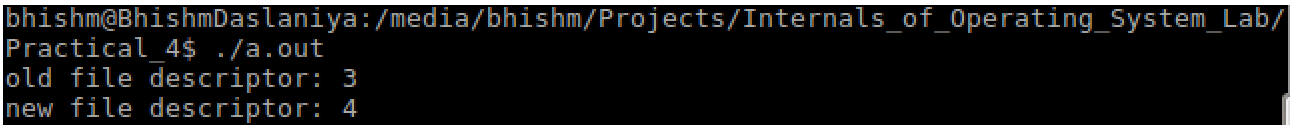
Practical - 4

Aim : Write a program uses dup() and dup2() system call that will prove the following sentence:
“dup() always uses the smallest available (unused) file descriptor whereas dup2() uses new file descriptor.”

Code: (dup())

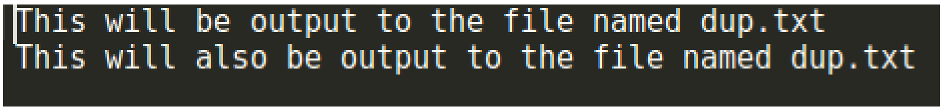
```
#include<stdio.h>
#include<fcntl.h>
#include<errno.h>
#include<unistd.h>
extern int errno;
int main()
{
   int file_desc = open("dup.txt", O_WRONLY | O_APPEND | O_CREAT);
   if(file_desc < 0)
      printf("Error opening the file\n");

         int copy_desc = dup(file_desc);
   write(copy_desc,"This will be output to the file named dup.txt\n", 46);
   write(file_desc,"This will also be output to the file named dup.txt\n", 51);
         printf("old file descriptor: %d \nnew file descriptor: %d \n",file_desc,copy_desc);

   return 0;
}
```

Output:



```
bhishm@BhishmDaslaniya:/media/bhishm/Projects/Internals_of_Operating_System_Lab/
Practical_4$ ./a.out
old file descriptor: 3
new file descriptor: 4
```

dup.txt:

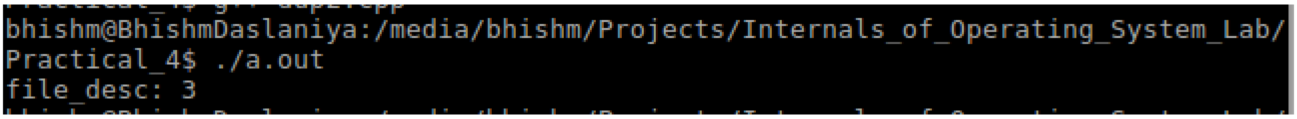


```
This will be output to the file named dup.txt
This will also be output to the file named dup.txt
```

Code: (dup2())

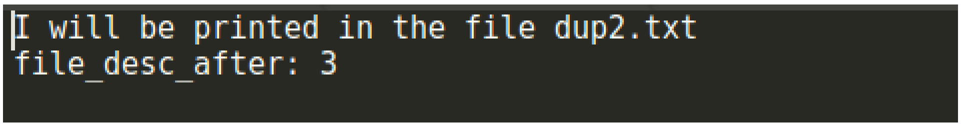
```
#include<stdio.h>
#include<fcntl.h>
#include<errno.h>
#include<unistd.h>
extern int errno;
int main()
{
         int file_desc = open("dup2.txt",O_WRONLY | O_APPEND | O_CREAT);
         // here the newfd is the file descriptor of stdout (i.e. 1)
         printf("file_desc: %d\n", file_desc);
   dup2(file_desc, 1);
   // Following lines will be printed in file dup2
   printf("I will be printed in the file dup2.txt\n");
         printf("file_desc_after: %d\n", file_desc);
   return 0;
}
```

Output:



```
bhishm@BhishmDaslaniya:/media/bhishm/Projects/Internals_of_Operating_System_Lab/
Practical_4$ ./a.out
file_desc: 3
```

dup2.txt:



```
I will be printed in the file dup2.txt
file_desc_after: 3
```

Conclusion: From this practical I have learnt about dup() and dup2() system calls and how it works internally and also come to know that dup() always uses the smallest available (unused) file descriptor whereas dup2() uses new file descriptor.