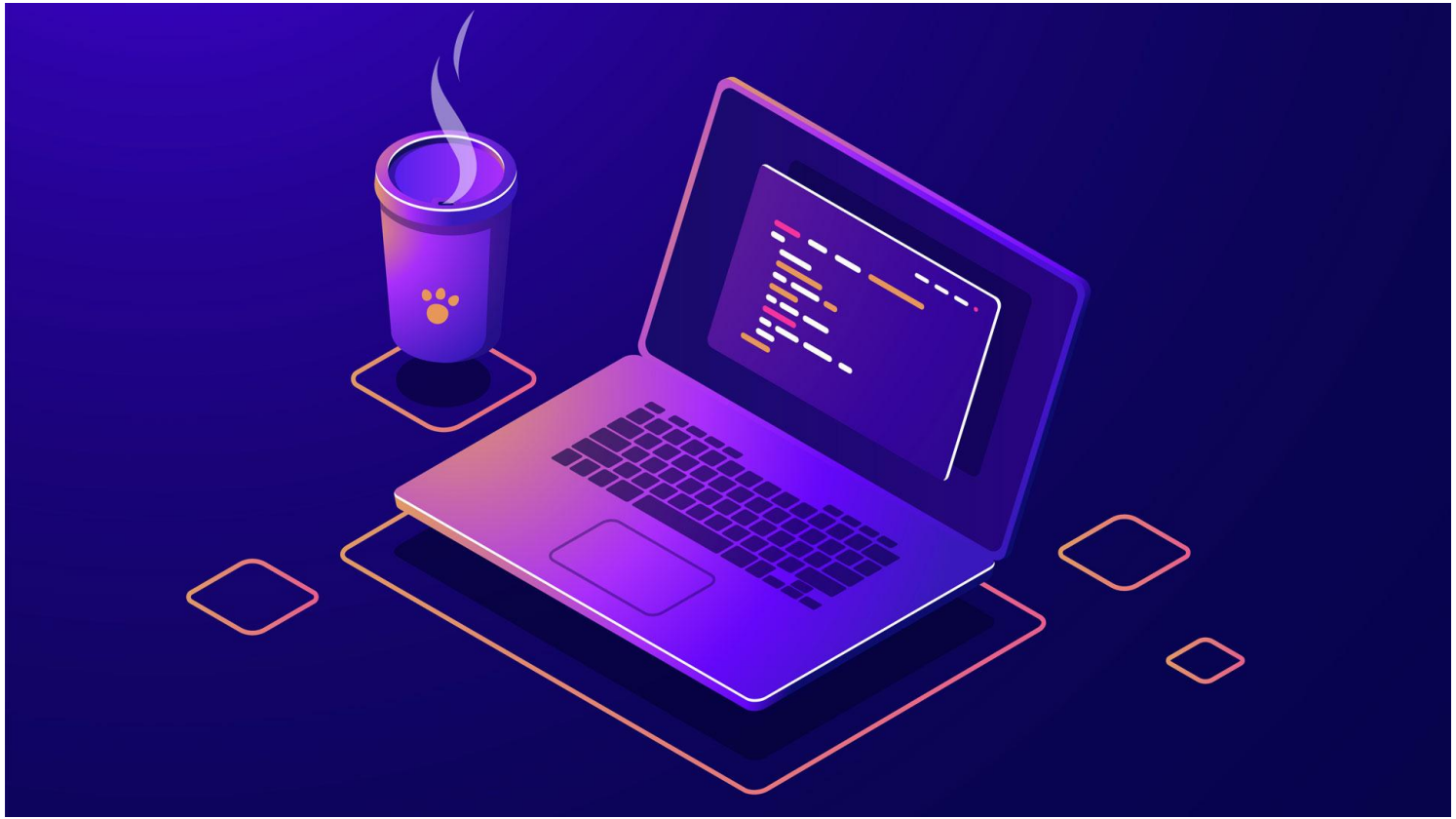
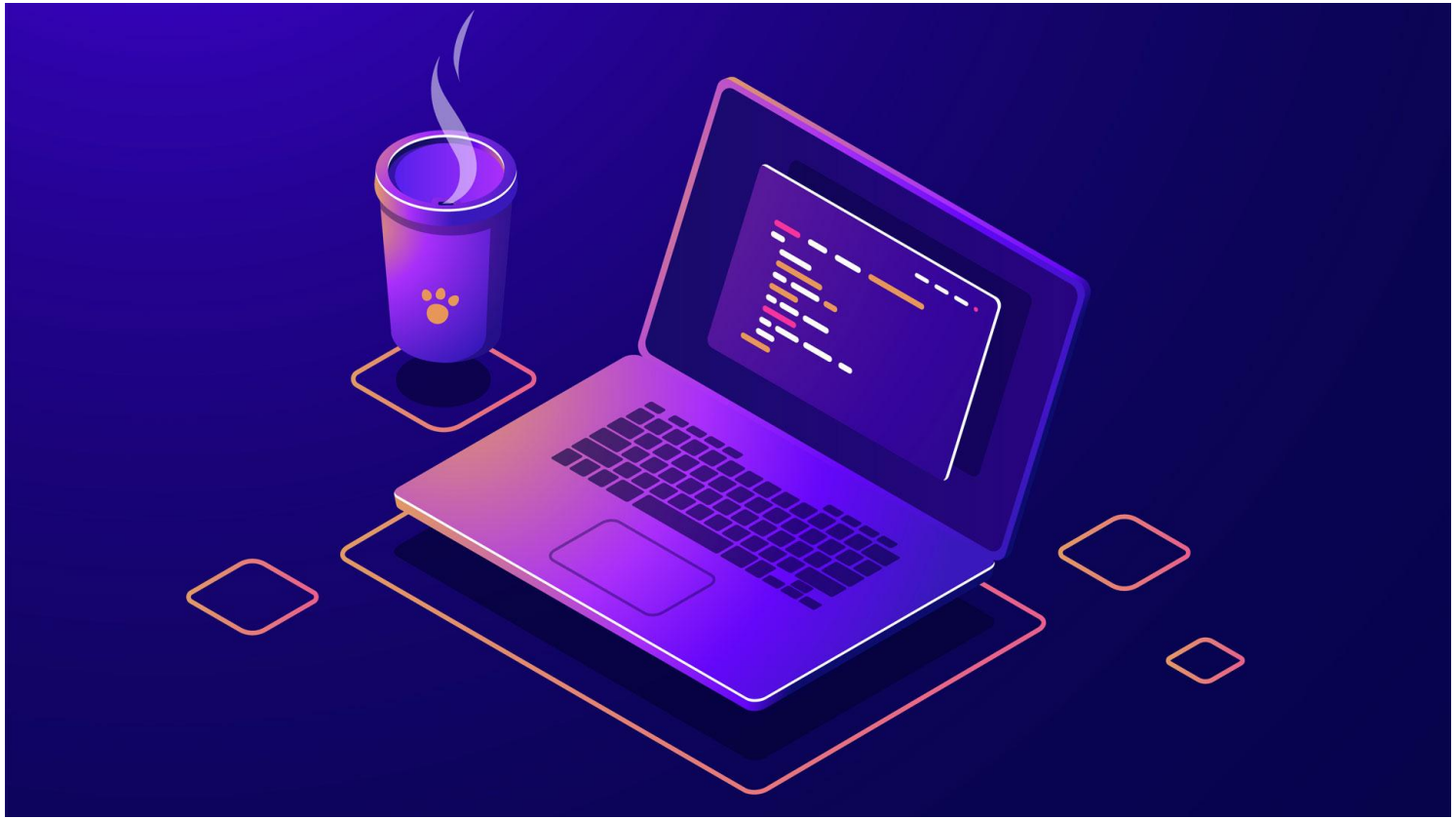
Reduce overhead and serialization



Atomic Directive



Atomic Directive

Atomic accesses: mechanism to guarantee atomicity in load/store instructions

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Atomic accesses: mechanism to guarantee atomicity in load/store instructions

```
#pragma omp atomic [update | read | write]
      expression
```

- Atomic updates: `x += 1`, `x = x - foo()`, `x[index[i]]++`
- Atomic reads: `value = *p`
- Atomic writes: `*p = value`

#pragma omp atomic update

Updates the value of a variable atomically.

Guarantees that only one thread at a time updates the shared variable, avoiding errors from simultaneous writes to the same variable.

An omp atomic directive without a clause is equivalent to an omp atomic update.

#pragma omp atomic write

Writes the value of a variable atomically.

The value of a shared variable can be written exclusively to avoid errors from simultaneous writes.

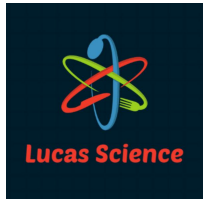
#pragma omp atomic read

Reads the value of a variable atomically.

The value of a shared variable can be read safely, avoiding the danger of reading an intermediate value of the variable when it is accessed simultaneously by a concurrent thread.

Instructor Social Media

Youtube: Lucas Science



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