Q. 5 Write any program and apply compiler optimization options (-O1, -O2, -O3 ) and note down timings (apply same dataset)

#include <stdio.h>

#include <stdlib.h>

void main()

{

int num, j, flag;

printf("Enter a number \n");

scanf("%d", &num);

if (num <= 1)

{

printf("%d is not a prime numbers \n", num);

exit(1);

}

flag = 0;

for (j = 2; j <= num / 2; j++)

{

if ((num % j) == 0)

{

flag = 1;

break;

}

}

if (flag == 0)

printf("%d is a prime number \n", num);

else

printf("%d is not a prime number \n", num);

}

Output

**lab320@lab320-HP-ProDesk-400-G3-SFF:~/HPC\_POST$ gcc -o1 fact.c**

**lab320@lab320-HP-ProDesk-400-G3-SFF:~/HPC\_POST$ time ./a.out**

Enter a number

5

5 is a prime number

real 0m2.632s

user 0m0.001s

sys 0m0.000s

**lab320@lab320-HP-ProDesk-400-G3-SFF:~/HPC\_POST$ gcc -o2 fact.c**

**lab320@lab320-HP-ProDesk-400-G3-SFF:~/HPC\_POST$ time ./a.out**

Enter a number

5

5 is a prime number

real 0m2.744s

user 0m0.001s

sys 0m0.000s

**lab320@lab320-HP-ProDesk-400-G3-SFF:~/HPC\_POST$ gcc -o3 fact.c**

**lab320@lab320-HP-ProDesk-400-G3-SFF:~/HPC\_POST$ time ./a.out**

Enter a number

5

5 is a prime number

real 0m1.448s

user 0m0.001s

sys 0m0.000s

