our honorable teacher **Falze Mohammed Tawsif**, Assistant Professor, **Mohammed Raihan Ullah**, Lecturer, **Partha Protim Paul**, Lecturer of SWE, SUST, for their efforts in assisting in our admission to various organizations and for their helpful advice.

I am thankful for my other two batchmates **Mohammad Farhad** and **Maraz Mia** who are working with me in DreamAspect Software, for the valuable information and support provided by them in their respective fields. I am grateful for their cooperation during the period of my internship.

Executive Summary

This report is a detailed overview of the author's internship journey at DreamAspect Software Company. This document's purpose is to identify and summarize the analysis carried out, the projects completed, the experience gained, and the accomplishments made during my four months of internship as an intern.

This report is divided into five chapters. The first chapter of this report deals with the introduction that presents the objectives, scope, and limitations. To understand the company on which the internship is carried on, the second chapter of the study deals with some theoretical concepts about the profile of DreamAspect Software Company. The third chapter is about my involvement in the company through various projects. Professional growth is discussed in the fourth chapter along with several methods of analysis and findings. The fifth chapter is about conclusions and references that are drawn by analysis of the whole report.

The author's efforts undoubtedly benefited him by strengthening his practical knowledge of the industry. His perspective on various mobile application frameworks and cross-platform application development frameworks was significantly expanded by some research and development projects. This internship also allowed him to gain professional work experience and gave him the scope to use the theoretical practice that he had learned at university.

Overall, the author learned important lessons during his internship that made him competent, skilled, and more confident for his future career.

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Chapter 1: Introduction

1.1 Introduction

An internship is a period of work experience offered by an employer to give students and graduates exposure to the working environment, often within a specific industry, which relates to their field of study. It gives a student the opportunity for career exploration and development, and to learn new skills. It offers the opportunity to bring new ideas and energy into the workplace, develop talent and potentially build a pipeline for future full-time employees.

An internship is a great way to help a student to develop abilities by gaining industry experience before applying to permanent positions. It also gives a real insight into the world of works, allows a student to apply the theory learned in university, and increases confidence with practical knowledge.

Institute of Information and Communication Technology provides its students the beneficial opportunity of having an internship within their bachelor's program under the course of SWE-420.

I was sent for an internship in a company called “**DreamAspect Software.**” It is a fully remote startup company.

1.2 Objectives

This report was produced using the knowledge and expertise that I had gained between September 1st, 2021, to December 31th, 2021, as an intern. This report's major goal is to highlight my accomplishments and highlight my contributions to projects, professional growth, and work experiences I received during the IICT, SUST-sponsored internship term.

1.3 Scope

This report reflects a glimpse of the experience that I have gathered in my internship. It gives a brief overview for the student who is interested to work in a new startup company like DreamAspect Software. It also represents most of the major technologies used for developing software at startups in Bangladesh so that it will help new students avoid the confusion about ongoing technologies used in startup companies.

1.4 Limitations

This report has some restrictions as all the contents can not be shared outside of the company, under the company policy. The information provided in this report may not be perfect as I just discuss what I learned from this company and what feedback I received from my mentor and my team members. Moreover, It was a completely remote internship. So it was very difficult work to evaluate the report and collect data from the office staff.

Chapter 2: Overview of the company

2.1 DreamAspect Software

DreamAspect Software basically a startup company, which is based in the United States. It doesn't have a functioning background because it is new in the software industry. It has an aim to dominate this rapidly expanding software industry sector by using limited resources and cutting-edge technology.

2.2 Company Type

An entrepreneur founded DreamAspect Software company to develop a platform-based software and then use that platform as a service to its users.

As it is new, it doesn't have a functioning background. Moreover, the software platform is not completely developed yet. So the software functional module is still in the R&D stage. However, those activities frequently face difficulties due to their lack of commercial and market experience.

2.3 DreamAspect's Service

The company comes up with its custom product. The service provided by the Company is Gable Games Platform. It is a **PaaS(Platform as a Service)** company. Platform as a Service is a step up from SaaS as developers have the APIs to create and develop an app that will operate in a specific environment. They implement their platforms. Developers can create apps designed specifically to be used for the Gable Games Platform using open APIs. That app is then available to any Gable Games user.

The company is aiming to add various interesting games to its platform. By playing those games, users may communicate among themselves and find similar mentality individual by the help of AI technology and networking.

2.4 DreamAspect Products

The company started its journey in the software industry by providing some games on its platform, all together called “**Gable Games**” as an umbrella term. Some of the exciting game products which are in the development phase are given below:

☐ Chess

Chess is one of the oldest and most well-known board games. Two players compete against each other on a checkerboard using specially crafted pieces in opposing colors, most often white and black. Following White's move, the players take turns switching roles according to predetermined rules, intending to force the other player's King—their main piece—into checkmate—a situation in which it cannot escape capture.

☐ Ludo

A single die roll determines how far each player's four tokens travel in the strategy board game Ludo, which is played by two to four players. Ludo is a simplified version of the Indian game Pachisi, like other cross and circle games.

☐ Checker

One of the oldest games in existence is the board game checkers, often known as draughts. Two players compete against one another over a board of 64 bright and dark squares, much like a chessboard. The 24 playing pieces are disk-shaped and come in opposing hues; regardless of their hues, they are recognized as being black and white. Each competitor has 12 pieces on the board when the game begins. The object of the game is to move a piece diagonally forward to an adjacent empty square. Moving first is Black. An opponent's piece must be caught and eliminated by leaping over it to the empty square if it is in such an adjacent unoccupied square with a vacant space beyond. A series of forwarding jumps in a straight or zigzag manner must be completed during the same play if this

square presents the same condition. The player has an option when there are multiple ways to jump.

□ **Carrom**

Carrom is a popular game played throughout the Indian subcontinent that demands a keen sense of angles, as well as extreme precision and focus. It used to be played for fun, largely by kids and women, but now it is organized and played at a high level of competition.

2.5 Tools And Frameworks

As a newcomer to the software sector, this organization has only recently begun to use a few languages, tools, and frameworks. some of those are listed below:

Language:

- **Dart**
- **JavaScript**
- **NodeJs**
- **JSON**
- **HTML**
- **CSS**
- **GraphQL**

Framework:

- **Flutter**
- **ReactJs**

Database:

- **Postgres**
- **MongoDB**
- **Redis**

Game Engine:

- **Flame**
- **Forge2D**

Microservice:

- Docker

Cloud:

- BigQuery

2.6 Employees

We don't have a lot of information in this regard. As much as we knew, few permanent employees were working at this company. There were at least two assistant software engineers and three (The company hired three SWE students as interns) of us. We worked remotely from home while they had some backend developers, database designers, network, and software engineers working in America, Australia and Vietnam.

2.7 Office Schedule

As it was a remote office, its employee based in many countries. There was no single fixed time for all of them. However, we were asked to work from 12.00 PM to 9.00 PM, from Monday to Friday including two holidays in a week. There was a 1-hour break for lunch. And we also had a daily scrum for 30 minutes which started at 2:30 pm and ended at 3.00 pm.

2.8 Weekly Presentation

As we were in a remote internship, we couldn't talk much about other things except office work. So, a weekly presentation was arranged so that anyone could present his knowledge of what he had learned through the week. This process was very helpful to gain a piece basic knowledge about a new topic. Even, it was a great way to meet employees from various countries at a fixed time.

Chapter 3: My Participation in the Project

3.1 Overview

DreamAspect is new in the software industry. No product of the company has been released so far. Even the company has a handful of employees. So at the very beginning, we are assigned to the game portion of the main project of the company.

3.2 Gable Games Project

We were in the total number of three students, who went to DreamAspect company for an internship program from IICT. Each of us was assigned to a separate game project. The chess game was the first project that I worked on. It is a mobile game application built for Android and iOS. I was given a code base and asked to modify it as per requirement. Later they wanted to use that customized chess game project on their platform.

3.3 Working In A Team

For the first three months of the internship, I worked all alone. I had tried to make a customized Chess Game.

After making some progress, I was assigned to another game project called Ludo, under a mentor named **Sohel Kader**. He was an associate software engineer in that company. My task was to develop a custom UI for the Ludo game. But this time, I started from scratch. I was trying to build everything from the beginning. My mentor gave me some tasks and I tried to finish them. At night, we joined in a meeting and showed him my progress. We'd been pair programming together. It had been fun working with him. He's helped me figure out how to do it. I'd enjoyed working with him.

3.4 Technology I Used

The technology used to complete this project is given below:

Language:

- **Dart Language**

Framework:

- **Flutter Framework**

Development:

- **Visual Studio Code IDE**
- **Android Studio Emulator**

Version Control:

- **Github**

Communication:

- **Skype**
- **Google Meet**
- **Google Mail**

3.5 The Features I Was Implementing

My first task was to develop a custom UI Chess Game with the help of an existing code base. In the Chess Game project, it was my responsibility to make a flexible Chess board so that it could change its size along with all its pieces according to various mobile scrolls. Then I had to fit that board into the platform.

After completing that task, I was working on implicit-explicit animations to move Chess pieces to various places, according to the game rules. After that, I had to integrate the Chess pieces with the game logic to make it a fully workable game.

In the last project, I worked on custom UI development for the Ludo game. I started it from the beginning. I made the board structure, then built

UI and Game logic according to the International Ludo standard. My mentor guided me with his instructions.

3.6 Challenges I Faced

The most difficult challenge, I faced was understanding the codebase of another developer. In the very beginning, without deep knowledge of the language and framework, it was very tough for me to understand the codebase in that short period. I felt so distressed. Then I overcame it, and start everything from the beginning. After practicing more and more, I felt comfortable. In the end, it was enjoyable, and the code was much simpler to read and comprehend.

On the very first day of my internship, I was given a Chess Game project whose technological stack, coding structure, and sizeable codebase; I knew nothing about. Since I was given a project alone, without any mentor or teammate, I felt it difficult. Even I didn't get any assistance with how to accomplish it or how to add the features under the criteria, which created a lot of challenges for me. However, after I got used to it, finishing the assignment was easier for me.

As DreamAspect was a start-up company, there was no proper SRS(Software Requirement Specification) for any of the projects. So, in the scrums meeting, I was given my tasks. Sometimes, it created many problems as the idea was not clear to me. It was also a problem that I had to deal with.

As I was completely in a remote internship, I had to manage everything from home. It was the very first time, I was doing something like that. So properly managing everything was difficult for me for the first time. Then I prepared a time routine and worked according to it. In the end, I felt very comfortable with it.

Chapter 4: My Overall Professional Growth

4.1 Tools And Technology

A computer program used by programmers to generate or build additional software is known as a software development tool. They make it possible for programmers to create stable software that meets the needs or objectives of a client. Every software professional eventually makes use of these technologies and frameworks to increase their productivity. These resources are essential for people working in the software industry to complete projects while collaborating in teams.

In today's technologically advanced society, there are enormously advanced technologies that are emerging beyond our wildest dreams, transforming human capacity into superhuman skill. There are numerous technologies, yet they are all based on the various needs of the businesses in the technology sector. A framework or technology is similar to a blueprint with pre-built components, making it quick and simple to construct applications that are ready for production.

4.2 Technology And Tools I learned

As an intern at DreamAspect Software company, I have learned various tools and technologies.

4.2.1 Tools

Programming tools make development easier. In my Intern at DreamAspect, I have to use the following tools in my daily work.

- **Visual Studio Code:** Visual Studio Code is free with a source-code editor made by Microsoft for Windows, Linux, and macOS. Features include support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git. Users can change the theme, keyboard shortcuts, preferences, and install extensions that add additional functionality.

- **Android Studio:** Android Studio is the official integrated development environment for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development.
- **Android and IOS Emulator:** Software that enables one computer system to behave like an Android/IOS system.
- **Git and Github:** Git is a DevOps tool used for source code management. It is a free and open-source version control system used to handle small to very large projects efficiently. Git is used to track changes in the source code, enabling multiple developers to work together on non-linear development.

4.2.2 Technology

4.2.2.1 Dart

Dart is a client-optimized language with C-style syntax developed by Google for building fast apps on any platform. Its goal is to offer the most productive programming language for multi-platform development, paired with a flexible execution runtime platform for app frameworks. The Dart language is type-safe. It uses static type checking to ensure that a variable's value always matches the variable's static type. It supports most of the common concepts of programming languages like classes, interfaces, and functions, unlike other programming languages.

Dart also offers sound null safety, meaning that values can't be null unless you say they can be. With sound null safety, Dart can protect you from null exceptions at runtime through static code analysis. Unlike many other null-safe languages, when Dart determines that a variable is non-nullable, that variable is always non-nullable. If you inspect your running code in the debugger, you'll see that non-nullability is retained at runtime.

4.2.2.2 Flutter

Flutter is Google's free and open-source UI framework for creating native mobile applications. Released in 2017, Flutter allows developers to build mobile applications with a single codebase and programming language. This capability makes building both iOS and Android apps simpler and faster.

The Flutter framework consists of both a software development kit (SDK) and a widget-based UI library. This library consists of various reusable UI elements, such as sliders, buttons, and text inputs.

Developers building mobile applications with the Flutter framework will do so using a programming language called Dart.

```
Widget build(BuildContext context) {  
  return Scaffold(  
    appBar: AppBar(  
      backgroundColor: Theme.of(context).canvasColor,  
      elevation: 0.0,  
    ),  
    body: Column(  
      crossAxisAlignment: CrossAxisAlignment.stretch,  
      children: <Widget>[  
        // Give the key-pad 3/5 of the vertical space and the display 2/5.  
        Expanded(  
          flex: 2,  
          child: CalcDisplay(content: _expression.toString()),  
        ),  
        const Divider(height: 1.0),  
        Expanded(  
          flex: 3,  
          child: KeyPad(calcState: this),  
        ),  
      ],  
    ),  
  );  
}
```

Fig: Flutter Code Sample.

Flutter has many advantages for both developers and business people. Flutter offers exceptional usability, speed, and quality at affordable prices. Flutter has many advantages for both developers

and business people. Flutter offers exceptional usability, speed, and quality at affordable prices.

- Development goes faster when the same code is used for both iOS and Android applications. Flutter's singular codebase speeds up time-to-market while cutting mobile app development costs significantly.
- Flutter app performance is equivalent to that of native real-time applications. Unlike other frameworks, Flutter apps do not need a bridge to interact with native components. Since these bridges typically cause performance issues, this gives Flutter a decided advantage.
- Flutter's "hot reload" feature allows developers to change the code on emulators, simulators, or real devices, and see results in real-time. The changed code is then reloaded immediately while the app is running. No restart is required. Hot reloads make building UIs, adding features, and bug fixing simpler than ever.

4.3 Pair Programming & Development Technique

When two programmers collaborate at the same workstation while using the agile software development technique known as pair programming. The driver is the one who writes the code, while the observer, or we can say, as each line of code is entered, the navigator checks it. The two programmers routinely switch between duties. The reviewer also takes into account the "strategic" direction of the work, coming up with offers suggestions for enhancements and potential issues to be resolved in the future. This is meant to release the driver to concentrate solely on the "tactical" components of finishing the current task, employing the observer as a support system and a mentor.

While internship, Sohail Kader Bhai, a senior associate software engineer, and I practiced pair programming with another intern of my

batch, and the results were better than any of us could have come up with on our own. In contrary to one person, two persons can detect issues earlier and spot probable flaws. We have reviewed, assessed, and talked through any trade-offs involved before the team decides on a strategy to tackle a specific problem. Instead of doing so after we've already implemented them, solutions have been appraised early on.

4.3.1 Merits Of Pair Programming

According to certain research, software created by pair programming has fewer problems than software created through solo development. As detection of coding mistakes become easier, defect rates will be reduced by 15% to 50%, depending on the difficulty of the assignment and the experience of the programmer.

Two brains are always better than one. So in comparison to programmers working alone, pairs often find more design alternatives, arrive at simpler, more maintainable designs, and identify design flaws earlier. Pairs of programmers typically finish a task more quickly than one coder working alone.

Again in pair programming, they can both benefit from each other's knowledge sharing and mutual learning.

4.3.2 Demerits Of Pair Programming

According to several other research, pair programming is not always advantageous or productive since, despite producing results more quickly, it typically requires more total programming time than solo programming.

Although it is normally discouraged since it is more difficult for newcomers to establish good habits without an appropriate role model, teaming up with newcomers can result in better results than two newcomers working individually.

4.4 Professional Learning

The main goal of an internship is professional learning, despite the value of technical learning.

4.4.1 Communication Skills

Communication skills are an indispensable part of professional growth. Without communication skills, advancing a career is difficult for a candidate.

During my internship, I learned to develop my communication skill through various sets of work. Like asking questions to better understand and be more clear about my task, giving a presentation every Friday about the learnings of the whole week, seeking feedback from my peers as well as my mentor, etc.

4.4.2 Time Management / Work-Life Balance

Effectively managing time is a very important skill that every intern should learn.

As I was in a fully remote internship, managing time sometimes got very difficult for me. When I was in the internship, I developed some technics that helped me a lot in managing time.

- Try to break down big to-do lists into smaller ones.
- Write everything down.
- Prioritizing important tasks.
- Taking advantage of various time management tools.

4.4.3 Adaptability

People like to hire professionals who can quickly adjust to workplace changes and new challenges. An internship is the best place to develop this

skill. Adapting to new tools and technologies is an integral part of this skill for a software engineering intern like me.

Every company has its own culture. As an example, the CEO of the company where I did my internship, always says “If facing a problem just become aggressive.” For me, it seemed like a company attitude towards problems. I gradually adapted to this culture.

4.4.4 Work-Ethics / Professionalism

Work ethic is a set of standards of behavior and beliefs regarding what is and isn't acceptable to do at work.

As I was in a remote internship, my mentor couldn't notice me all the time. So, professionalism was a must to make it a successful internship. For professionalism, other key skills or qualities include:

- **Punctuality**
- **Respect**
- **Reliability**
- **Organization**
- **Efficiency**
- **Positive attitude**
- **Emotional Intelligence**
- **Accountability**

During my internship, I had a great opportunity to practice all of those qualities and tried to maintain my professionalism.

4.4.5 Taking Criticism / Feedback

It can be difficult to be told that you need to improve upon something or that you completed a task incorrectly.

As an intern, I learned how to handle criticism with grace (both from watching coworkers receive criticism and from receiving criticism myself), which also built my confidence in a professional setting. Since I already had

a trial run in the workplace as an intern, I know now that I can handle criticism maturely, and I know how to respond to it professionally and respectfully, which will help me in my career.

4.4.6 Leadership, Confidence, and Responsibility

I was in charge of several aspects of my project while an intern. Although I had mentors and advice, I still had to make decision on my own, including selecting the proper algorithm. Through these experiences, I gained confidence (along with taking ownership of my actions and their results), leadership (especially in terms of advocating for and defending my ideas and decisions, not to mention making decisions!), and responsibility (my decision would be impactful). These skills are priceless for a career. So I tried my best to learn and practice them during my internship.

Chapter 5: Conclusion

5.1 Conclusion

Working in DreamAspect software company has been a mixed experience for me. Undoubtedly in that four months of internship, I was able to learn more about what a software engineer and programmer are throughout my internship and become ready to work as a responsible and creative software engineer and programmer in the future.

In the course of my internship, I figured out that a student profited greatly from the field placement in that he or she was able to put the theoretical information acquired at the university into practice through the numerous activities, tasks, and assignments the intern was required to do. During my internship, I also made mistakes, my mentor corrected me and offered to advise. Nevertheless, their suggestions can help me adjust and keep from repeating the same mistakes. I had participated in various projects, weekly presentations, and other seminar-type meetings, discussing various topics. My skills in interpersonal communication, listening, public speaking, acting naturally among others, resolving conflicts, and organizing all improved as a result of this internship.

In a summary, this internship has been satisfying. I can say with certainty that working at DreamAspect has taught me a great deal. While working on that completely remote internship, I've come to realize the significance of time management abilities in day-to-day life.

My coding and design skills for software development have improved. Now, I can look forward to facing the upcoming challenges of my career. I'm hoping that this experience will inspire and teach me how to create a better future for myself.

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