

PADP lab Program 1b

**Code:**

```
#include<stdio.h>

#include<mpi.h>

#include<stdlib.h>

#define SEED 3655942


int main(int argc, char **argv){
int iter = 10000;

int i, reduced_count,reduced_iter, count = 0;

int rank;

double pi,x,y,z,t;

MPI_Init(&argc,&argv);

MPI_Comm_rank(MPI_COMM_WORLD,&rank);

if(rank==0){
t = MPI_Wtime();
}

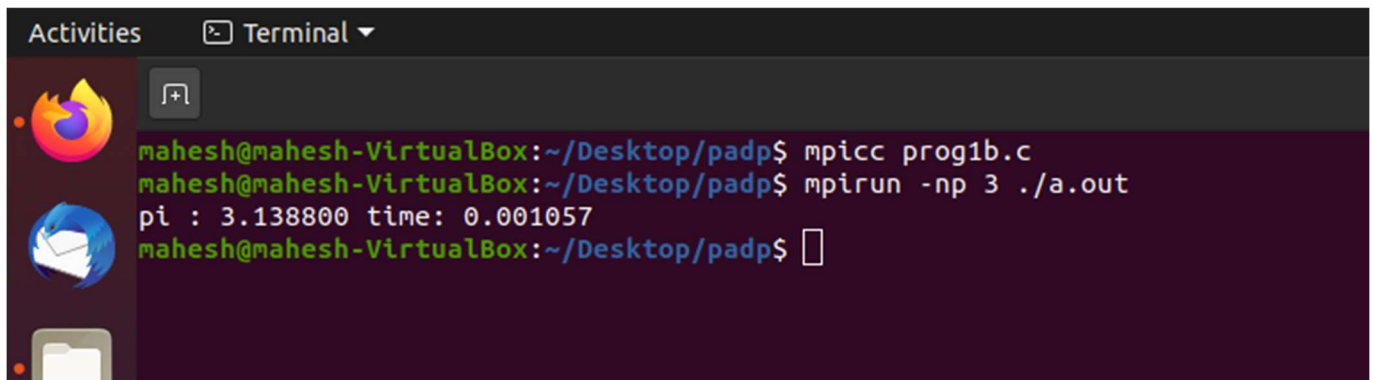
if(rank>0){
srand(SEED+rank*10);

for(i=0;i<iter;i++){
x = (double)rand()/RAND_MAX;
y = (double)rand()/RAND_MAX;
z = x*x + y*y;
if(z<=1) count++;
}
}

MPI_Reduce(&count,&reduced_count,1,MPI_INT,MPI_SUM,0,MPI_COMM_WORLD);
```

```
MPI_Reduce(&iter,&reduced_iter,1,MPI_INT,MPI_SUM,0,MPI_COMM_WORLD);  
reduced_iter = reduced_iter - iter;  
if(rank==0){  
t = MPI_Wtime() - t;  
pi = (double)reduced_count/((double)reduced_iter * 4;  
printf("pi : %lf time: %lf\n",pi,t);  
}  
MPI_Finalize();  
return 0;  
}
```

## Output:



The screenshot shows a terminal window titled 'Terminal' with a dark background. The prompt is 'mahesh@mahesh-VirtualBox:~/Desktop/padp\$'. The user enters 'mpicc prog1b.c' and then 'mpirun -np 3 ./a.out'. The output of the program is 'pi : 3.138800 time: 0.001057'. The prompt returns to 'mahesh@mahesh-VirtualBox:~/Desktop/padp\$'.

```
mahesh@mahesh-VirtualBox:~/Desktop/padp$ mpicc prog1b.c  
mahesh@mahesh-VirtualBox:~/Desktop/padp$ mpirun -np 3 ./a.out  
pi : 3.138800 time: 0.001057  
mahesh@mahesh-VirtualBox:~/Desktop/padp$
```