



OpenMP

- Lab 2 -

Sumar

- Loop scheduling
 - Reduction

Loop scheduling

#pragma omp for schedule(<mode>,[<chunk>])

Mode:

- static – default pentru gcc
- dynamic
- guided
- auto
- runtime

Loop scheduling

Mode – static, chunk=4

- munca este distribuita circular

```
schedule(static, 4):
```

```
*****
      *****
    *****
  *****
*****
```

Loop scheduling

Mode – dynamic

```
schedule(dynamic, 1):
```

```
  *   *   *           *   *   *   *   *           *   *   *   *
* * *   * *   *   *   *   *   *   *   *   *   *   *   *   *
*   *   *   *   *   *   *   *   *   *   *   *   *   *
*   *   *   *   *   *   *   *   *   *   *   *   *   *
```

```
schedule(dynamic, 4):
```

```
      *****          *****          *****
*****          *****          *****          *****          *****
      *****          *****          *****          *****          *****
          *****          *****          *****          *****          *****
              *****          *****          *****          *****
```

Loop scheduling

Mode – guided, min chunk_size work

```
schedule(guided, 2):
```

```
*****  
                                     *****  
                                     **  
               *****  
               ***  
               **  
*****  
*****  
*****
```

```
schedule(guided, 4):
```

```
*****  
*****  
*****  
*****  
*****  
*****  
*****
```

Reduction

#pragma omp for reduction(+: variable)

Operatori: +, -, *, &, |, ^, &&, ||

Exemplu:

sum = 0;

*#pragma omp parallel for shared(a) reduction(+: **sum**)*

for (i = 0; i < 10; i++)

{

***sum** += a[i]*

}

Task-uri

1) Pornind de la ex1.c:

1) Compilati programul (`gcc -fopenmp ex1.c -o ex1`)

2) Rulati programul de mai multe ori. Ce observati?

3) Modificati codul schimband politica de scheduling in static. Ce observati?

4) Se observa schimbari de performanta?

Task-uri

- 2) Folosind Reduction, paralelizati codul in ex2.c
- 3) Folosind gen_files.sh, generati o lista de fisiere text. Sa se scrie un program paralel ce determina dimensiunea ocupata de acestea pe harddisk. Lista de fisiere poate fi data ca parametru programului.
- 4) Rezolvati punctele 1. si 2. din sectiunea „Activitate Laborator 2”