# Formal Modeling for Secure Software Design

# Formal Modeling (Chondamrongkul et al.,2021)

- Describes the structure and behaviour of a design
- Sets formal descriptions of security requirements
- Has a framework for architectural design
- The analysis tools are tailored specifically to the project needs

# Formal Modelling (preyumkr, 2022)

- Robust and specific to application architecture
- Can encompass formal and informal testing methods
- Is much more expensive
- Is much more time consuming than automated testing

# Formal Modeling

- Though expense and time are more resource intensive, Formal Modeling is superior to automated testing for the following reasons:
  - Automated testing follows a script, so random or overlooked vulnerabilities can be missed
  - Only formal modeling can encompass formal and informal testing methods, which better mirror real-world attack vectors
  - It satisfies the testing requirements within the Software Life Cycle

# References


- Chondamrongkul, N., Sun, J., & Warren, I. (2021) Formal Security Analysis for Software Architecture Design: An Expressive Framework to Emerging Architectural Styles. *Science of Computer Programming*, 206. [Available Online] https://www.sciencedirect.com/science/article/abs/pii/S0167642321000241#:~:text=Formal%20modelling%20of%20software%20architecture,security%20vulnerabilities%2C%20metrics%20and%20scenarios. ‘

- Preyyumkar (2022) Formal Testing | Geeks for Geeks. Geeksforgeeks.org. [Available Online]: https://www.geeksforgeeks.org/formal-testing/