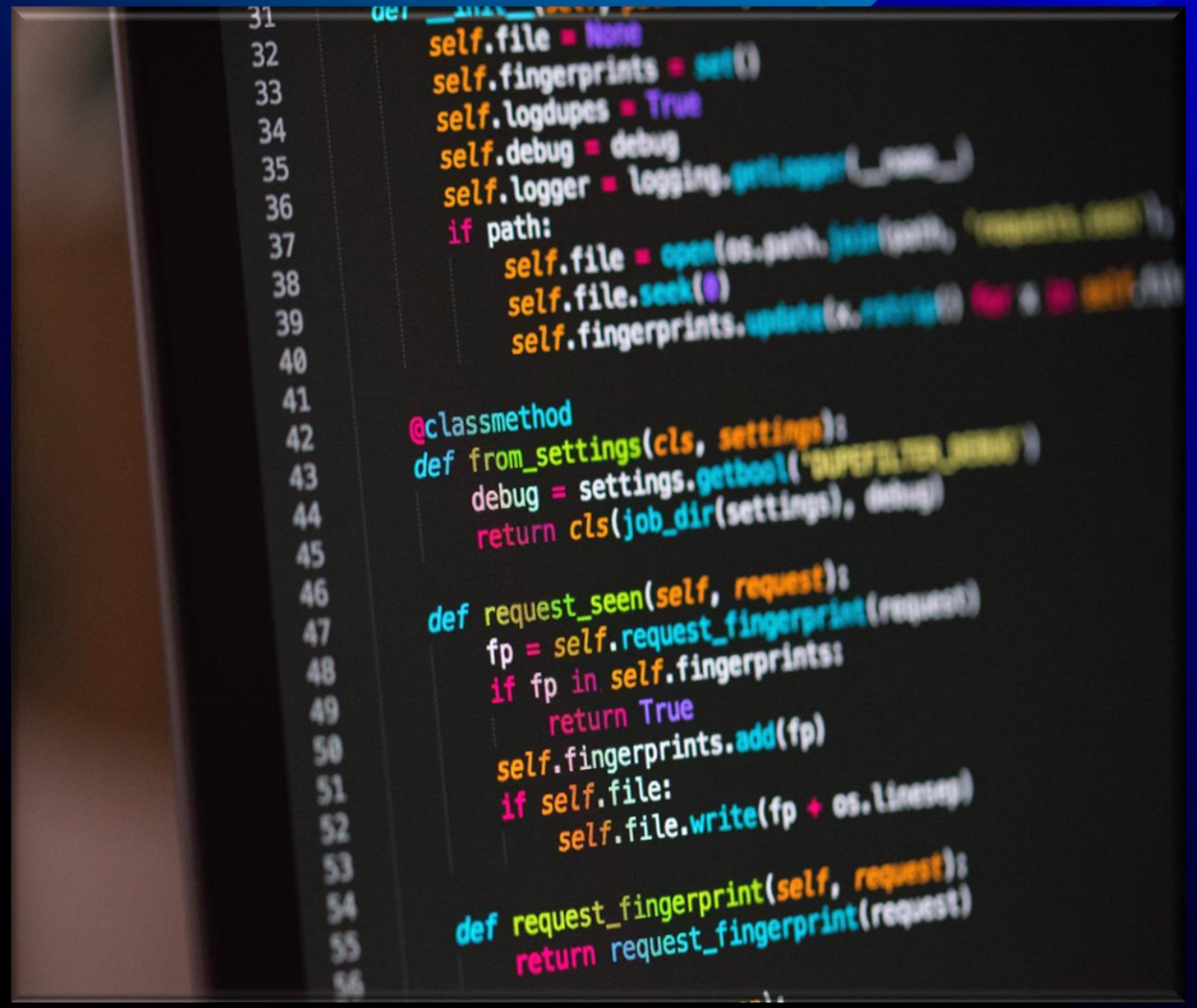
CODE OPTIMIZATION

Introduction

- *Code optimization improves program performance and reduces resource usage*
- *Techniques used in compilers transform source code into optimized object code*
- *This presentation explores code optimization techniques and their implementation in compilers*
- *Effectiveness of techniques evaluated in terms of performance, code size, and resource usage*



Techniques for Code Optimization

- *Data-flow analysis is a technique for identifying patterns in data values and how they are used in a program. This information is then used to optimize the code.*

- *Loop optimization is a technique for analyzing loops in a program to identify ways to improve their efficiency. This includes techniques like loop unrolling, loop fusion, and loop interchange.*

- *Instruction scheduling is a technique for rearranging instructions in a program to optimize their execution order. This includes techniques like instruction reordering, register allocation, and pipeline scheduling.*

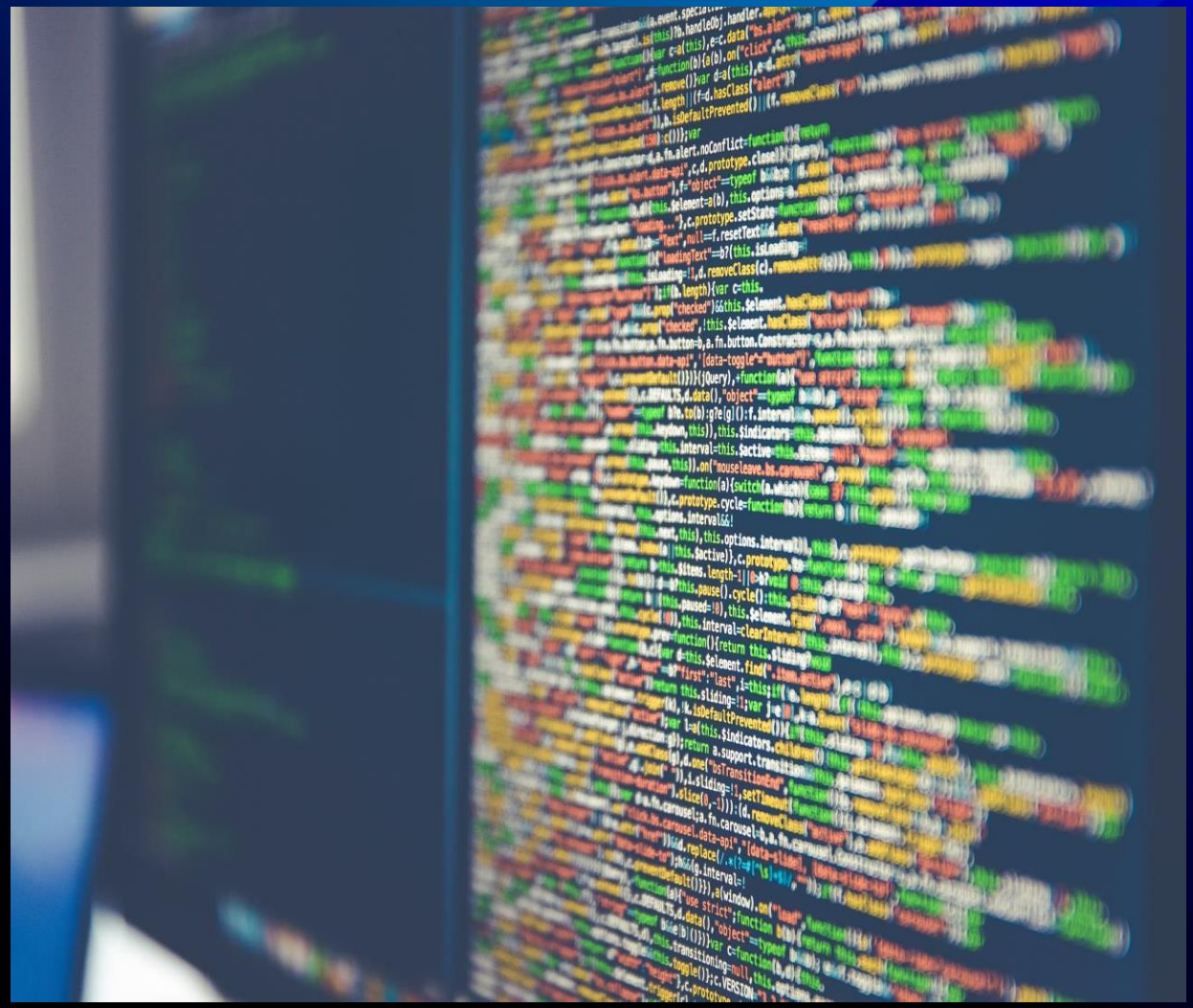
Evaluation of Optimization techniques

- *The effectiveness of optimization techniques is evaluated in terms of performance improvements, code size reduction, and memory usage reduction.*

- *Performance improvements are typically measured in terms of execution time or throughput.*

- *Code size reduction is important for reducing memory usage and improving program load times.*

- *Memory usage reduction is important for improving program efficiency and reducing overall resource usage.*



Combined optimization

- *Optimization techniques are often combined to produce more effective results.*

- *For example, loop optimization and instruction scheduling are often used together to improve program performance.*

- *Data-flow analysis can be used in combination with other optimization techniques to identify additional optimization opportunities.*

- *Combining optimization techniques can result in even greater performance improvements, code size reduction, and memory usage reduction than individual techniques alone.*

Conclusion

- *Code optimization improves program performance, reduces code size, and minimizes resource usage.*
- *Optimization techniques can be used individually or in combination to produce optimized code.*
- *The effectiveness of optimization techniques is evaluated based on performance, code size, and memory usage.*
- *Careful consideration of trade-offs is necessary to balance optimization with other factors.*
- *Overall, code optimization is a vital tool for creating efficient and effective software.*

Thank you

Done by:

G Ashwin

V Allen Jerome