Assignment Project Exam Help

Pthreads

https://tutorcs.com

Anandha Gopalan

WeChat: cstutorcs

November 24th 2017

Imperial College
London

- POSIX (Portable Operating System Interface) Threads

- Implementation depends on the system

- Implemented as a library on POSIX compliant Unix systems ⇒ libpthread
  - Since Kernel version 2.6, implemented in Linux as the Native POSIX Thread Library ⇒ 1-1 relationship between threads created and Kernel threads

- Provides APIs for creating and managing threads

#include <pthread.h>

int pthread_create (pthread_t *thread, const pthread_attr_t *attr,
void *(*start_routine) (void *), void *arg)

pthread_create (ID, Attributes, Function Pointer, Argument)

- ID → ID of newly created thread (set by the system)

- Attributes → Generally set to NULL for default attributes

- Function Pointer → Pointer to the function which will be executed by the newly created thread

- Argument → Argument to the Function

Pass address of producerid so that we get id of thread created back

```
        pthread_t producerid;
        int parameter = 5;
        pthread_create (&producerid, NULL, producer,
                        (void *) &parameter);
```

Have to cast to correct data type in function

```
        void *producer (void *parameter)
        {
          int *param = (int *) parameter;
          cout << "Parameter = " << *param << endl;
          pthread_exit(0);
        }
```

How do we create multiple threads?

Hint: Using an array to hold multiple thread IDs

How do we pass multiple parameters?

Can use global variables

Hint: Using structures → *struct* data type declaration and passing the structure as a parameter is a more elegant solution

Exit from Thread

```
#include <pthread.h>

void pthread_exit (void *retval)

pthread_exit (0);
```

Wait for thread to finish and exit main programme

```
#include <pthread.h>

int pthread_join (pthread_t thread, void **retval)

pthread_join (producerid, NULL);
```

Imperial College
London