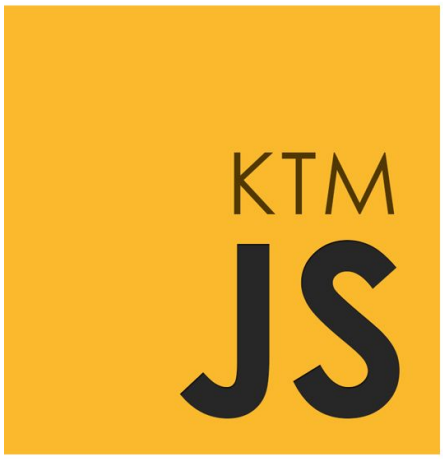

DEVELOPERS MEETUP #6

Sponsor:

Venue Sponsor:

KTMJS Developers meetup was conducted on 3rd September 2016 at Leapfrog Academy. The event was sponsored by Toptal.

The event started with a brief welcome speech by Punit Jajodia, a member of the organizing team.

Presentation talks

Madhu Rakhal Magar, senior software engineer at Cloudfactory started the proceedings with his talk on "**Functional Programming in JavaScript**".

He talked about how changing state and mutable data can result in bug ridden code. Madhu then explained the various concepts of functional programming including pure function, higher order functions, curried function, functional composition, immutability, recursion and lazy evaluation. You can find his presentation slides on github.

Madhu says, "This is my final gift to the JavaScript community before I leave for

Germany to pursue my post-graduate studies." He had presented on ES6 features in an earlier KTMJS meetup. The JS community in Nepal will surely miss his presence.

Next up was Pratik Gautam, software developer at Kathmandu Living Labs. Pratik has extensive experience in working with government and INGOs to visualize data on open maps like OSM.

In his talk on the topic "**Make data actionable using Open Mapping Technologies**", Pratik explained the meaning of open, that you can add any data to the map, use data that others have contributed and even download the whole map of the world containing all the data that has been uploaded till date. He then showed us demos of some of the projects his team, at Kathmandu Living Labs, had implemented.

All of the projects were interesting,

- mapping of Brick Kilns, clicking on any kiln on the map would show additional information like how many child labourers were working there,
- mapping the quality of drinking water using crowdsourcing
- showing the progress of road construction by overlapping data on a map
- A map of the hydropower projects in Nepal with an interactive timeline

The crunch of the talk was how difficult it is to read a text report and understand it. He showed a text report of the road construction project and showed the same data on a map, which clearly showed exactly where roads were being constructed.

Pratik concluded on a note that we usually talk about technology, but rarely about creating an impact in the society using it. According to him, mapping can help make data that rots away in files and CDs available to the society at large, put it in context, and make it accessible through an interface they understand. His presentation is available for download on slideshare.

We took a short break to prepare for the panel discussion. The participants had tons of questions for the speakers and you could see both of them surrounded by curious minds.

Introducing Toptal

Toptal developer Punit Jajodia explained the toptal hiring process to the participants. Toptal is a premier freelancing website that hires the top 3% freelancers in the world and finds clients that can give them challenging projects and good pay.

For developers who want to try toptal, there are multiple options to choose from. They can apply for projects on hourly, part-time and full-time basis, and also shift between these engagements.

Dixanta Shrestha, CEO of Leapfrog Academy talked about how Rojina Bajracharya won the $10,000 Toptal scholarship and the mentorship opportunities that toptal has provided her. Toptal also recently sponsored the T-shirt designing competition DesignHack where 40 participants created beautiful t-shirt designs. Dixanta also talked about the importance of bringing girls into the tech mainstream not only as a means of empowerment but also because train them to contribute equally.

Panel Discussion

The topic of the panel discussion was "**The Future of Cross Platform Apps**". Cross platform apps run on multiple platforms and are a major productivity boost for developers. You write code using one technology and various tools like PhoneGap/Cordova, Xamarin, Appcelerator and React-Native and Electron help you create apps that can run on multiple platforms.

The panelist included a host of experienced software engineers. All of them are founders/co-founders of software companies in Nepal and thus bring in not only technical knowhow but business expertise as well.

Here's a brief introduction of each panelist:

1. Aayush Shrestha - Head of UI / UX Architecture and Design at Viveka Health & Co-Founder of Lishn
2. Subash Pathak - Creater of Prepros App and few other things made of js
3. Anish Shrestha - cofounder and CEO, FawesomeApps, YellowNepal
4. Dev Bahadur Khadka - Co-Founder and CTO at SmartMobe Solutions
5. Piyush Thapa - Co-founder and CEO of WsCodeLabs

The panel discussion would proceed as follows. Each panelist in turn is asked a question relevant to his experience. He answers the question to the best of his ability. After he is done answering, other panelists can pitch in with their remarks.

Here's a brief summary of how the panel discussion went:

Punit(to Anish): *You've done a lot of product related work. A lot of blood, sweat and energy goes into building a product.*

Do you think in the near future, more companies will look into going into the market with a bootstrapped cross-platform app and then moving to native apps once you've tested the waters?

Anish: We tried creating a few hybrid apps using PhoneGap a few years ago. The iPhone app was smooth but the Android app was really laggy. A user would click a button and it would take 3 seconds for the app to do its thing.

This is a user experience disaster. We pride ourselves on being a company that offers the best user experience in the market, all our apps are fluid and we've never looked back at going to hybrid again. However, that was 3-4 years back and a lot of things have changed. Mobile browsers are much more powerful and we now have the option of going to technologies like Xamarin and React-Native that compile to native code instead of running everything inside a WebView container.

I feel this is a much better approach to the problem of investing in separate teams for iPhone and Android. Another reason to switch to cross-platform is that there is a huge shortage of iPhone developers in Nepal. The few developers that exist charge too much.

Since the iPhone version of the PhoneGap powered Hybrid app is fluid, one option is to build a native Android app and a hybrid iPhone app to save costs without sacrificing quality.

Punit (to Dev Khadka): *As a company that is so mobile that it calls itself Smartmobe, how do you decide whether to go for a cross-platform or a native app? Do you think you'll be building more hybrid apps than native apps a year down the line?*

Dev: It's not always an easy choice to make. Some of our clients read blogs where people talk about how impressive Hybrid apps are and insist us to build hybrid apps for them.

The decision actually depends on what kind of functionality you want in the app. If you are going to interact with the phone hardware e.g. sensors, camera, GPS etc., I recommend going for native. We did not like the fluidity of the hybrid apps we made so we only build very simple apps using Hybrid technologies.

We are also looking at technologies like React-Native because they are surely going to be a force in the mobile market soon. It takes time to educate our clients on the reasons to go for native apps. After all, they are paying for apps that will solve their users' problems. It is our responsibility to give them the right consultancy about what is the right tool for their requirements.

If you are going for a hybrid app, I suggest a prototyping approach. Instead of stuffing a hundred features into the app, build a few but build them perfectly. It is a myth that hybrid apps are easy to make. If you want an app that performs well, even with hybrid app technology you have to pay a lot of attention to detail before the app feels right.

Punit (to Subash Pathak): *Was prepros a cross platform app right from the start? If no, what was the main reason for going for electron? If yes, what were the main reasons for shifting to cross platform development?*

What future do you see for cross-browser app development on the Desktop?

Subash: We use an open source technology called Electron to create different builds for Windows, Mac and Linux. The first version of Prepros was native but we quickly realized the potential of cross-platform development and shifted to it.

The desktop doesn't face the challenges of a weaker browser as mobile devices do. Even complex apps can run inside the chromium browser without any visible lag.

The prepros app needs both Windows and Mac users. Windows users give us the numbers, they download the app and try it but Mac users bring in the revenue. Most of our paying users are using Mac. Many of our users also use a Windows PC at work but a Mac at work. Since both the apps are built from the same code, our users can get half their work done on a PC and continue the rest on a Mac seamlessly.

But there are some subtle differences between usage patterns between Windows and Mac users that you have to take care of. Mac users use shortcuts a lot more so you have to make sure that your app contains keyboard shortcuts for all common tasks.

Also, there are some system wide tasks in Mac that people expect to work on any app e.g. Cmd + P is the print command. If your app does something else for the shortcut combination, your users will get confused and leave.

Punit(to Aayush): *You've helped build Lishn, a native Android app and nLocate, a hybrid app.*

Web developers who traditionally had to stick with web apps now have the power to build mobile apps using the technologies they already know. What are the mistakes web developers trying to enter the mobile space through hybrid apps need to avoid?

Aayush: Today's cross-platform apps contain JavaScript APIs to access the camera, location etc. WIth nLocate, we were able to build a location based search engine by using hybrid application technology. The app was not laggy at all.

The biggest mistake that web developers make is that they see the demos on the websites for cross platform technologies. They even download the apps on their mobiles and are impressed with how seamlessly they work. The disappointment comes when they start building their own app and cannot recreate the same fluidity.

What they don't understand is that you still have to optimize the app, adding too many animations, performing complex calculations on the front end etc. will obviously make the app slow and unresponsive. But if you build it the right way, I see no reason not to invest in cross-platform.

More importantly, you should not treat hybrid apps as an easy way out. You will definitely save precious time opting hybrid apps, but perfection comes at a cost. And you have to put in that extra effort to build a perfectly working app.

Punit(to Piyush) : *There's a lot of buzz around React-native and how it can change the mobile app development landscape.*

What is your experience with it?

Piyush: React-native is different from hybrid app technology. Since the code eventually compiles to native code, the output works fast and I'm very impressed with the results we've been getting at WsCodeLabs. Complex CSS animations can hurt performance but other than that, apps built using React Native work like a charm.

The best part is that React-native allows you to connect native platform-specific code so its potential is limitless. Even if the JavaScript API for a functionality is missing, you can always write a wrapper yourself.

Since it is open source technology, there are a lot of people that are creating these JS interfaces that help you interact with files, camera and even the kernel. You can always use other people's contributions to save time.

React Native is very powerful and I am pretty sure it will be the preferred choice of developers building mobile applications soon.

Panel Discussion contd. - Questions from the Audience

After these insightful answers from the panelists, the floor was opened to questions from the audience.

Participant: *How can we deal with problems like memory management when we are building hybrid apps?*

Answer from Panelists: Don't load too much data on one page. If you keep all the data in memory even when the user is no longer using it, your app is obviously going to face memory management issues.

Load only the page that user is currently using. A balancing act between caching and memory management is necessary to make sure that you don't use too much memory but the user doesn't have to wait too long to switch between views.

Participant: *Each platform has a different look. The same UI might not work for both Android and iPhone. How much effort does it take to build these different UIs and does it take away the advantage of "write once deploy everywhere" that cross platform apps give us?*

Answer from Panelists: The savings you gain from not having to replicate the same business logic in two different programming language completely justify the effort to create different views for different platforms.

You can reuse a lot of these components on multiple platforms too. Frameworks like ionic handle this problem to a certain extent by creating an abstraction layer that styles components differently for different builds to make the apps look as native as possible.

Participant: *What about progressive web apps? Now that users can save an icon that directly opens your app on the browser, do you think they will catch on?*

Answer from Panelists: Its wait and watch for now. The features that progressive web apps provide definitely make the whole ecosystem even more interesting.

These apps can even work offline and sync data with the server, and there is definitely a lot of space.

Not having to go the the app store or play store is both an advantage and disadvantage. While it makes deployment more convenient, users like to view the ratings and read the comments on the app store before downloading an app.

But if you are building an app for an online newspaper for instance, and your main aim is to load the mobile website with extra features like push notifications and allowing your users to create a shortcut icon on their homescreen, progressive apps are definitely the way to go.

The discussion ended with a warning that hybrid apps may come back with a bang. After all, mobile browsers are getting more powerful each day and once the performance lag is acceptable enough, hybrid apps can always make a strong comeback.

Wrapping up

The organizers thanked the presenters, panelists, sponsors and venue sponsor for their contributions to the event. Toptal t-shirts were given to the presenters and panelists.

Networking Session

The meat of any meetup is the networking session, a chance to catch up with developers you know and meet new ones.

Participants discussed about the emerging technologies on the web and problems we were facing as a community over coffee.

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