

**CS556 Iterative Methods Fall 2024 Quiz 2.**  
Due Tuesday, Sep. 3, 5 PM.

1. Which of the following loops is likely to perform faster?

```
do i=1,n
  a(ind(i)) = a(ind(i)) + b(i)
enddo
```

```
do i=1,n
  b(i) = b(i) + a(ind(i))
enddo
```

Provide a rationale for your choice.

2. Comment on the expected relative performance of the following operations (for large  $n$ ). Assume that the matrices are square.

$$\underline{w} = a * \underline{x} + \underline{w} \tag{1}$$

$$\underline{w} = A\underline{p} \tag{2}$$

$$W = AP \tag{3}$$

Provide a rationale for your answer.

3. Identify the operations of (2) in with the correct categorization, BLAS1, BLAS2, or BLAS3.
4. What is the computational complexity of each operation (FP64 flops-per-byte)?