

NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA SURATHKAL
DEPARTMENT OF INFORMATION TECHNOLOGY
IT 301 Parallel Computing
14th September 2021
Lab 6

Total Marks [10]

(1) Execute following code and observe the working of task directive.

Check the result by removing if() clause with task. [1+1 = 2 Marks]

```
#include<stdio.h>
#include<omp.h>
int fibo(int n);
int main(void)
{
    int n,fib;
    double t1,t2;
    printf("Enter the value of n:\n");
    scanf("%d",&n);
    t1=omp_get_wtime();
    #pragma omp parallel shared(n)
    {
        #pragma omp single
        {
            fib=fibo(n);
        }
    }
    t2=omp_get_wtime();
    printf("Fib is %d\n",fib);
    printf("Time taken is %f s \n",t2-t1);
    return 0;
}

int fibo(int n)
{
    int a,b;
    if(n<2)
        return n;
    else
    {
        #pragma omp task shared(a) if(n>5)
        {
            printf("Task Created by Thread %d\n",omp_get_thread_num());
            a=fibo(n-1);
            printf("Task Executed by Thread %d \ta=%d\n",omp_get_thread_num(),a);
        }
        #pragma omp task shared(b) if(n>5)
        {
            printf("Task Created by Thread %d\n",omp_get_thread_num());
            b=fibo(n-2);
```

```
printf("Task Executed by Thread %d \tb=%d\n",omp_get_thread_num(),b);  
}  
#pragma omp taskwait  
return a+b;  
}
```

(2) Design a parallel program to find a given element in an unsorted array using Binary Search.

Take a large number of elements up to the maximum possible size. Make use of openmp task directive. Use random function to initialise values.

Compare the time taken for searching an element in best case , worst case and average case.

(i) Sequential Binary Search program **[3 Marks]**

(ii) parallel binary search program **[5 Marks]**