References

- [1] A. Aldayel and K. Alnafjan. Challenges and best practices for mobile application development. In *Proceedings of the International Conference on Compute and Data Analysis*, pages 41–48, 2017.
- [2] Q. Ashfaq, R. Khan, and S. Farooq. A comparative analysis of static code analysis tools that check java code adherence to java coding standards. In 2019 2nd International Conference on Communication, Computing and Digital systems (C-CODE), pages 98–103. IEEE, 2019.
- [3] F. S. Barbosa and A. Aguiar. Removing code duplication with roles. In 2013 IEEE 12th International Conference on Intelligent Software Methodologies, Tools and Techniques (SoMeT), pages 37–42. IEEE, 2013.
- [4] X. Chen, A. Y. Wang, and E. Tempero. A replication and reproduction of code clone detection studies. In *Proceedings of the Thirty-Seventh Australasian Computer Science Conference-Volume 147*, pages 105–114, 2014.
- [5] A. W. R. Emanuel, R. Wardoyo, J. E. Istiyanto, and K. Mustofa. Modularity index metrics for java-based open source software projects. *arXiv preprint arXiv:1309.5689*, 2013.
- [6] E. Gamma, R. Helm, R. Johnson, J. Vlissides, and D. Patterns. Elements of reusable object-oriented software. Design Patterns. massachusetts: Addison-Wesley Publishing Company, 1995.
- [7] F. B. HARUN. Review of ios architectural pattern for testability, modifiability, and performance quality. *Journal of Theoretical and Applied Information Technology*, 97(15), 2019.
- [8] I. Heitlager, T. Kuipers, and J. Visser. A practical model for measuring maintainability. In 6th international conference on the quality of information and communications technology (QUATIC 2007), pages 30–39. IEEE, 2007.
- [9] ISO. Iso/iec 25010:2011(en) systems and software engineering systems and software quality requirements and evaluation (square) system and software quality models.
- [10] E. Juergens, F. Deissenboeck, and B. Hummel. Code similarities beyond copy & paste. In 2010 14th European Conference on Software Maintenance and Reengineering, pages 78–87. IEEE, 2010.
- [11] C. J. Kapser and M. W. Godfrey. "cloning considered harmful" considered harmful: patterns of cloning in software. *Empirical Software Engineering*, 13(6):645–692, 2008.
- [12] V. Lenarduzzi, A. Sillitti, and D. Taibi. A survey on code analysis tools for software maintenance prediction. In *International Conference in Software Engineering for Defence Applications*, pages 165–175. Springer, 2018.
- [13] I. Malavolta, R. Verdecchia, B. Filipovic, M. Bruntink, and P. Lago. How maintainability issues of android apps evolve. In *2018 IEEE International Conference on Software Maintenance and Evolution (ICSME)*, pages 334–344. IEEE, 2018.
- [14] A. Monden, D. Nakae, T. Kamiya, S.-i. Sato, and K.-i. Matsumoto. Software quality analysis by code clones in industrial legacy software. In *Proceedings Eighth IEEE Symposium on Software Metrics*, pages 87–94. IEEE, 2002.
- [15] B. S. Panca, S. Mardiyanto, and B. Hendradjaya. Evaluation of software design pattern on mobile application based service development related to the value of maintainability and modularity. In 2016 International Conference on Data and Software Engineering (ICoDSE), pages 1–5. IEEE, 2016.
- [16] M. D. Papamichail, T. Diamantopoulos, and A. L. Symeonidis. Measuring the reusability of software components using static analysis metrics and reuse rate information. *Journal of Systems and Software*, 158:110423, 2019
- [17] D. Rodriguez and R. Harrison. An overview of object-oriented design metrics. 2001.
- [18] A. A. Saifan and A. Al-Rabadi. Evaluating maintainability of android applications. In 2017 8th International Conference on Information Technology (ICIT), pages 518–523. IEEE, 2017.
- [19] F. E. Shahbudin and F.-F. Chua. Design patterns for developing high efficiency mobile application. *Journal of Information Technology & Software Engineering*, 3(3):1, 2013.

- [20] A. Shvets. What's a design pattern?
- [21] P. Tomas, M. J. Escalona, and M. Mejias. Open source tools for measuring the internal quality of java software products. a survey. *Computer Standards & Interfaces*, 36(1):244–255, 2013.

Supplements

```
package com.oriondev.moneywallet.picker;

blimport ...

glimport ...

gl
```

Fig 9. Template Pattern Group 3

Fig 10. Template Pattern Group 4

```
| package com.oriondev.moneywallet.ui.adapter.pager;
| post | public package com.oriondev.moneywallet.ui.adapter.pager;
| publ
```

Fig 11. Template Pattern Group 31

```
package com.oriondev.moneywallet.ui.fragment.secondary;

import ...

public abstract class SecondaryFragmentTemplate extends SecondaryPanelFragment {

public loaderxCursor> onCreateLoader(int id, Bundle args) {

Activity activity = getActivity();

f (activity != null) {

return onCreateLoaderActivity();

}

return null;

abstract LoaderxCursor> onCreateLoaderActivity();

abstract LoaderxCursor> onCreateLoaderActivity();

}
```

Fig 12. Template Pattern Group 51