

A Comprehensive Analysis and Strategy Development for Maximizing Code Reusability in Cross-Platform Development Frameworks

Krishnakumar Harishankar Vishwakarma and Roshan Ramkisan Kamble

Students, Department of MCA

Late Bhausaheb Hiray S. S. Trust's Institute of Master of Computer Application, Mumbai, India

krishnavishwakarma.og@gmail.com and mcaroshan2@gmail.com

Abstract: *This examination offers an in-depth exploration of code reusability for cross-platform improvement. With the growing desire for software program solutions to be well matched throughout numerous systems, cross-platform improvement has gained great prominence. But the balance between maximizing code reusability and catering to platform-specific customization requirements remains a difficult problem. This study on the whole aims to assess the volume of code reuse across unique cross-platform development frameworks, examine the effect of platform-specific customization on code reusability, and suggest techniques to beautify code reuse in this context. A combined-method technique was employed, combining quantitative data analysis of several open-supply initiatives with qualitative records collected through expert interviews. An examination of popular cross-platform frameworks, which include Flutter, React Native, Xamarin, and Ionic, discovered the inherent differences affecting code reusability. Furthermore, an empirical study was carried out to determine the impact of platform-specific customization on code reuse. The findings indicate a sizable variance in code reusability across different frameworks, and the necessity for platform-specific customization certainly impacts code reusability. But this research additionally provides a group of powerful techniques, such as the use of layout styles, element-primarily based improvement, abstracting platform-specific code, utilization of go-platform libraries, code refactoring, computerized testing, and continuous integration/non-stop deployment, to maximize code reusability. This observation provides essential insights for developers, researchers, and choice-makers within the discipline of mobile platform improvement. Future studies can build upon these findings to further delve into this critical component of software improvement.*

Keywords: Cross-Platform Development, Code Reusability, Platform-Specific Customization, Code Reuse Strategies, Empirical Study, Data Analysis

REFERENCES

- [1]. S. Thummalapenta, T. Xie, N. Tillmann, J. de Halleux, and W. Schulte, "MSeqGen: Object-oriented unit-test generation via mining source code," in Proceedings of the the 7th Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering, 2009, pp. 193-202.
- [2]. E. J. Davies, D. M. German, M. W. Godfrey, and A. Hindle, "Software Bertillonage: Determining the provenance of software development artifacts," Empirical Software Engineering, vol. 19, no. 6, pp. 1195-1237, 2014.
- [3]. Ionic Framework, [Online]. Available: <https://ionicframework.com/> .
- [4]. Flutter Framework, [Online]. Available: <https://flutter.dev/> .
- [5]. React Native Framework, [Online]. Available: <https://reactnative.dev/> .
- [6]. Xamarin Framework, [Online]. Available: <https://dotnet.microsoft.com/en-us/apps/xamarin> .
- [7]. D. Spinellis, "Code reading: The open-source perspective," Addison-Wesley, 2003.

- [8]. S. Baltes, L. Dumani, C. Treude, and S. Diehl, "Code duplication on Stack Overflow," Proc. ACM Program. Lang., vol. 2, no. OOPSLA, pp. 1–30, 2018.