

C Concurrency In Action Practical Multithreading

C Concurrency In Action Practical Multithreading C Concurrency in Action Practical Multithreading for RealWorld Applications So youre diving into the world of C concurrency Welcome Harnessing the power of multiple threads can dramatically boost your applications performance especially when dealing with computationally intensive tasks or IObound operations But lets be honest concurrency in C can seem daunting at first Fear not This blog post will guide you through the practical aspects of multithreading in C equipping you with the knowledge and examples to build efficient and robust concurrent applications

Understanding the Basics Threads vs Processes Before diving into Cs concurrency features its essential to differentiate between threads and processes A process is an independent selfcontained execution environment while a thread is a unit of execution within a process Threads share the same memory space making communication between them faster and easier than interprocess communication However this shared memory also necessitates careful management to avoid data races and other concurrency hazards Think of a process as a kitchen and threads as chefs working in that kitchen They share the same ingredients memory but need to coordinate their actions to avoid chaos data corruption

Diving into Cs Multithreading The pthreads Library Cs primary mechanism for multithreading is the pthreads library POSIX Threads It provides a set of functions for creating managing and synchronizing threads Lets explore some key functions pthreadcreate This function creates a new thread It takes a pointer to a pthread_t thread ID attributes which well cover later a pointer to the function the thread will execute and arguments for that function pthreadjoin This function waits for a specific thread to finish execution Its crucial for ensuring that all threads complete their work before the main thread exits pthreadexit This function terminates a thread

2 A Simple Example Calculating Prime Numbers

Lets illustrate pthreads with a basic example finding prime numbers within a given range Well divide the range into chunks and assign each chunk to a separate thread

```
c include include include Structure to pass data to threads typedef struct int start int end int primes int count ThreadData Function to check if a number is prime int isPrimeint n Implementation omitted for brevity Function executed by each thread void findPrimesvoid arg ThreadData data ThreadData arg for int i datastart i end i if isPrimei dataprimesdatacount i pthreadexitNULL int main int numThreads 4 int rangeStart 2 int rangeEnd 1000 int totalPrimes 0 3 pthread_t threadsnumThreads ThreadData threadData numThreads Divide the range among threads int chunkSize rangeEnd rangeStart 1 numThreads for int i 0 i count pthread_mutex_unlockmutex Rest of the code pthread_mutex_initmutex NULL Initialize mutex rest of main function pthread_mutex_destroymutex Destroy mutex Now only one thread can access and modify totalPrimes at a time eliminating the race condition Error Handling and Thread Attributes Robust multithreaded applications require proper error handling Always check the return values of pthreads
```


achieved also what about parallelism wha

8 dec 2022 can someone explain how concurrency works on github actions at the job level and workflow level

the first statement doesn't update anything but it increments the rowversion and it will throw a concurrency exception if the rowversion was changed in between

25 feb 2010 i've heard these words related to concurrent programming but what's the difference between lock mutex and semaphore

26 feb 2014 not all update exceptions are caused by concurrency so you also have to catch dbupdateexception after catching dbupdateconcurrencyexception because the latter is a subtype

what is the difference between concurrent programming and parallel programming i asked google but didn't find anything that helped me to understand that difference could you give me an example for

30 oct 2010 does sqlite3 safely handle concurrent access by multiple processes reading/writing from the same db are there any platform exceptions to that

30 may 2019 here's an expanded list of configuration options that are available since airflow v1.10.2 some can be set on a per dag or per operator basis but may also fall back to the setup wide

23 nov 2024 1 using concurrency 4 celery a task worker 1 info concurrency 4 this starts one worker process with a concurrency of 4 the worker will then create 4 internal worker threads or

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