Използване на OpenMP - част 4. Tasks.

Курс „Паралелно програмиране“

ИНСТИТУТ *за* СЪВРЕМЕННИ
ФИЗИЧЕСКИ ИЗСЛЕДВАНИЯ

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План

```
p=head;
 while (p) {
    process(p);
    p = p->next;
}
```

Свързан списък. Решение 1.


```
while (p != NULL) {
 p = p->next;
      count++;
 }
 p = head;
 for(i=0; i<count; i++) {
      parr[i] = p;
      p = p->next;
   }
 #pragma omp parallel
 {
     #pragma omp for schedule(static,1)
     for(i=0; i<count; i++)
       processwork(parr[i]);
 }
```

	Default Schedule	Static,1
One Thread	48 Secs	
Two Threads	39 Secs	

Обособени единици за изпълнение със собствен код и данни, които се “вземат” от различни нишки чрез планировчик (scheduler - internal control variables).

```
#pragma omp parallel
{
   #pragma omp task
   foo();
   #pragma omp barrier
   #pragma omp single
   {
      #pragma omp task
      bar();
   }
}
```

```
int fib ( int n )
{

int x,y;
   if ( n < 2 ) return n;
#pragma omp task
   x = fib(n-1);
#pragma omp task
   y = fib(n-2);
#pragma omp taskwait
   return x+y;
}
```

```
int fib ( int n )
{

int x,y;
  if ( n < 2 ) return n;
#pragma omp task
  x = fib(n-1);
#pragma omp task
  y = fib(n-2);
#pragma omp taskwait
  return x+y;
}
```

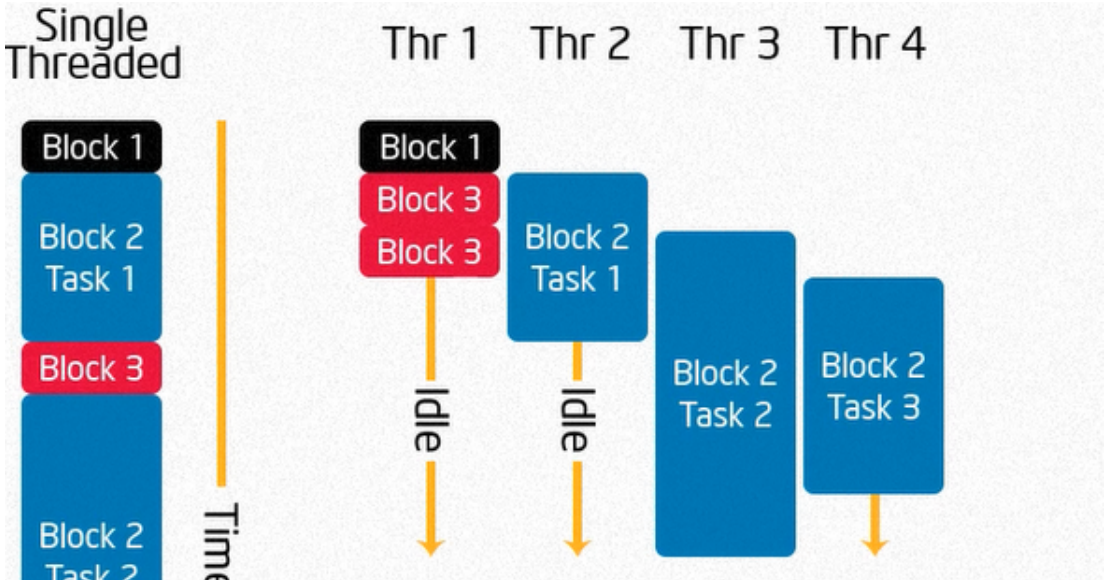
```
int fib ( int n )
{

int x,y;
  if ( n < 2 ) return n;
#pragma omp task shared (x)
  x = fib(n-1);
#pragma omp task shared (y)
  y = fib(n-2);
#pragma omp taskwait
  return x+y;
}
```

Задачи в OpenMP. Списък.

```
List ml; //my_list
Element *e;
#pragma omp parallel
#pragma omp single
{
  for(e=ml->first;e;e=e->next)
#pragma omp task firstprivate(e)
    process(e);
}
```

```
#pragma omp parallel
{
  #pragma omp single
  {
    node * p = head;
    while (p) {
    #pragma omp task firstprivate(p)
      process(p);
    p = p->next;
    }
  }
}
```



от *Introduction to OpenMP 14 Module 8* до *Introduction to OpenMP 17 Discussion 7*