Shriram Ghadge
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CS305 - Software Engineering

(End-Sem)

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1. Open-Source Contribution (possible topics covered: design and code reviews, bug filing, testing, and documentation)

Open-Source software : PixelExperience

Github link : https://github.com/PixelExperience
Home Page : https://download.pixelexperience.org/

PixelExperience is an open source project in which they create custom OS (operating systems) for android phones. PixelExperience is inspired from google pixel phone - OS (specially UI - user interface), here they build similar OS with some extra features, with improved kernels and also provide latest security updates and all.

PixelExperience provides their custom android ROMs (Android Read Only Memory) for almost all recents mobile phones like One Plus, Asus, Samsung, Sony, Xiaomi, Realme and even for Google phones - nexus & pixel. Each of these brands have multiple devices like for Xiaomi - Note series, Mi series. And for each of these devices there are multiple versions like Android 9, Android 10, Android 10 plus (plus version supports more customizations), Android 11.

I have been using PixelExperience custom ROM for almost the last 2 years on my mobile device - Xiaomi Redmi Note 5 Pro (WHYRED). I really got inspired from this. The basic requirements for being a developer in this community are

Software - basic knowledge of android, git and bash
Hardware - mobile device, linux device with 16GB+ RAM & 120 GB SSD storage (devices with configurations weaker than these usually much more time sometimes in hours).

My Contribution :

PixelExperience team is regularly adding new devices and working with custom ROM for these devices. For every new device, initially they add basic device hardware details (in README.md file), device images and some basic tools like Kernels. So for the new device Xiaomi Redmi Note 8 Pro (begonia) they were missing the README.md file with all basic hardware details of this mobile device, available similar for almost all other earlier mobile devices e.g. Xiaomi Redmi Note 5 Pro (whyred).

These hardware details mainly consist of details about Processor, CPU, GPU, Memory, Storage, Battery, Display, Camera. All these details are generally available at respective mobile device brand's websites - Xiaomi redmi note 8 pro. These hardware details are essential for building such ROM, developers must know all these basic info before he/she starts developing such a giant project.

My Contribution : github.com/Shiru99/kernel_xiaomi_begonia/blob/eleven/README.md

Device Tree for Redmi Note 8 Pro (begonia)

The Redmi Note 8 Pro (codenamed *"begonia"*) are high-end mid-range smartphones from Xiaomi announced and released in September 2019.

Device specifications

Device	Xiaomi Redmi Note 8 Pro
SoC	MediaTek Helio G90T
CPU	octa-core ARM Cortex - (A76 2x2.05GHz + A55 6x2GHz)
GPU	Mali G76 MC4 800MHz
Memory	6GB / 8GM RAM (LPDDR4x)
Shipped Android version	Android 9 Pie
Storage	64GB / 128GB UFS2.1 flash storage
Battery	Non-removable 4,500mAh (typ) Li Polymer
Dimensions	161.7 x 76.4 x 8.81 mm
Display	1080 x 2340 pixels, 19.5:9 ratio (~395 ppi density)
Rear camera 1 (Main Camera)	64MP, 0.8μm，1/1.7 inch CMOS image sensor, 1.6μm 4-in-1 Super Pixel, f/1.89, Dual LED flash
Rear camera 2 (Ultra-wide angle lens)	8MP, 1.12μm，f/2.2，FOV 120°, Dual LED flash
Rear camera 3 (Macro lens)	2MP,1.75μm, 2cm focus, Dual LED flash
Rear camera 4 (Dedicated depth sensor)	2MP, Dual LED flash
Front camera	20MP,0.9μm，f/2.0 1080p 30 fps video, Selfie-light

2. Tools and Frameworks

CA - Computer Architecture,
DBMS - Database Management System
SE - Software Engineering

Sr. No.	Course Name	Software name and details	Installed on Laptop (yes/no)
1.	CA	KEIL MDK-ARM 5 (https://www.keil.com/demo/eval/arm.htm)	yes
2.	CA	WineTricks (https://www.winehq.org/)	yes
3.	DBMS (project)	Flutter (https://flutter.dev/)	yes
4.	DBMS (project)	Dart (https://dart.dev/)	yes
5.	DBMS (project)	Android Studio (https://developer.android.com/studio)	yes
6.	DBMS (project)	Firebase (https://console.firebase.google.com/)	Yes (Web Account)
7.	DBMS	Postgres (https://www.postgresql.org/)	yes
8.	DBMS	Pgadmin (https://www.pgadmin.org/)	yes
9.	DBMS	JDBC (https://docs.oracle.com/javase/tutorial/jdbc/)	yes
10.	DBMS	J2EE (https://www.oracle.com/java/technologies/appmodel.html)	yes
11.	Philosophy	Grammarly (https://app.grammarly.com/)	Yes (Web Account)

Sr. No.	Course Name	Software name and details	Installed on Laptop (yes/no)
12.	Philosophy	Google Classroom (https://classroom.google.com)	Yes (Web Account)
13.	RnD	Google Drive (https://www.google.com/intl/en_in/drive/)	Yes (Web Account)
14.	RnD	Google Colab (https://colab.research.google.com/)	Yes (Web Account)
15.	SE	Piazza (https://piazza.com/)	Yes (Web Account)
16.	DBMS & CA	Eclipse (https://www.eclipse.org)	Yes
17.	All	Google Docs (https://docs.google.com/)	Yes (Web Account)
18.	All	GitHub (https://github.com/)	Yes (Web Account)
19.	All	Moodle (https://moodle.iitdh.ac.in/)	Yes (Web Account)
20.	All	Google meet (https://meet.google.com/)	Yes (Web Account)
21.	All	VS Code (https://code.visualstudio.com/)	Yes
22.	All	Gmail	Yes
23.	All	Whatsapp	Yes
24.	DBMS, CA, SE	JAVA	Yes
25.	CA, SE	Python	Yes
26.	SE	Django	Yes
27.	All	YouTube	Yes