

# Report on Internship

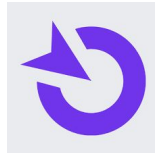
SWE 420, Internship

Submitted By:

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performed at:

**Orbitax Bangladesh Limited**



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

Date of Submission: September 1, 2020

## Letter of Transmittal

Date: September 1, 2020

Prof Mohammad Abdullah Al Mumin Director,  
Institute of Information and Communication Technology,  
Shahjalal University of Science and Technology, Sylhet

Subject: **Letter of Transmittal**

Dear sir, I am pleased to submit the Internship Report to you for your kind appraisal. I have completed my internship at '**Orbitax Bangladesh Limited**' in this semester as a part of our course, **SWE - 420**. During the internship, we got a huge amount of support and help from the officials. During this period ( 1 January 2020 - 31 June 2020 ), I worked under the supervision of **Shamim Ahsan Shaon** (Senior Software Engineer) and **Plabon Kumar Biswas** (Associate Software Engineer) at Orbitax Bangladesh Limited.

The experiences I have gathered will be very helpful in my professional life.

I believe, this report will be quite interesting and fulfill your expectation. I have tried to give my best efforts to prepare a comprehensive report. I will be grateful if you accept my report and your kind consideration will be highly appreciated.

Sincerely yours,

Md. Masum Mollik  
Reg No: 2016831013  
4th year, 1st Semester  
Department of Software Engineering,  
Shahjalal University of Science and Technology

# **Letter of Endorsement**

To Whom It May Concern

Subject: **Approval of the Report**

This letter is to certify that all the information mentioned in this document is true and not confidential to the company. The projects mentioned here have had a successful involvement of MD. Masum Mollik, Institute of Information and Communication Technology, Shahjalal University of Science and Technology.

I wish all the best and hope that he will lead a successful career.

Internship Supervisors,

**Hasan Shahriar Masud**  
**Chief Technology Officer**  
**Orbitax Limited**

**Shamim Ahsan Shaon**  
**Senior Software Engineer**  
**Orbitax Limited**

**Plabon Kumar Biswas**  
**Associate Software Engineer**  
**Orbitax Limited**

## Acknowledgment

First of all, I would like to thank my Institute, Institute of Information and Communication Technology, for arranging the internship program for me. I am also grateful to Orbitax Limited for recruiting me as an intern.

I would like to express my heartfelt gratitude to **Mohammad Abdullah Al Mumin**, Director, Institute of Information and Communication Technology, Shahjalal University of Science and Technology for his kind support and inspiration which has immensely strengthened my confidence during my internship program.

I am extremely grateful and remain indebted to **Mr. Hasan Shahriar Masud**, CTO of Orbitax Bangladesh Limited Mr. Hasan Shahriar Masud for hiring me as an Intern.

I also thank and gratitude to my Team Leader **Mr. Shamim Ahsan Shaon**, Senior Software Engineer for his exemplary guidance, monitoring, and constant encouragement throughout this internship. The blessing, help, and guidance given by him from time to time shall carry me a long way in the journey of life on which I am about to embark.

I would like to thank **Mr. Plabon Kumar Biswas**, Associate Software Engineer for giving me ideas, help, support, knowledge in various tasks.

I also Thank **Mr. Kousik Deb**, Former Associate Software Engineer(Provisional) for helping and co-operating me during the developing time.

I am also thanking honorable teacher to **Quazi Istaque Mahmud Rafi** and **Fazle Mohammed Tawsif** , Lecturer, SWE-SUST, for their contribution and hard work to getting us to admit to different companies.

I also like to thank my other seven batch-mate colleagues who are working in Orbitax Bangladesh Limited for the valuable information provided by them in their respective fields. I am grateful for their cooperation during the period of my internship.

I'm thankful to them for their continual constructive criticism and invaluable suggestions and help, which benefited me a lot at my internship.

## **Executive Summary**

The internship report highlights the major works carried out by the author in terms of academic and non-academic perspectives. The scope of this document is to identify and describe the analysis carried out, projects completed, experience gained, and focuses on the achievements as an intern.

The author was sent to Orbitax Limited to complete his internship. The author found himself rather lucky by getting the chance to work in such an environment that Orbitax provided and got introduced to some of the new terms, new Technologies, and new Languages. But the most amazing experience was to work in a multicultural work environment.

The projects that the author worked in certainly helped him by increasing his practical knowledge depth. The research and development projects were particularly helpful in widening his views regarding different web application development frameworks and mobile application frameworks.

Keeping the coding apart, there were also a few more challenges. Some of them were technical and some were non-technical. Coming almost at the end of his internship, the author discovered that some of his communicative and management skills have been improved to a great extent. Besides, there were some vital lessons which will help him in his future jobs.

After the internship, the author is more confident, more skilled, and more professional than he was before.

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# **Chapter 1: Introduction**



### 1.1 Introduction

The internship is the process of on-the-job training, which is particularly beneficial for students with majors in technical courses.

Institute of Information and Communication Technology (IICT) provides that glorious opportunity to their students of having an internship within their bachelor program.

IICT always emphasizes industry orientation in academic study. For this purpose industry, people are invited to IICT to talk about their companies and experiences, often some technical courses are entirely conducted by them. The six months internship program is another, possibly most effective, way of achieving industry orientation.

Internship helps the students to link-up their academic experience with industry practices. I have tried my best to combine both. I hope I'm successful, the future semesters of my degree will prove the fact of success and failure.

The company I was sent for an internship is Orbitax Bangladesh Limited. It is one of the leading software companies in Bangladesh.

### 1.2 Objective

This report has been prepared as a requirement of the internship program provided by the Institute of Information and Communication Technology (IICT), SUST. The report is intended to reflect my achievements, project involvements, professional growth, and industrial experiences during the intern period.



## **1.3 Scope**

This report gives an insight into the experience that I faced in my workplace at Orbitax Bangladesh Limited. As well as it also provides a brief description of Orbitax Limited for students who are interested in Orbitax for their professional growth. This report will also give a brief overview of Orbitax Bangladesh Limited to the students of IICT who will continue the internship program at Orbitax in the future. It also will represent most of the major technologies used for developing software in Bangladesh. So, it will help new learners to avoid confusion about ongoing technologies in Bangladesh.

## **1.4 Methodology**

I have presented different kinds of information in this report which I gathered during the internship period and collected from any written document such as the Internet or another person. Most of the information is collected from web sites, articles, Orbitax employees, and some journals. The information included in this report is classified into two categories, primary data source, and secondary data source.

### **1.4.1 Primary Data Source**

- The experience of the intern period
- Information from my team members and other employees
- Participating in different in-house activities

### **1.4.2 Secondary Data Source**

- Websites of Orbitax
- Social media pages of Orbitax
- Different types of blog data

## **Chapter 2: Company Profile**

## 2.1 About Obritax Limited

Orbitax is committed to providing high value, low-cost tax research, management & planning solutions. Its vision is to deliver the extensive international tax practice experience of Orbitax team members and partners through easy to use the software. It recognizes that international tax work is complex, and must be done by trained professionals.

Its tools are designed to help expert users by reducing time/effort on repetitive, routine tasks, carry out exhaustive research, use templates of tried and tested tax strategies and explore scenarios enabling large productivity gains.

Orbitax introduces users to each product category through online tools accessible through tax content portals traditionally used by tax professionals. Orbitax also develops ancillary tools to help users derive better value from the tax content and software they already own.

## 2.2 Company Type

Orbitax Bangladesh Limited is a Product-based company. Product-based are those companies that will be working on their products and deliver that product to the end-users. They will look for candidates who have good technical and domain knowledge and are familiar with the latest tools and technology.

In product-based companies, you work on the same product for years while in service-based companies it will be mostly for some months or years in rare cases. In most cases, the product-based companies consider their employees as an asset for their company as losing them will be a great loss as it will take more time for a new employee to expertise their product. Product-based companies will consider the quality as the King while the service-based considers the client as King. There you will have more opportunities for learning as you will have a new problem and write code from scratch. They won't be that strict on timings, you just have to do your work.

## **2.3 Services**

In today's world, every organization depends heavily on technology to keep business operations connected, drive revenue, and support ever-growing customer demands. Undoubtedly, Information Technology is the key to manage technology and it spans a wide variety of areas that include but are not limited to things such as computer software, information systems, programming languages, database management systems, networking, etc. Keeping these in mind Orbitax Bangladesh Limited provides an impressive tally of services and solutions. It provides the following services that are described below:

### **2.3.1 Ideation, Graphics, and Interaction Design**

Orbitax Bangladesh Limited generates initial ideas with the help of its tax specialist team and business analysis team and the head of the development team. Then they start working on those ideas. Its design team helps developers through digital design and strategy maze. It works through the early stages of a project. Over the years they have become very good at this art of making the complex simple.

### **2.3.2 Software Development**

Orbitax Limited teams build custom software- related to high value, low-cost tax research, management & planning. Orbitaxians have worked with many technology platforms and have collaborated with many teams over the seas.

### **2.3.3 Software Quality Assurance**

Every great software has bugs in its initial stage. SQA team finds out the bugs and send the list to the development team for further development. This is a continuous process of development and by the passage of time, the software turns into great software. Great design and development go nowhere without great quality. Orbitax

has an experienced software quality assurance team that works for the betterment of the software being developed. Orbitax integrated quality assurance approach incorporates all aspects of agile and lean development with the stability and reliability of the traditional SQA process.

Orbitax believes software quality assurance is only possible with a mixed set of procedures that should involve all members of the team collaborating with a dedicated team of SQA professionals.

Orbitax follows the Agile SQA recipe every day to complete QA:

- Unit Tests at the developer's desk
- Integration tests at the SQA desk
- Regression at the automation server

Because of the involvement with all kinds of projects, Orbitax SQA teams are exposed to a variety of technology and business domains. This helps Orbitax to provide unique resources bringing in skills, experience, and ideas from very different sectors.

## 2.4 Location and Physical Layout

The headquarters of Orbitax Bangladesh Limited is located in San Francisco, California. Its office is located at 113 Kazi Nazrul Islam Ave, Dhaka 1205.





figure: Office Building of Orbitax Bangladesh Limited

- Orbitax office building is situated in an industrial area. But the structure of the building is like a residence building. So, the employees work in a domestic environment in Orbitax.
- the office consists of the 1st, 3rd, and 7th floor. Orbitax is planning to expand its office area by including the 6th floor of the building.
- It has a large indoor playground on the 1st floor and a pool room on the 7th floor.
- It has a nice dining room on the 3rd floor of the building.
- There are kitchens on each floor of the office.
- There are gymnasium instruments on the 7th floor where employees can exercise and keep their body fit.

## 2.5 Human Resources

Orbitax has more than 60 permanent employees at this moment and they are planning to recruit more as they have more plans to produce quality products. Since the beginning, Orbitax has grown in the number of resources and production every year.

Orbitax doesn't hire developers, designers, or QA engineers; Orbitax hires people who solve problems. And it hires only the best. Orbitax runs regular training and review sessions to keep it on the top. And the culture of constructive criticism, learning, and sharing expands Orbitax horizons and keeps it level headed.

## 2.6 Orbitax Products

- **Orbitax Change Report Tracker:**
  - Orbitax Change Reports Tracker is a comprehensive solution for tracking worldwide tax law changes. With coverage of over 195 countries, and a broad range of features (including global footprint analysis, multiple user access, custom reports, push notifications, and more), Orbitax CRT is a must-have tool to navigate the constantly changing landscape of international tax, enabling users to effectively plan for the years to come. Orbitax Change Reports Tracker is the only solution that can truly emulate a customer's global footprint and allow for important tax changes to be shared automatically to key contacts and stakeholders.
- **International Tax Research and Compliance Expert(ITRCE):**
  - Orbitax International Tax Research and Compliance Expert (ITRCE) provides a comprehensive analysis of tax regimes with embedded tools to put your research into action and is your one-stop-shop for all your essential international tax research and compliance needs, including cross border tax rates, tax treaties, daily tax news updates, country analysis and world-wide tax compliance forms in English. It also provides powerful real-time translation of any foreign documents with automatic foreign exchange conversion for translating foreign financial statements.

- **Orbitax Essential International Tax Solutions (Essentials)**
  - In addition to research and compliance material, Orbitax Essential International Tax Solutions allows companies to create their entity charts (visual and table format) and perform worldwide tax planning and multiyear forecasting calculations.
- **FX Rates**
  - Its FX Rates feature allows the client to search for and download foreign exchange rates for 160 reporting currencies for any given tax period. Choose between Spot Rates, Tax Year Rates, and Period Rates including simple average, 12-month weighted average, and 13-month weighted average rates, and export into Excel for a local copy. Our certified rates are updated daily and offer historical rates results dating back to 1995.
- **Country Analysis**
  - Orbitax's Country Analysis offers detailed tax guidance for companies doing business in over 100 countries, including:
    - Country Snapshots providing concise compilations of key tax facts; Country Summaries describing key tax rules relevant for multinational companies doing business outside their home country; and Country Chapters offering in-depth practical tax guidance focusing on all aspects of the tax system that are of relevance to cross-border business and international structuring. Topics covered include forms of doing business, corporate and withholding tax rules for resident and nonresident businesses, anti-avoidance rules, indirect tax rules, and others.
- **Tax Forms and Translation**
  - Orbitax's Forms tool provides key tax forms translated into English for over 80 countries, including corporate tax return forms, treaty benefit claim forms, withholding tax reporting forms, and VAT forms. The Forms tool also provides powerful built-in document translation to translate any document (electronic or scanned) into English or any

other language, as well as currency conversion, and compare features for translated documents.

- **International Tax Rates**

- Use Orbitax's International Tax Rate tools for the most up to date rates for over 100 countries:
  - Cross-Border Tax Rates, including the best withholding tax rates (domestic, treaty, EU) for any of 9 cross-border payment streams (including interest, royalties, and dividends);
  - Corporate Tax Rates, including statutory tax rates, surtaxes, and effective tax rates for the current year, as well as historical rates and approved future rates;
  - Value Added Tax (VAT) Rates, Goods and Services Tax (GST) Rates, and other indirect tax rates; and
  - Individual Income Tax Rates.

In addition to the rates, access to powerful tools is provided to calculate total tax costs and benefits of a cross-border transaction including withholding tax, participation exemption, and foreign tax credit rules, and to quickly calculate all possible transaction combinations and optimal routes.

- **Worldwide Tax Treaties**

- Use Orbitax's Worldwide Tax Treaties tool to search our repository of worldwide tax treaties (in English), including amending protocols and consolidated versions as amended. The tool also provides news on treaty developments, the status of current and pending treaties, and treaty withholding tax rates, as well as relevant treaty material including OECD, UN and US Models, relevant EU Directives, Technical Explanations, and more.

- **DAC6 Reporter**
  - DAC6 is not just about aggressive tax planning. The Directive has been drafted as such that it also applies to standard transactions with no particular tax motive. This means that ordinary transactions such as cross-border leasing, intercompany royalty payments, securitization structures, certain types of reinsurance, and many standard group corporate funding structures may be reportable.
- **Entity Tracker and Designer**
  - Track an MNE's global footprint, including entities and cross border transactions.
- **Due Date Tracker**
  - Automatic due date obligation tracker for all your filing needs to be tied directly to your global footprint
- **WHT Implementer**
  - End-to-End Solution for determining and completing the required forms for cross-border transactions
- **Change Reports Tracker**
  - Worldwide tax law change tracker for 195 countries and jurisdictions with custom alerts
- **Excel Add-Ins**
  - Pull calculations, rates, and entity data directly into Microsoft® Excel
- And many more...

## 2.7 Tools and Frameworks

Over the years Orbitax has worked with many tools and technology. Some of those are given below.

Languages:

1. C#
2. Python

3. TypeScript
4. Javascript
5. NodeJs
6. YAML
7. JSON
8. GO
9. HTML\*
- 10.CSS/SCSS/SASS
- 11.JQUERY

### Frameworks:

1. ASP.NET Core
2. Windows Forms
3. Windows Presentation Foundation
4. LINQ
5. ASP.NET Entity Framework
6. ASP.NET MVC
7. yFiles
8. Angular
9. React
- 10.React Native
- 11.Robot Framework
- 12.Selenium Webdriver

### Databases:

1. MongoDB
2. MSSQL Server
3. Postgres

### Servers:

1. Nginx
2. IIS

Cloud:

1. Amazon AWS
2. S3 Bucket
3. Windows Azure

Microservice:

1. Docker
2. K8S
3. Helm
4. Jenkins

## 2.8 Facilities for Employees

According to the two-factor theory of job satisfaction, salary is just a hygiene factor. Motivation factors are important for high productivity. Orbitax provides several facilities for the employees. They also arrange monthly team parties at different places. This helps the employees to calm their minds.

Orbitax also arranges yearly Tours (International & National) at the end of the year.

### 2.8.1 Domestic Environment

When we attended our first day at the office, we were scared as we had no industrial experience. So, we talked to each other with muted tones and faced a communication problem. But the other employees took us out of the scared zone and told us not to worry about anything. Orbitaxians are like one big family. All the current and ex-employees are members of this Orbitax family. Work is fun here. Employees consider the company to be their responsibility.

### **2.8.2 Lunch and snacks**

Orbitax always cares about food nutrition. It believes that healthy food can make employees' memory sharp and make them energetic. No healthy food, no great work. The employees are provided with breakfast, lunch from the office. Also, there is tea, coffee, and snacks available all the time. Special foods are bought from restaurants on special events.

### **2.8.3 Indoor and outdoor games**

The Orbitax compound is dedicated to outdoor games like cricket, badminton, etc. Also, one room is equipped with a pool table. And two dining spaces are equipped with carom, etc. It has a large indoor playground for playing table tennis, badminton, Basketball, etc.

### **2.8.4 Recreation**

Orbitax has different ways of recreation of employees. Release parties, picnics, outings are part of it. Employees are taken out of the country for the international tour of Orbitax every year. I am sure these are only a small fraction of the facilities available at Orbitax. Despite being an intern, I received all these facilities and consider myself lucky.





Figure: random photo of a party at Orbitax

### **2.8.5 Exercise**

Orbitax always cares about the mental and physical health of its employees. It has different types of gym equipment like treadmill, dumbbell, etc. Employees can do exercise during break times.

### **2.8.6 Religious sector**

Employees here get enough here for saying prayers. Muslim employees can have short breaks for going to the mosque. Moreover, Orbitax has allowed a room for women employees to say prayers during office time.

## **2.9 Office Schedule**

The office starts at 11:00 am and ends at 7:00 am, from Sunday to Thursday. There is a 1:30 hour break from 1:30 pm for lunch and sports/taking rest.

## **2.10 Culture**

Culture provides important social and economic benefits. Without Culture society is impossible. Orbitax has a great working environment with a rich culture of fun and professionalism that attracts the best talents. Cultures that I have found in Orbitax are discussed below:

### **2.10.1 People**

Orbitax doesn't hire developers, designers, or QA engineers, it hires people who can solve problems. And it hires only the best. It runs regular training and review sessions to keep employees on the top. And its culture of constructive criticism, learning, and sharing expands our horizons and keeps employee level headed.

### **2.10.2 Culture of fun and creativity**

Orbitax believes in the simple principle that creative work requires a special kind of work culture. Orbitaxians are very careful to maintain a culture that helps attract talented people and helps them achieve their best performance. This culture starts from workplace structure to operating principles of the development teams. Orbitax has a great working environment at our office space From color selection to furniture orientation Orbitaxians have been very careful to create an environment that actively enhances the knowledge exchange and collaborative nature of our work.



Figure: A photo before playing the Shooting game at Fun Factory

### **2.10.3 Culture of fun and passion**

There is no doubt that there is something wrong with Orbitax - but in a good way. Orbitaxians are always obsessed with something. The object of obsession changes over time sometimes is just a new programming trick, or sometimes it's a game that we are playing. People outside of Orbitax point these out as signs of our insanity. But Orbitax proud of them.

### **2.10.4 Sports**

Orbitaxians are just crazy about sports, like badminton, table tennis, pool, caroms, etc. Every year Orbitax arranges Intra-Orbitax sports tournaments of badminton, table tennis, pool, and caroms. Besides, Every year Orbitax participates in inter-software industries Football, Badminton, and Cricket tournaments.





**Figure: participation in the inter-software company Football tournament 2020**



### 2.10.5 Working Environment

Orbitax has a great working environment in the office space. From color selection to furniture orientation it has been very careful to create an environment that actively enhances the knowledge exchange and collaborative nature of work.

### 2.10.6 Helping the Community

During this COVID-19 pandemic, the whole world is suffering from a great economical crisis. In this situation, the members of Orbitax raised funds from the employees' contribution and helped the victims of this pandemic. Orbitax has managed to collect BDT. 5,62,917 for donation and already donated BDT.4,95,00 by the end of August. Orbitax is involved with many efforts in helping the community around us. During the COVID-19 pandemic, Orbitaxians raise funds from their salary to help the people.



Fig A small help for the poor people on Eid

### **2.10.7 Joining Party**

When a new group of freshers is recruited at Orbitax, A joining party is being held by Orbitax. Here all Orbitaxians celebrate by cutting a cake and welcome the newcomer. I was lucky to have this kind of warm welcome.

### **2.10.8 Equality of Lower and Higher level Employees**

Orbitaxians treat lower-level and higher-level employees equally. The lower-level employees are recognized as ‘**Soinik**’(Soldiers) as they make the work environment perfect for other employees, especially for developers. They do the hardest part of the backstage.

### **2.10.9 The Mega Event**

Orbitax arranges national and international tours for the employees every year. It's one of the best facilities Orbitax provides to its employees. The Orbitax team went on an Indonesia trip last time.





**Figure: A Random photo of Annual trip 2018**



# **Chapter 3: My Project Involvement**



## 3.1 Orbitax Connect

When we joined Orbitax, it just made an idea to give a short glimpse of the total Orbitax web platform to the users. The idea was to build a mobile application named ‘Orbitax Connect’ and honorable CTO, Hasan Shahriar Masud selected me along with my seven batchmates of my department under the guidance of Shaon Vai(Senior Software Engineer, Orbitax) And Plabon Vai(Associate Software Engineer, Orbitax). So, I was lucky to participate in the development of ‘Orbitax Connect’. Orbitax Connect is a mobile application developed for both Android and IOS. It gives a short glimpse of the total Orbitax platform to its user.

As this project’s information was under NDA so we will talk about its basic overview.

### 3.1.1 Overview

Orbitax Connect is a pet project so its development process goes under the tag of a pet project. Being a pet project, orbitax does not compromise its quality, all of the development processes are strictly followed. When I was assigned to this project it’s just in its birth phase.

### 3.1.2 Team

We all 8 interns were assigned to the same project. But we do work there as a pair. I was assigned to the project in a pair with my batchmate, Md. Tonoy Akondo. We work on this project following the pair programming methodology. Without his sincere help, I could not be involved with the project successfully.



**Figure: we, interns at Orbitax with Mr. Hasan Shahriar Masud, CTO, Orbitax**

### 3.1.3 Technology

What technology we used to complete this project are given below:

1. Typescript
2. NodeJs
3. React
4. React Native
5. Redux
6. Realm
7. RxJs
8. Lodash
9. Jest
10. Enzyme
11. Git
12. Various third party packages



### 3.1.4 Features I Was Worked

I have implemented the following features:

- Swipeable message list with actions of deletion, renaming the title of the conversation, managing the participants of that chat, and leaving the conversation
- Skeleton UI in the messaging list
- Infinite scrolling in the conversation list
- Role-based add participants and role-based manage participants
- Searching the participant list
- On chat-bubble-swipe quick-reply
- Different animated components

These are the topmost features of this project. For implementing these features, I had to learn graphql and implement my learning. I was successfully able to do my work. Besides graphql, I used most of the technology mentioned above.

### 3.1.5 Challenges

The main challenge for me was that I just joined Orbitax and had little idea about industry projects. And I don't have any knowledge of the Orbitax ecosystem. So at first, I have to struggle a little bit to make myself comfortable. After getting used to the ecosystem it's being pretty comfortable.

The ecosystem of Orbitax is huge so you always find something to learn. The ecosystem is running the microservice architecture. And you will always find a service that does a certain task and it communicates with each other through message passing. As this was my first time with microservice work, so it takes a little bit of time to grasp it. It was a real challenge for me.



Then another thing was maintaining the coding structure. It seems difficult at first. But throughout the time I was comfortable with this. This was fun and the code was much easier to read and understand.

# **Chapter 4: Professional Growth**



## 4.1 Technology and Tools I Learned

As Orbitax develops its tools in various technologies. As an intern, I saw them very closely and I gradually started to desire to learn them. And I have to learn them.

### 4.1.1 Tools

Programming tools make development easier. In my Intern at Orbitax I have to use the following tools in my daily works:

- **Webstrom:** WebStorm is a cross-platform IDE primarily for web, JavaScript, and TypeScript development. Many of JetBrains' other IDEs include the feature set of WebStorm via plugins.
- **Visual Studio Code:** Visual Studio Code is a free with 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.
- **Visual Studio 2017 & 2019:** Microsoft Visual Studio is an integrated development environment from Microsoft. It is used to develop computer programs, as well as websites, web apps, web services, and mobile apps.
- **React Native Debugger:** Open-source error tracking that helps developers monitor and fix crashes in real-time.
- **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.
- **XCode:** Xcode is an integrated development environment for macOS containing a suite of software development tools developed by Apple for developing software for macOS, iOS, iPadOS, watchOS, and tvOS.
- **Android & IOS Emulator:** software that enables one computer system to behave like an Android/IOS system.
- **Postman:** Postman is a collaboration platform for API development. Postman's features simplify each step of building an API and streamline collaboration so you can create better APIs—faster.



- **Insomnia:** Leading Open Source API Client, and Collaborative API Design Platform for GraphQL, and REST.
- **SourceTree:** A Git GUI that offers a visual representation of your repositories. Sourcetree is a free Git client for Windows and Mac.
- **Sublime Merge:** Sublime Merge is a new Git Client for Mac, Windows, and Linux, from the makers of Sublime Text.
- **Jira:** Jira is a proprietary issue tracking product developed by Atlassian that allows bug tracking and agile project management.

## 4.1.2 Technology

### 4.1.2.1 RxJs

RxJS is a library for composing asynchronous and event-based programs by using observable sequences. Think of RxJS as Lodash for events. It's Reactive Extensions for JavaScript.

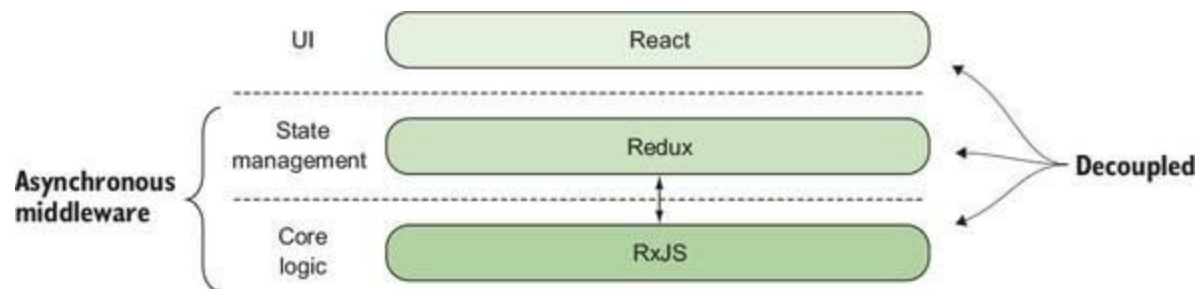


Fig: Layered diagram of the 3R architecture that shows the hierarchy of the different layers of the system

### 4.1.2.2 Typescript

TypeScript is an open-source language that builds on JavaScript, one of the world's most used tools, by adding static type definitions.

Types provide a way to describe the shape of an object, providing better documentation, and allowing TypeScript to validate that your code is working correctly.





### **4.1.2.3 Redux**

While Redux can be used with any UI layer, it was originally designed and intended for use with React. There are UI binding layers for many other frameworks, but React-Redux is maintained directly by the Redux team.

As the official Redux binding for React, React-Redux is kept up-to-date with any API changes from either library, to ensure that your React components behave as expected. Its intended usage adopts the design principles of React - writing declarative components.

### **4.1.2.4 React Native**

This is a framework for native applications. React Native runs on React, a popular open-source library for building user interfaces with JavaScript. To make the most of React Native, it helps to understand React itself. This section can get you started or can serve as a refresher course.

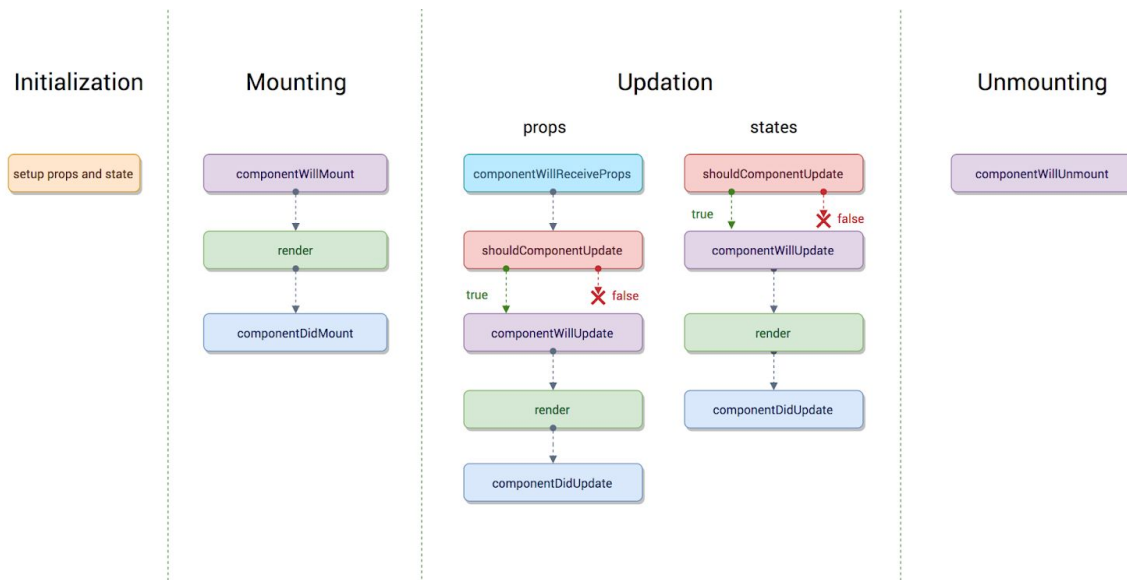


Fig: React native Component Lifecycle

## 4.2 Development Technique, Pair Programming

CTO of Orbitax, Hasan Shahriar Masud Vai always tries to bring something new and innovative. He divided us into 4 pairs. In the Internship, I paired with my teammate Md. Tonoy Akondo. As I was new to the Orbitax ecosystem, I always had a lot of questions. Therefore, I could clear my confusion while talking with the seniors and gain knowledge about the platform.

We always worked as a team at the university. But never did actual teamwork. In Orbitax, I learned about actual teamwork. Where some developer works in a different part of the same applications.

While working as a pair, we used to work in a way, when my partner was typing I was assisting him, giving him ideas and checking for mistakes; when I was typing my partner was giving me instructions.

Here in Orbitax, I learned that this is an agile programming technique known as Pair Programming.



*“Pair programming is an agile software development technique in which two programmers work together at one workstation. One, the driver, types in code while the other, the observer (or navigator), reviews each line of code as it is typed in. The two programmers switch roles frequently.”*

In Orbitax pair programming is done most of the time and it works as a real technique. Although pair programming is not suitable in all situations, I believe some situations are the most perfect situation for paired programming which are recognized by my experienced team members.

### **4.2.1 Benefits and Costs of pair programming**

Some studies suggest that pair programming produces software with fewer bugs than software developed alone. Reduction in defect rates of 15% to 50%, varying depending on programmer experience and task complexity. Pairs typically find more design alternatives than programmers working alone, and arrive at simpler, more-maintainable design; they also catch design defects early. Pairs usually complete work faster than one programmer assigned to the same task.

However, some other studies suggest that pair programming is not uniformly beneficial or effective because although it produces faster, the total programmer time in pair programming is usually higher than that of programming alone.

## **4.3 Professional Learning**

Although technical learning is important, professional learning is the sole purpose of an internship. Orbitax is an excellent place to learn professionalism.



### **4.3.1 No bullying and blaming**

Software development is always teamwork. And in a team, all members don't have similar skills or knowledge. This is true for Orbitax too. During my time of internship, I have made many mistakes like did not maintain code structure. And sometimes stuck in a problem for many hours. But my team leader had never been harsh with me. He always encouraged me to ask for help when I was stuck for some hour. But he did not solve the problem himself unless it was necessary. He always suggests an approach for how to solve that problem. He always encourages us to dig into the error.

In Orbitax, I have never seen team leaders and project managers bully people working under their supervision.

This practice is effective to keep the work environment healthy. Blaming others for their mistakes does not solve the problem. It only makes the situation and the relationship between coworkers worse.

### **4.3.2 Always Complete your work**

At Orbitax, Everyone is assigned to a particular work and he does his work in his way. At times of scrum, everyone shares their progress with others. All the projects are done in this way.

### **4.3.3 Appreciate success, do not discourage for failure**

The team I have been assigned to has taught me the value of appreciation. Here, the members appreciate each other on their successful contribution to the company and also on their success in some other fields.

The employees do not discourage people from failure in a particular task. People who can have expertise in that field help others.



Orbitax gives time to its employees to learn and work at the same time. It has a really good work environment.

#### **4.3.4 Attitude**

Orbitax Ltd. is a Software Company full of fun and creativity and Orbitaxians are very much friendly. As an intern, these attract me very much and I always try to follow them to be a successful Software Engineer as well as a successful man.

#### **4.3.5 Quality of work**

Orbitax Ltd. follows a great standard of pure software engineering and its product quality is very high. Time to time code is reviewed so that better quality software is developed. I tried to maintain the standard of work from my side.

They have a really good reputation for completing a very complex time within a short period maintaining the quality and architecture of code.

#### **4.3.6 Negotiation**

Negotiation is an important part of software engineering. At Orbitax, I have had practical experience in negotiation. We, the developers here, negotiate with our product owner and domain expert quite often here. I also had such an experience and could create a win-win situation.

#### **4.3.7 Planning before doing**

Before starting to implement a product, the assigned developer creates a plan under the direct supervision of the Team Leader.



This planning contains almost every detail for the implementation of the product.

This generally includes :

- Understanding the high-level view of the product
- Architecture to follow
- Create low-level details for the product
- Task breakdown
- What tools to be used
- Implementing the base for the product
- And many more ...

### **4.3.8 Organizing**

One of the best ways of learning how to organize is to start organizing oneself on his/her own and after spending almost six months at Orbitax I should say that I am a much more organized person only by practicing that principle. And now being organized, I can say that I am ready to organize others.

## **4.4 Non-Technical Skills**

### **4.4.1 Remote Working**

In the middle of our journey, COVID-19 almost stopped the whole world's productive activities. It became risky to go outside of the home. At that moment Orbitax decided to start the home-office concept. Employees worked from their homes sincerely and stayed safe. In this way, we got experience of working with a software company remotely. We have learned how to use social communication media to communicate with other employees of the company.

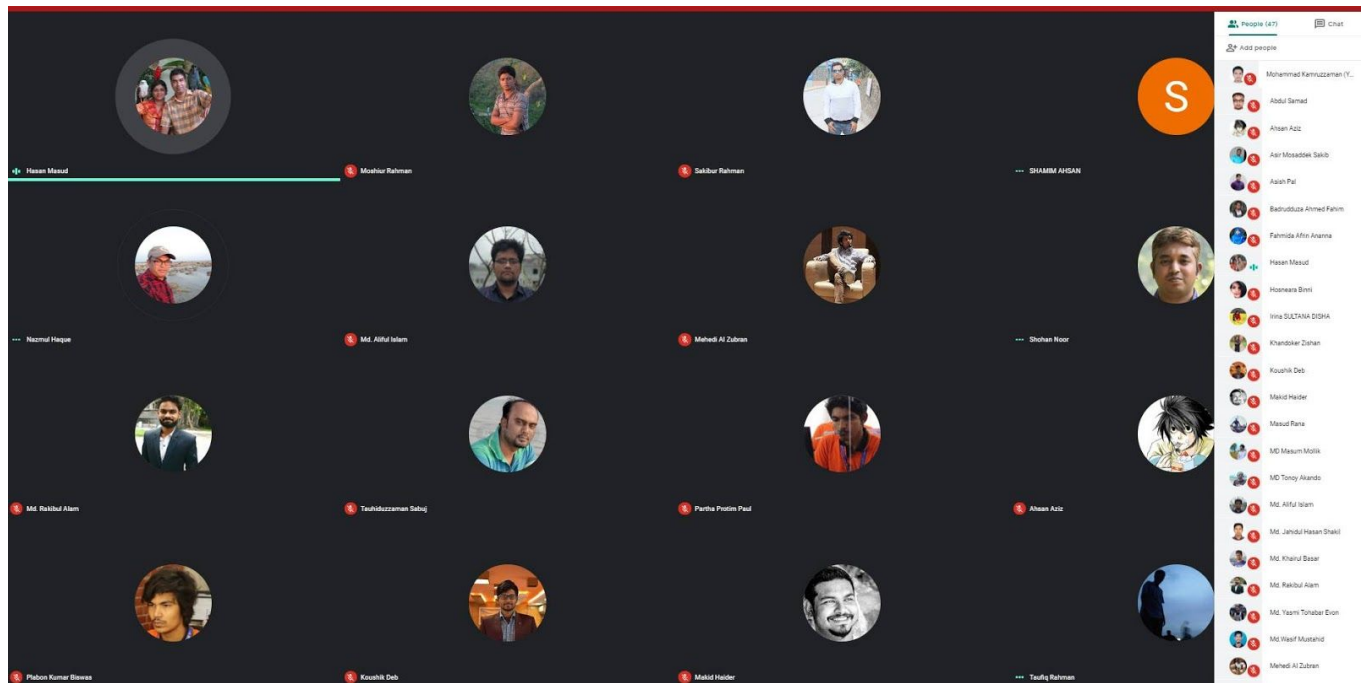


Figure: Screenshot of virtual team meeting

## 4.4.2 Communication Skills

One will have a better chance to succeed with good communication skills. For the students, internships provide the best chance of improving their communication skills. I had my chance and I had tried my best to enhance my communication skills. In daily scrum, we had to discuss our thoughts with the team leader. Thus, through these kinds of tasks, I have improved my communication skill and I think this will help me in the future.

## 4.4.3 Teamwork Skills

I worked in a pair and my pair worked with my team. So, I also achieved teamwork skills. I think that working as a team is way better and faster than working alone. My team members are also very helpful and friendly. By working with the team, I was able to know how to plan and manage a task, how to manage time, and how to run a meeting. I was able to share my idea and receive feedback from my teammates.

# **Chapter 5: Conclusion**



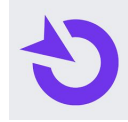


## 5.1 Conclusion

The six months of Internship was a time of experimentation. Internship in an intermediate period of the academic calendar is exceptional from the perspective of our country. From that point of view, this is a matter of glory that during the internship I have passed the best academic period in my life by experiencing real-world technology. It is a matter of grandeur that what I read yesterday at the book is now available to me. Moreover, gathering a vast knowledge about how the real-world works can help me to prepare myself for an upcoming working life for me.

I would like to convey my thanks to the Institute of Information and Communication Technology, Shahjalal University of Science and Technology for providing me an opportunity to gain an idea of the competitive environment in the professional field. It has certainly lifted my software development skills in terms of design and coding. I now look forward to facing the upcoming challenges of the world.

Orbitax Bangladesh Ltd. is a leading software company in Bangladesh with its innovative and reputed products. So, it was a great opportunity for me to complete my internship period as an effective member of the development of Orbitax. Concerning the assigned project work I had, it was interesting to implement something else that I was taught in my bachelor program. It was interesting to me from different points of view. It was a real pleasure to work in an office with corporate culture. Moreover, working in a team and a friendly official environment made me learn different things. Even though that was something new for me, I was able to change myself with this. Different tools and technologies, experienced human resources, a large range of business domains, innovative products,



inspirational and motivating higher authority and a friendly environment were the most significant factors to learn professionalism, positive attitude, winning mentality, self- initiative, team strength.

In a word, this internship was a great experience for me. And I hope that this experience will give me inspiration and instruction to build up to me a better future.