

Internship Report

SWE 420

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: August 31, 2020

Letter of Transmittal

Date : August 31, 2020

Prof Mohammad Abdullah Al Mumin

Director,.

Institute of Information and Communication Technology

Shahjalal University of Science and Technology

Subject: **Letter of Transmittal**

Dear Sir,

I am pleased to submit the Internship Report that you have asked for. I have been working as an Intern at '**Orbitax Bangladesh Limited.**' on 4/1 semester as a part of our course, **SWE 420**.

This report contains my experience in the company. It is my immense pleasure in presenting you this report based on my observation and experience during my internship period, starting from January 01, 2020, to June 31, 2020. During this period, I worked under the supervision of **Shamim Ahsan Shaon**, Senior Software Engineer, and **Plabon Kumar Biswas**, Associate Software Engineer at Orbitax Bangladesh Limited.

I believe this report will be quite interesting and fulfill your expectations. 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,

Partha Protim Paul

Reg Number : 2016831005

SWE, 4th Year, 1st Semester

Institute of Information and Communication Technology

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 successful involvement of Partha Protim Paul , Institute of Information and Communication Technology, Shahjalal University of Science and Technology.

I wish him 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, SUST 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 running the internship program and giving me the opportunity.

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

I am extremely grateful and remain indebted to CTO of Orbitax Limited, **Hasan Shahriar Masud** for being a source of inspiration and for his constant support in the internship.

I take this opportunity to express my profound gratitude and deep regard to my Team Leader **Shamim Ahsan Shaon**, Senior Software Engineer, **Mr. Plabon Kumar Biswas**, Associate Software Engineer for their exemplary guidance, monitoring, and constant encouragement throughout this internship. The blessing, help, and guidance given by them from time to time shall carry me a long way in the journey of life on which I am about to embark.

I am obliged to all my Team members, 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.

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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 Limitations

There are some limitations in this report. All the contents cannot be shared outside the office. I only describe in this report what I learnt from this company and what feedbacks I got from my team members and co-workers, so all the data given in this report may not be perfect. Moreover, gathering data and review the report from office employees was also a tough job. It was quite hard to get time from them in the busy business hours during this pandemic.

Chapter 2: Company Profile

2.1 About Orbitax Limited

Orbitax is committed to providing high value, low-cost tax research, management & planning solutions.

It is one of the best software companies in Bangladesh. It's vision is to deliver the extensive international tax practice experience of Orbitax team members and partners through easy to use software. We recognize 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 Key Features

2.3.1.1 Analyze Your Global Footprint

Populate your global footprint and track law changes relevant to you, including enacted current, future enacted and proposed changes. Changes can be easily made in current and future fiscal years as your global footprint evolves.

2.3.1.2 Receive Custom Reports and Alerts

See at a glance what the latest changes are, what their effective date is and any associated references including news articles. Receive notifications directly to your inbox when new changes are published.

2.3.1.3 Distribute Reports Automatically

Send custom reports to key stakeholders, including automatic quarterly change report summaries and email alerts at any chosen frequency.

2.3.1.4 Powerful and Intuitive Solution

Orbitax Change Reports is a simple-to-use, secure, web-based tax solution. There's nothing to download or install. Set up global footprints, custom reports and email notifications with just a few clicks.

2.3.2 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.

2.3.3 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.

2.3.4 Software Quality Assurance

Every great software has bugs in its initial stage. SQA team finds out the bugs and sends 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 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 headquarter of Orbitax Bangladesh Limited is located in San Francisco, California. Its office is located at 113 Kazi Nazrul Islam Ave, Dhaka 1205.



Fig 2.1: 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. YML
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 a yearly Tour (International & National) at the end of the year.

2.8.1 Domestic Environment

Orbitaxians 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

The employees are provided with breakfast, lunch from the office. Also, there is tea, coffee, and snacks available all the time.

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.

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.

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.

2.10 Culture

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 Software 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.

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 is proud of them.

2.10.4 Sports

Orbitaxians are just crazy about sports, like badminton, table tennis, pool, caroms, etc. Every year Orbitax arranges inter sports tournaments of badminton, table tennis, pool, and caroms.



Fig 2.2 : Pool Room

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. The people here are super friendly and co-operative

2.10.6 Helping the Community

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 2.3 : 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 The Mega Event

Every year, Orbitax arranges a tour for the employees. It's one of the best facilities Orbitax provides to its employees.



Fig 2.4 : Pictures from International Tour

Chapter 3: My Project Involvement

3.1 Orbitax Connect

We were a team of 11 members, 8 interns who are my classmates. And Masud bhai(CTO, Orbitax), Shaon bhai(Senior Software Engineer, Orbitax) And Plabon bhai(Associate Software Engineer, Orbitax) guided us through our six months journey. It was a great experience working with them.

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 were assigned to the same project. But we do work there as a pair. I was assigned with my batchmate Fahim for this project. We work on this project following the pair programming methodology. Without his help, I could not be involved with the project successfully. For some time, I also paired with Koushik bhai who is brilliant and dedicated about his responsibility. I enjoyed working with both of them.

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



Fig 3.1 : Intern Team with CTO,Orbitax

3.1.4 Features I Was Worked

I worked on a library feature where recent tax news and changes reflect on a library system and a home screen where different types of feeds showed with Fahim. I also worked on making the app persistent when there was no internet connection so that it can provide a smooth experience and also worked on an offline database system called Realm.

Along with these features write unit tests for these features. Every time the tests get passed. It gives me confidence and inner peace. Tests are great for discovering the bugs and the consistency of my written code that my code is being executed successfully.

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
- Visual Studio Code
- Visual Studio 2017 & 2019
- React Native Debugger
- Android Studio
- XCode
- Android & IOS Emulator
- Postman/Insomnia
- SourceTree / Sublime Merge
- Realm Studio

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.

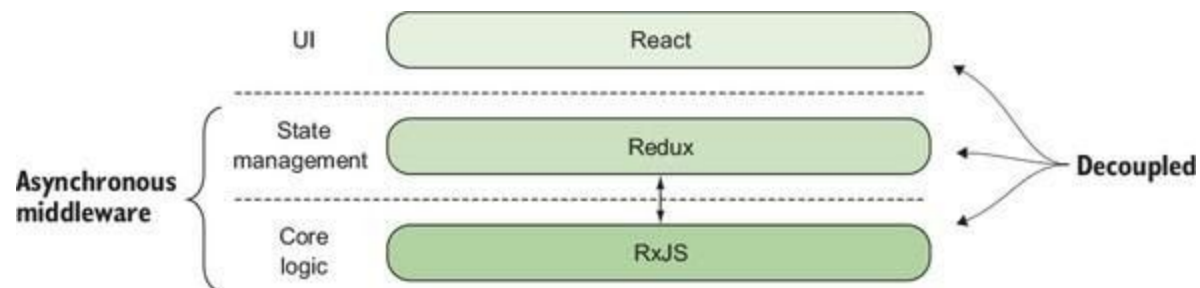


Fig 4.1 : Layered diagram of the 3R architecture that shows the hierarchy of the different layers of the system

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.

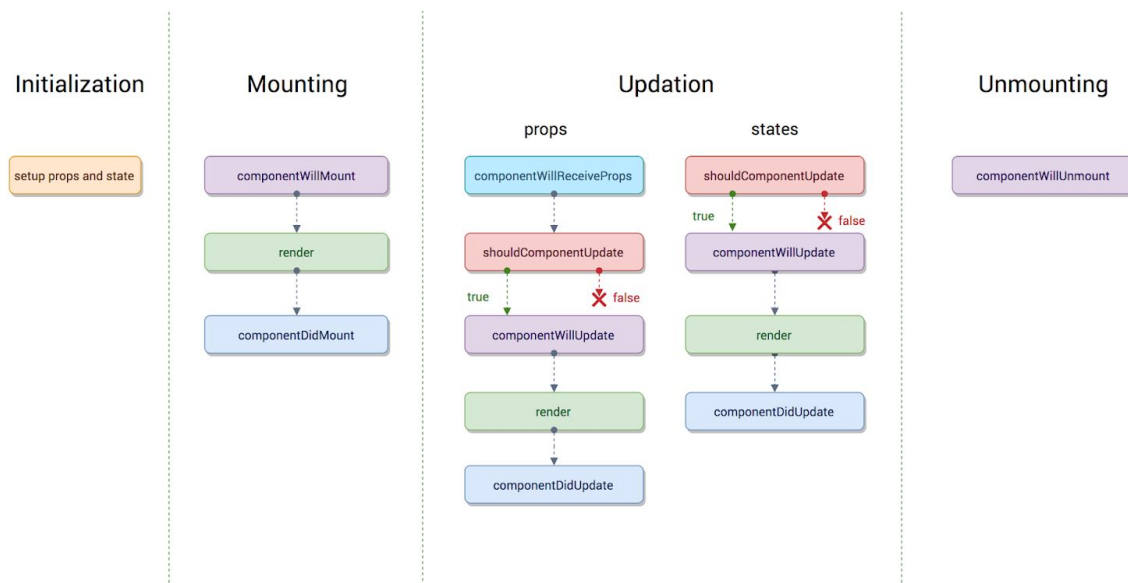


Fig4.2: React native Component Lifecycle

4.1.2.5 Realm

Realm Database is an alternative to SQLite and Core Data. Thanks to its zero-copy design, Realm Database is much faster than an ORM, and often faster than raw SQLite. Get started in minutes, not hours.

Realm gives a much more efficient way to store a data model and requires much shorter code to store data than other offline databases like SQLite. It's encryption is much stronger than other offline databases and query time is faster.

```
realm.write(() => {
  const john = realm.create('Person', {
    firstName: 'John',
    lastName: 'Smith'
  });
  john.lastName = 'Peterson';
  console.log(john.fullName); // -> 'John Peterson'
});
```

Fig 4.3 : Sample Code from Realm

4.2 Development Technique, Pair Programming

In the Internship, I paired with my teammate Fahim and Evon and Koushik bhai. 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.

Actually, in varsity, we always worked as a team. 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.

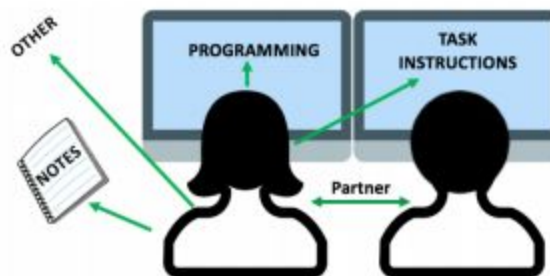


Fig 4.4 : Pair Programming

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 with full of fun and creative 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 of 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.

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 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 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.

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