3.3. Estimated cost of hardware products (such as servers, etc.)

For 3 software engineers and renting servers, the estimated cost of hardware products includes the cost of 4 laptops (2 for the app developers, 1 for the app designer, and 1 for the project lead). Based on (Mathew, 2021), a highly recommended laptop for full-stack app development is the HP Pavilion 15 Laptop. The 15.6" FHD 16GB RAM model should cost approximately $649.00 per laptop (Zhenxiong, 2022). At $649.00 for four people the total estimated hardware cost is $2596.00. The QA Engineer would use already provided resources. Furthermore, the project would be conducted remotely, thus no business space is required. Moreover, we would rent servers and that will be included in the hardware cost estimate.

The final total estimated hardware cost is $2596.00.

3.4. Estimated cost of software products (such as licensed software, etc.)

For our app development, we will utilize React Native instead of PWA since we only need the app to function on mobile devices (Tran, 2022). Included in the cost estimation is the React Native License Cost. Based on the distribution channels, i.e. App stores for Android and iOS, we have to pay $100 for the license (How much does react native app development cost? 2022). The developers would use app development tools such as Atom, Sublime Text, and Visual Studio Code which are free (Verma, 2022). The UI/UX designer would use a designing tool such as Figma, which is free. The Project manager would use Jira as a management tool which is free for the number of people we are using. Our QA Engineer would utilize Appium for iOS and Android functionality testing. Appium is free and works for native, iOS and Android (Lyengar, 2021). All team members would communicate through Zoom which is a free communication platform.

The total Estimated cost of software products is $100.

3.5. Estimated cost of personnel (number of people to code the end product, training cost after installation)

According to our FP-determined project complexity and timeline, the cost of personnel will be based on our 10-month timeline. The personnel assigned to the project is based on the typical app development personnel according to (Shiotsu, 2021). We expect to hire a Project manager/Senior lead to ensure that the project timeline is maintained as well as assist with major code development. Additionally, we plan to hire a UI/UX designer, 2 intermediate mobile developers, and a Quality Assurance manager to manage end-product quality. The estimated costs for each position include:

In Texas, the expected react native developer has a median pay of $66.67/hr (*React Native developer salary in Texas - average salary* 2022). At the projected timeline of ten months, and an estimated $10,833/month (*React Native developer salary in Texas - average salary* 2022), the expected of one intermediate developer is $108,330. With 2 developers, to accomplish the front

end, back end, API connection and algorithm implementation, there is a total estimated cost of $216,660/per ten months.

In Texas, the expected react native senior project lead/SE has a median pay of $74.36/hr (*Senior Software Engineer (.NET/react) salary in Texas - average salary 2022*). The estimated cost is $12,083/month (*Senior Software Engineer (.NET/react) salary in Texas - average salary* 2022). One senior project lead, to lead app development, has a total estimated cost of $120,830/per ten months.

In Texas, the expected UI/UX designer has a median pay of $51.38/hr (*UI/UX designer salary in Texas - average salary* 2022). The estimated cost is $8,349/month (*UI/UX designer salary in Texas - average salary* 2022). One UI/UX design, to test the app and ensure project specifications are met, has a total estimated cost of $83,490/per ten months.

In Texas, the expected QA Engineer has a median pay of $36.25/hr (*Quality Assurance Engineer (QA Engineer) salary in Texas - average salary* 2022). The estimated cost is $5,891/month (*Quality Assurance Engineer (QA Engineer) salary in Texas - average salary* 2022). One QA Engineer to ensure end design quality has a total estimated cost of $58,910/ per ten months.

The total cost of personnel for development is $216,660 + $120,830 + $83,490 + $58,910 = $479,890.

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