Tell us what your idea is.

We notice a huge challenge we face during coding on mobile- **Typing code..**

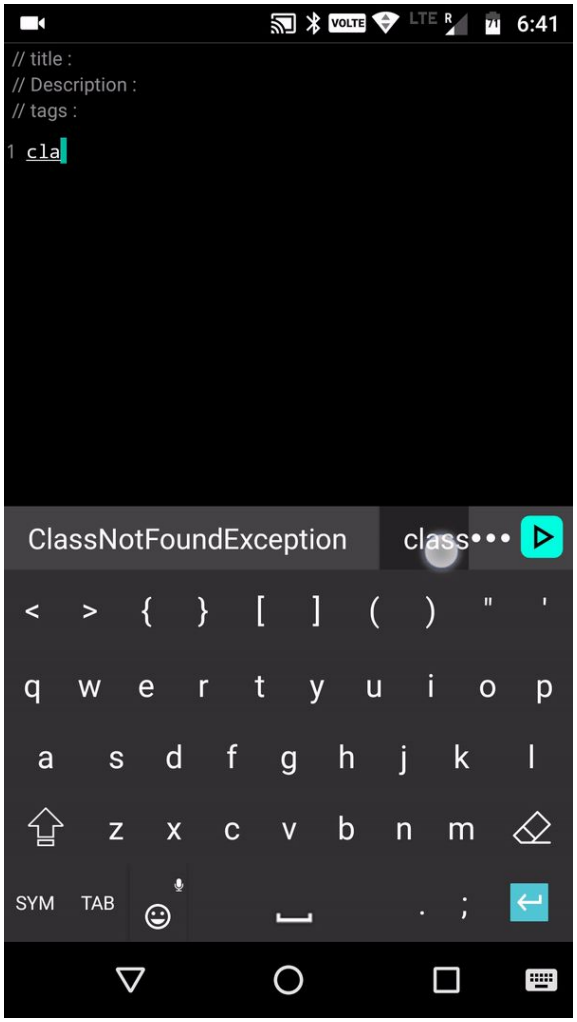
In terms of usability coding has always been mouse & keyboard facilitated. Building the same experience for mobile requires us to fundamentally rethink our strategy, by understanding the relationship between the keyboard and editor and the interactions with the users thumbs (**Yup! For mobile it's just thumbs**.. Not all 10 fingers like the keyboards).

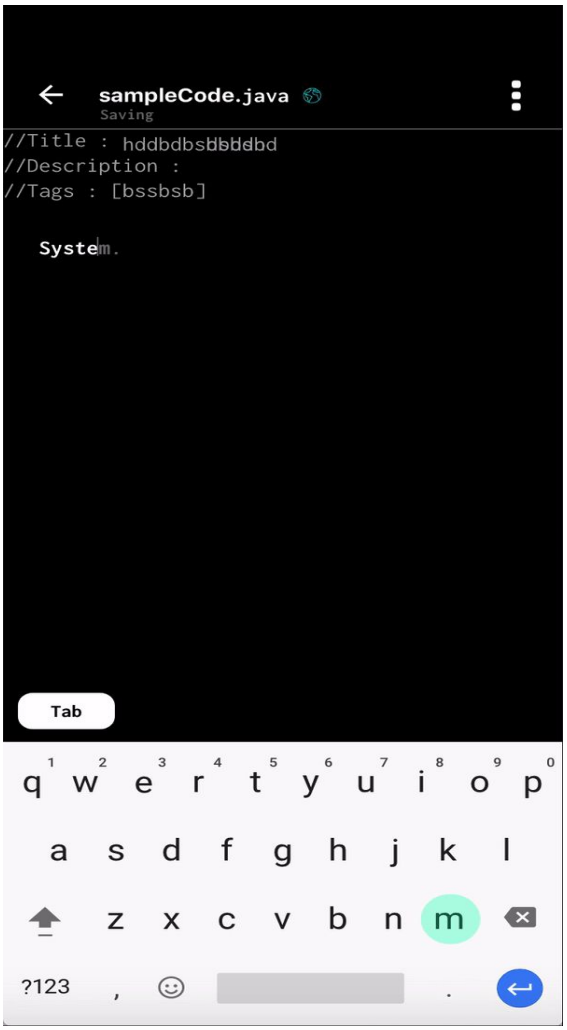
We want to focus on **reducing the typed words by 50%,** thereby reducing the **coding time by over 60%, error by 6 times and reduce observed thumb fatigue**, for 100 lines of code on **desktop it take 12 mins, the same on mobile is18**!

"We identified, by including a simple word prediction we can achieve a significant part of our goals."

With variability in user writing style, language type and general coding language structure, a deployed machine learning model on the device can aid this process.

Current Implementation vs what we plan to achieve:





Tell us how you plan on bringing it to life.

1. Our app has a custom made editor and keyboard with which we are able to implement a basic auto complete feature. Currently as the user is typing we suggest the most apt words. We plan to use this to construct the basic model and then an on device model to create a strong association to the users coding habits and style.

2. To achieve this dual approach we would like to use google federated learning to understand how a feature can be engineered. This would require some expert opinions within this field and an in depth understanding on how do we engineer the product into our editor.

3. We get over a half a million files every month in 37 programming languages from different users from all over the world. We plan to build a global model and then explore customisation and personalisation on device.

   Timeline:

   a. December 2019:
      i. Cleaning and validating the data we have and Implement flow with TensorFlow Lite
      ii. Understanding global model and training with constant feedback.
   b. January 2020.
      i. Usability testing with matching expectation gap and iterate on different data sources. Understanding local model training
   c. January 2020.
      i. Android UI Development.
      ii. Set up feature pipeline for continual improvement on global models
   d. February 2020 &March 2020 :
      i. Finalize IOS/ Android/ Web UI.
   e. April 2020 :
      i. Testing and Deployment.

   ii. Beta releases to our community.
f. May 2020 :
   i. Present at Google IO

Tell us about you.

We built **Dcoder- a mobile coding app** on the play store. This has been in the market for **3yrs and have over 2 million users, spread across 172+ countries.**

We have been mobile first in which emerging markets have been the earliest to adopt us. Our goal is to foster innovation in the remotest parts of the world by providing the necessary tools. Tech being foundational to this, we believe the IDE and the mobile is what it takes to get that started.

Many of our users are mobile first and lack the necessary hardware (like laptops etc) to enable them.