

IT 314 SOFTWARE ENGINEERING

LAB 4 : SPECIFYING TOOLS AND TECHNOLOGY

HEALTH CENTRE MANAGEMENT

GROUP: 12

Finalized tools, technologies and frameworks

Tools : Android Studio

Technology : Android

Framework : Android Native (in kotlin), Firebase.

Reason:

Android is developed and maintained by Google and there are abundant resources available to learn. Android has a large community of developers and users compared to other app development frameworks like Flutter. There are many open source libraries available for almost everything in Android which can be directly used while developing, hence reducing the development time and effort.

Firebase is a Backend as a service(BaaS) which includes a real-time database, cloud storage for storing large documents, authentication and testing the application. It also provides Push Notification service.

Database for the project

Database chosen : Firebase Database

Reason :

- Firebase Database is a **real-time** No-SQL cloud-hosted database developed by Google. No separate server is needed to host the database, hence it is cost effective.
- The database can be accessed directly from the client devices without having a need for an application server to interact with the database.
- Even when the client device is offline, firebase database provides the latest fetched data and once the device is reconnected, the data will be synced automatically.

Estimation effort

Overall **use-case size point** estimation:

Technical Complexity Factor (TCF)

Technical Factor	Calculated factor
T1	10
T2	4
T3	2
T5	2

T6	2
T7	2
T8	6
T9	3
T10	2
TOTAL	33

$$TCF = 0.6 + (0.01 * 33) = 0.93$$

Environmental Complexity Factor (ECF)

Environmental Factor	Calculated Factor
E1	6
E2	1
E5	1
E6	10
Total	18

$$ECF = 1.4 + (-0.03 * 18) = 0.86$$

Unadjusted Use Case Weight (UUCW)

Use Case Type	Result
Simple	60
Total	60

$$UUCW = 60$$

Unadjusted Actor Weight (UAW)

Actor Type	Result
Simple	5
Total	5

$$UAW = 5$$

Unadjusted Use Case Points (UUCP)

$$UUCP = UUCW + UAW = 60 + 5 = 65$$

Productivity Factor (PF)

$$PF = 20$$

Final Calculation:

$$UCP = TCP * ECF * UUCP$$

$$UCP = 0.93 * 0.86 * 65 = 51.987$$

$$\text{Estimate} = UCP * PF$$

$$\text{Estimate} = 51.987 * 20 = 1039.47 \text{ hours}$$