

CS 6363: Advanced Compiler Construction

Feb 17, 2010

You Name:

1. Given the following loop nest,

```
do j = 1, n-1
  do i = 1, n-1
    ry(i,j) = ry(i,j) - ry(i-1,j) * d
  enddo
enddo
do j = 1, n-1
  do i = 1, n-1
    rx(i,j) = rx(i,j) - rx(i,j-1) * ry(i,j)
  enddo
enddo
do j = 1, n-1
  do i = 1, n-1
    x(i,j) = x(i,j) + rx(i,j)
  enddo
enddo
do j = 1, n-1
  do i = 1, n-1
    y(i,j) = y(i,j) + ry(i,j)
  enddo
enddo
```

- (a) Give the loop dependence graph for the above sequence of loop nests. Indicate which loop nests are parallel and which are sequential by categorizing the loop dependence graph nodes into different types.
- (b) Apply loop fusion to the loop dependence graph. Give the transformed code after loop fusion.