

Intel Thread Building Blocks (TBB)



- ❑ Template library for designing parallel C++ programs
- ❑ A serial version of a simple for loop

```
for (int i = 0; i < n; i++) {  
    apply(v[i]);  
}
```

- ❑ The same for loop written using TBB with `parallel_for` statement:

```
parallel_for (size_t(0), n, [=](size_t i) {apply(v[i]);});
```

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max number of subtasks in a system which can be simultaneously executed in a system - degree of concurrency

Parallelism - Implementation aspect - finer details

Grand central dispatch - missed that part in lecture :(

Cancel a thread:

Fork - FORK IT

Execute - Replace the running process and exec a new process

exec() in multithreading



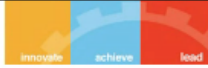
Which of the two versions of fork() to use depends on the application

- ❖ If `exec()` is called immediately after forking, then duplicating all threads is unnecessary, as the program specified in the parameters to `exec()` will replace the process; duplicating only the calling thread is appropriate
- ❖ If, however, the separate process does not call `exec()` after forking, the separate process should duplicate all threads

Asynchronous Cancellation - JUst fuck my shit up

Deferred cancellation - Allows target thread to periodically check if should be cancelled


Thread cancellation contd..



- Invoking thread cancellation requests cancellation, but actual cancellation depends on thread state

| Mode | State | Type |
|--------------|----------|--------------|
| Off | Disabled | — |
| Deferred | Enabled | Deferred |
| Asynchronous | Enabled | Asynchronous |

- If thread has cancellation disabled, cancellation remains pending until thread enables it
- Default type is deferred
 - Cancellation only occurs when thread reaches **cancellation point**
 - i.e., `pthread_testcancel()`
 - Then **cleanup handler** is invoked
- On Linux systems, thread cancellation is handled through signals



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Signal Handling - UNIX systems to notify a process that a particular event has occurred

Thread local storage- TLS

Different from Local variables
Similar to Static data

Scheduler Activation
M:M approach and Two-level models

RIP. Lite.