

HW8.2. Parallelism Principles

The Hamming distance between two bitstrings of equal length is the number of locations in which the bits differ. For example, `hamming(0b1011101, 0b1001001) == 2`.

Consider the following implementation of `Hamming`:

```
uint32_t hamming(uint32_t x, uint32_t y) {
    uint32_t mask, ham_dist = 0;
    #pragma omp for
    for (int i = 0; i <= 31; i++) {
        mask = 1 << i;
        if ((y & mask) != (x & mask))
            ham_dist++;
    }
    return ham_dist;
}
```

Q1: For each variable, determine if it can be made shared, or must be private in order for the above code to work properly. Note that we generally prefer to use shared variables when possible.

Q1.1: `x`

☐ shared

☐ private

Q1.2: `y`

☐ shared

☐ private

Q1.3: `mask`

☐ shared

☐ private

Q1.4: `i`

☐ shared

☐ private

Q1.5: Is a data race possible on any variable that must be shared? If so, what variables cause the data race?

☐ (a) `x`

☐ (b) `y`

☐ (c) `mask`

☐ (d) `i`

☐ (e) `ham_dist`

☐ (f) A data race is not possible

Select all possible options that apply. ?

Save & Grade 20 attempts left

Save only

Additional attempts available with new variants ?

Homework 8

Assessment overview

Total points: 0/100

Score: 0%

Question

Value: 10

History:

Awarded points: 0/10

Report an error in this question ?

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Attached files

No attached files

Attach a file ?

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