

### Lab Experiment 7

#### 1. Sample - Barrier

Code:

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

int main()
{
    int n = 7;
    int a[] = {1,7,3,9,2,4,12};
    int y[n], b[n];

    #pragma omp barrier
    for(int i = 1; i < n; i++)
    {
        b[i] = (a[i-1] + a[i]) / 2.0;
        printf("b[%d] = %d\n", i, b[i]);
    }

    #pragma omp single
        printf("After Barrier");
}
```

Output:

```
C:\Users\menon\Desktop>gcc -fopenmp 17_barrier.c
C:\Users\menon\Desktop>a.exe
b[1] = 4
b[2] = 5
b[3] = 6
b[4] = 5
b[5] = 3
b[6] = 8
After Barrier
C:\Users\menon\Desktop>_
```

## 2. Sample - nowait

Code:

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

int main()
{
    int a[] = {1, 2, 3, 4, 5};
    float b[5], y[5];
    int z[] = {64, 4, 196, 123, 224};
    #pragma omp parallel
    {
        #pragma omp for nowait
        for(int i = 1; i < 5; i++)
        {
            b[i] = (a[i] + a[i-1]) / 2.0;
            printf("b[%d] = %f\n", i, b[i]);
        }
        #pragma omp for nowait
        for(int i = 0; i < 5; i++)
        {
            y[i] = z[i]/2.0;
            printf("y[%d] = %f\n", i, y[i]);
        }
    }
    return 0;
}
```

Output:

```
C:\Users\menon\Desktop>gcc -fopenmp l7_nowait.c

C:\Users\menon\Desktop>a.exe
b[4] = 4.500000
y[3] = 61.500000
b[1] = 1.500000
y[0] = 32.000000
y[4] = 112.000000
b[2] = 2.500000
y[1] = 2.000000
b[3] = 3.500000
y[2] = 98.000000

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

### 3. Sample – Parallel For (Nested)

Code:

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

int main()
{
    int n = 3;
    int a[3][3] = {
        {1,2,3},
        {4,5,6},
        {7,8,9}
    };

    for(int i=1;i<n;i++)
    {
        #pragma omp parallel for
        for(int j=0;j<n;j++)
        {
            a[i][j] = a[i-1][j] + 2;
        }
    }

    for(int i=0;i<n;i++)
    {
        for(int j=0;j<n;j++)
        {
            printf("a[%d][%d] = %d\n", i, j, a[i][j]);
        }
    }
}
```

Output:

```
C:\Users\menon\Desktop>gcc -fopenmp l7_parallelfor.c
```

```
C:\Users\menon\Desktop>a.exe
```

```
a[0][0] = 1
```

```
a[0][1] = 2
```

```
a[0][2] = 3
```

```
a[1][0] = 3
```

```
a[1][1] = 4
```

```
a[1][2] = 5
```

```
a[2][0] = 5
```

```
a[2][1] = 6
```

```
a[2][2] = 7
```

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