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Lab Experiment 3

1. Sample first private

   Code:

```c
#include <stdio.h>
#include <omp.h>


int main()
{
    int d=5;
    int a[] = {1,2,3,4};
    int b[] = {1,2,3,4};
    int c[4];

    #pragma omp parallel for firstprivate(d)
    for(int j=0; j<4; j++)
    {
        c[j] = a[j] + b[j] + d;
        printf("%d\n", c[j]);
    }
    return 0;
}
```

Output:

```
C:\Users\menon\Desktop>gcc -fopenmp firstprivate.c

C:\Users\menon\Desktop>a.exe
9
7
11
13

C:\Users\menon\Desktop>a.exe
9
13
7
11

C:\Users\menon\Desktop>
```

2. Sample last private

Code:

```c
#include <stdio.h>
#include <omp.h>


int main()
{
    int d=5;
    int a[] = {1,2,3,4};
    int b[] = {1,2,3,4};
    int c[4];
    int max;

    #pragma omp parallel for firstprivate(d) lastprivate(max)
    for(int j=0; j<4; j++)
    {
        c[j] = a[j] + b[j] + d;
        printf("%d\n", c[j]);
        max = c[j];
    }
    printf("Max = %d\n", max);
    return 0;
}
```

Output:

```
C:\Users\menon\Desktop>gcc -fopenmp lastprivate.c

C:\Users\menon\Desktop>a.exe
7
9
11
13
Max = 13

C:\Users\menon\Desktop>a.exe
9
7
13
11
Max = 13

C:\Users\menon\Desktop>a.exe
9
11
7
13
Max = 13

C:\Users\menon\Desktop>
```

3. Sample first private with modification to d variable

Code:

```c
#include <stdio.h>
#include <omp.h>


int main()
{
    int d=5;
    int a[] = {1,2,3,4};
    int b[] = {1,2,3,4};
    int c[4];

    #pragma omp parallel for firstprivate(d)
    for(int j=0; j<4; j++)
    {
        d = d+j;
        c[j] = a[j] + b[j] + d;
        printf("c[]: %d\td: %d\n", c[j], d);
    }
    return 0;
}
```

Output:

```
C:\Users\menon\Desktop>gcc -fopenmp firstprivate_with_d_mod.c

C:\Users\menon\Desktop>a.exe
c[]: 7  d: 5
c[]: 13 d: 7
c[]: 10 d: 6
c[]: 16 d: 8

C:\Users\menon\Desktop>a.exe
c[]: 10 d: 6
c[]: 7  d: 5
c[]: 13 d: 7
c[]: 16 d: 8

C:\Users\menon\Desktop>
```

4. Sum of array of c[i]

Code:

```c
#include <stdio.h>
#include <omp.h>

int main()
{
    int a[] = {1,2,3,4};
    int b[] = {1,2,3,4};
    int c[4];
    int ini=0;
    int sum;

    #pragma omp parallel for shared(ini) lastprivate(sum)
    for(int j=0; j<4; j++)
    {
        c[j] = a[j] + b[j];
        ini = ini + c[j];
        sum = ini;
        printf("c[%d]: %d\tSum: %d\tIni: %d\n", j, c[j], sum, ini);
    }
    printf("Sum = %d\n", sum);
    return 0;
}
```

Output:

```
C:\Users\menon\Desktop>gcc -fopenmp lastprivate_sum_of_c.c

C:\Users\menon\Desktop>a.exe
c[0]: 2 Sum: 2  Ini: 2
c[2]: 6 Sum: 8  Ini: 8
c[1]: 4 Sum: 12 Ini: 12
c[3]: 8 Sum: 20 Ini: 20
Sum = 20

C:\Users\menon\Desktop>
```