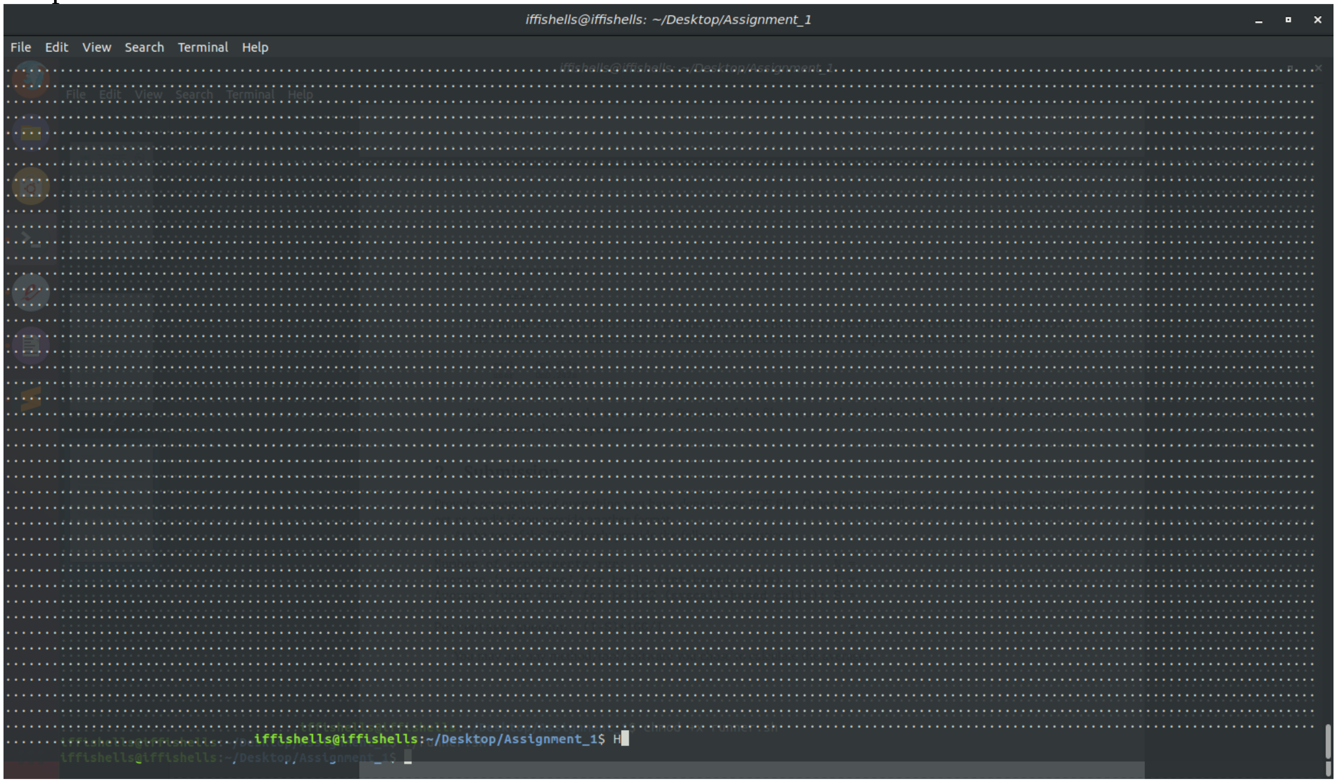
Number of experiments run: N =50
Average ‘user time’ for hello (int-based calls): I = 0.15576

Average ‘user time’ for hello2 (syscall-based calls): S =0.11647999999999997

Percentage speedup: (I-S)*100/I = 25.21828454031846

Output of the code :


iffishells@iffishells: ~/Desktop/Assignment_1
File Edit View Search Terminal Help

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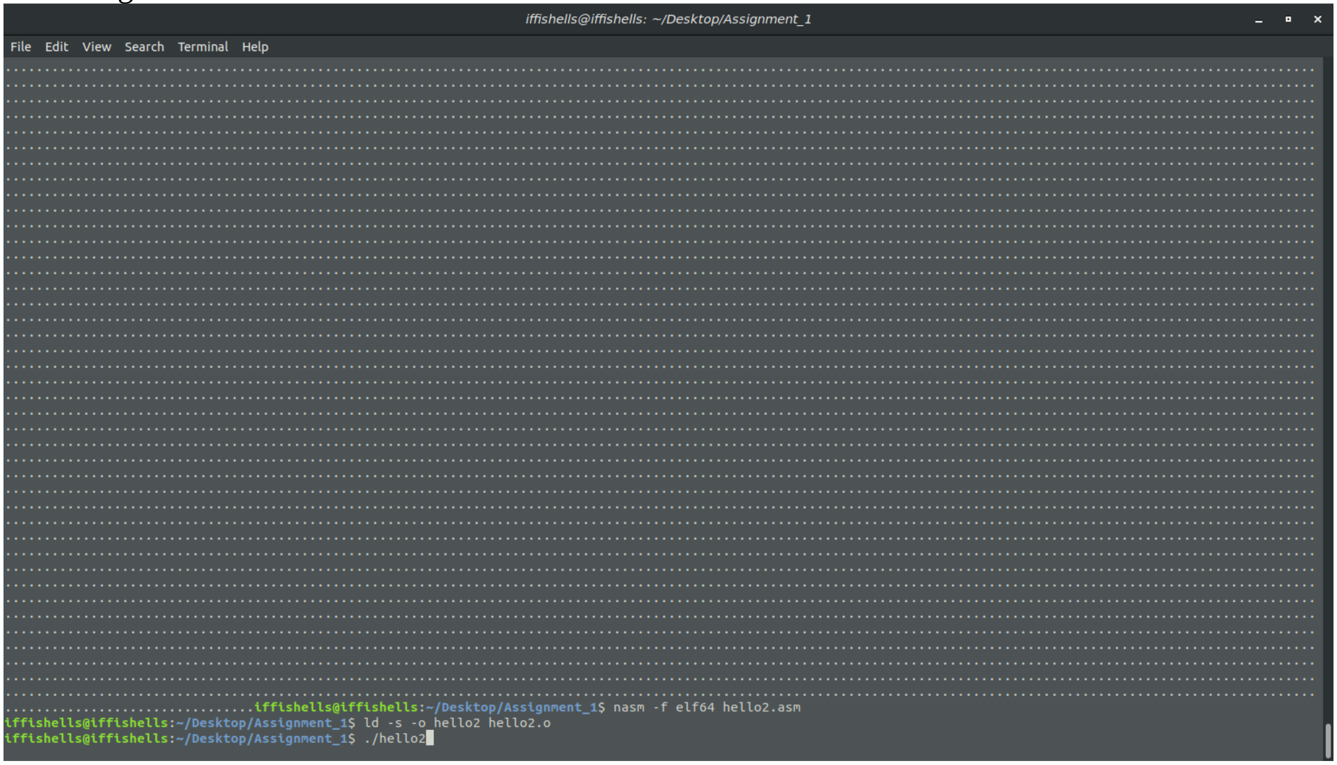
................................iffishells@iffishells:~/Desktop/Assignment_1$ H
```

Executing command :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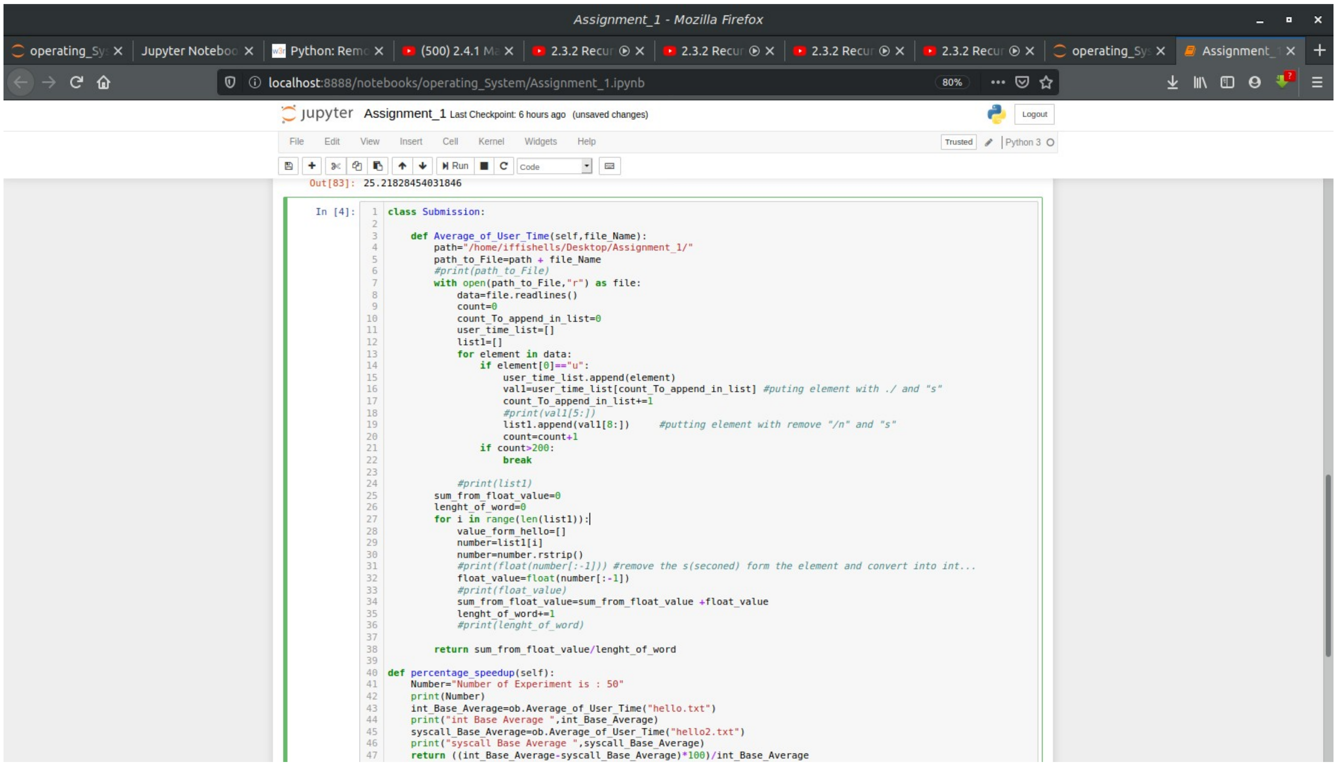
```
................................iffishells@iffishells:~/Desktop/Assignment_1$ nasm -f elf64 hello2.asm
iffishells@iffishells:~/Desktop/Assignment_1$ ld -s -o hello2 hello2.o
iffishells@iffishells:~/Desktop/Assignment_1$ ./hello2
```

code to Extract data from file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localhost:8888/notebooks/operating_System/Assignment_1.ipynb
80%
jupyter
Assignment_1 Last Checkpoint: 6 hours ago (unsaved changes)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3
Run
Code

```
Out[83]: 25.21828454031846
```

```
In [4]:
class Submission:

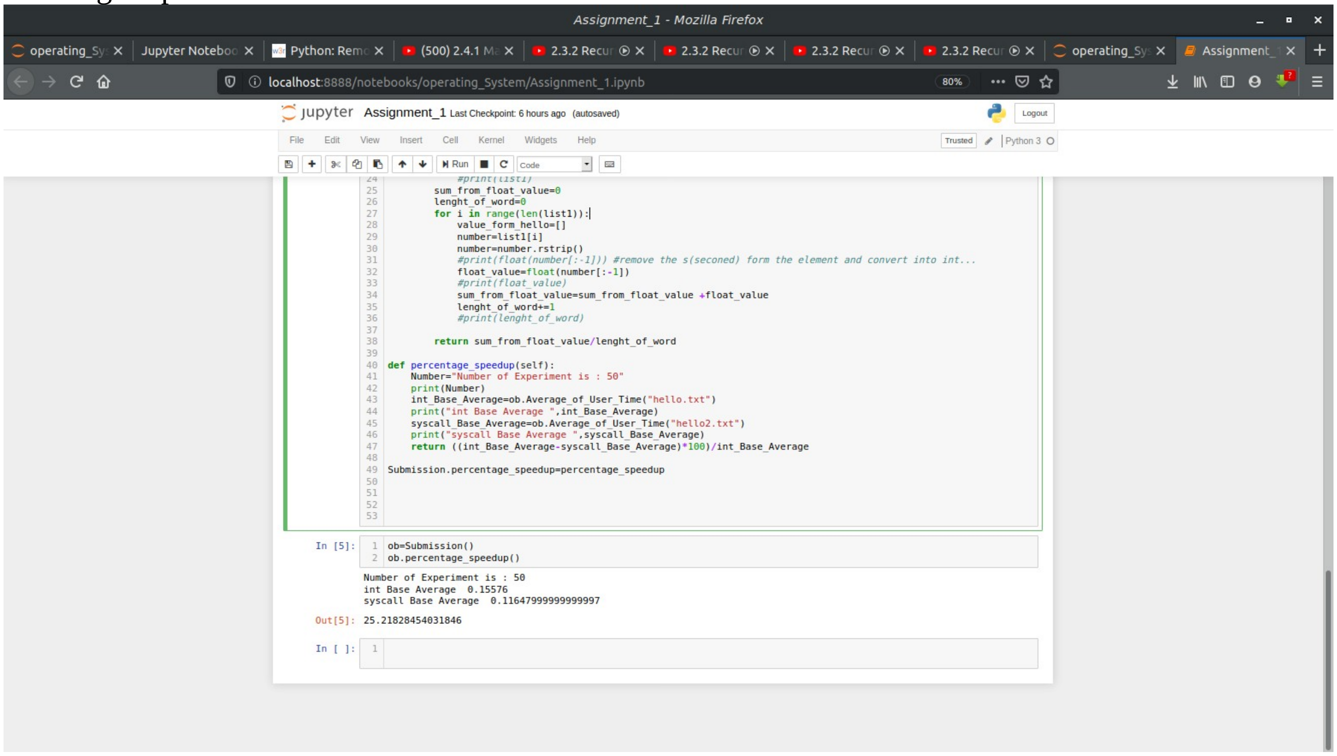
    def Average_of_User_Time(self,file_Name):
        path="/home/iffishells/Desktop/Assignment_1/"
        path_to_File=path + file_Name
        #print(path_to_File)
        with open(path_to_File,"r") as file:
            data=file.readlines()
            count=0
            count_To_append_in_list=0
            user_time_list=[]
            list1=[]
            for element in data:
                if element[0]=="u":
                    user_time_list.append(element)
                    val1=user_time_list[count_To_append_in_list] #puting element with ./ and "s"
                    count_To_append_in_list+=1
                    #print(val1[5:])
                    list1.append(val1[8:])     #putting element with remove "/n" and "s"
                    count=count+1
                if count>200:
                    break

            #print(list1)
        sum_from_float_value=0
        lenght_of_word=0
        for i in range(len(list1)):
            value_form_hello=[]
            number=list1[i]
            number=number.rstrip()
            #print(float(number[:-1])) #remove the s(seconed) form the element and convert into int...
            float_value=float(number[:-1])
            #print(float_value)
            sum_from_float_value=sum_from_float_value +float_value
            lenght_of_word+=1
            #print(lenght_of_word)

        return sum_from_float_value/lenght_of_word

def percentage_speedup(self):
    Number="Number of Experiment is : 50"
    print(Number)
    int_Base_Average=ob.Average_of_User_Time("hello.txt")
    print("int Base Average ",int_Base_Average)
    syscall_Base_Average=ob.Average_of_User_Time("hello2.txt")
    print("syscall Base Average ",syscall_Base_Average)
    return ((int_Base_Average-syscall_Base_Average)*100)/int_Base_Average
```

showing output



Assignment_1 - Mozilla Firefox
localhost:8888/notebooks/operating_System/Assignment_1.ipynb
jupyter Assignment_1 Last Checkpoint: 6 hours ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3
Run
Code

```python
        #print(list1)
        sum_from_float_value=0
        lenght_of_word=0
        for i in range(len(list1)):
            value_form_hello=[]
            number=list1[i]
            number=number.rstrip()
            #print(float(number[:-1])) #remove the s(seconed) form the element and convert into int...
            float_value=float(number[:-1])
            #print(float_value)
            sum_from_float_value=sum_from_float_value +float_value
            lenght_of_word+=1
            #print(lenght_of_word)

        return sum_from_float_value/lenght_of_word

def percentage_speedup(self):
    Number="Number of Experiment is : 50"
    print(Number)
    int_Base_Average=ob.Average_of_User_Time("hello.txt")
    print("int Base Average ",int_Base_Average)
    syscall_Base_Average=ob.Average_of_User_Time("hello2.txt")
    print("syscall Base Average ",syscall_Base_Average)
    return ((int_Base_Average-syscall_Base_Average)*100)/int_Base_Average

Submission.percentage_speedup=percentage_speedup
```

In [5]:

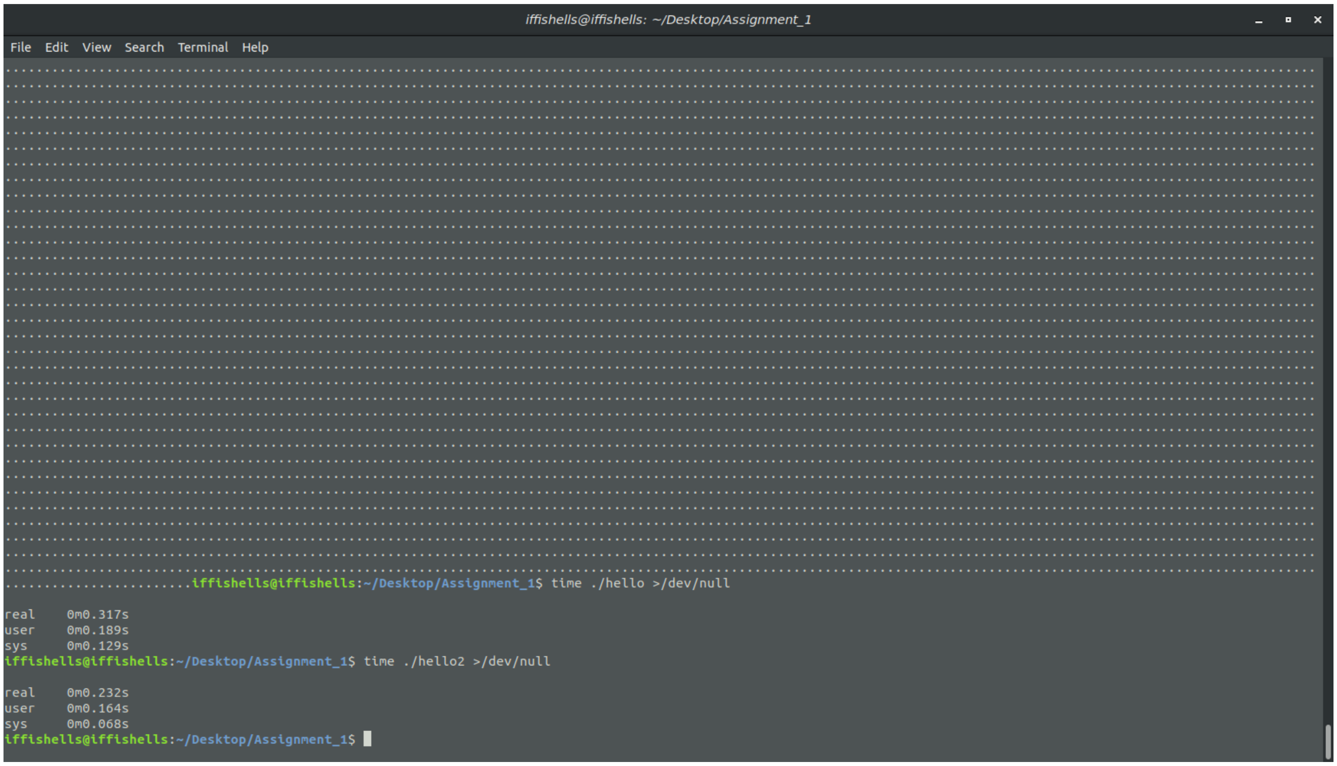
```python
ob=Submission()
ob.percentage_speedup()
```

```
Number of Experiment is : 50
int Base Average  0.15576
syscall Base Average  0.11647999999999997
```

Out[5]: 25.21828454031846

In [ ]:

show user time



iffishells@iffishells: ~/Desktop/Assignment_1
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........................iffishells@iffishells:~/Desktop/Assignment_1$ time ./hello >/dev/null

real	0m0.317s
user	0m0.189s
sys	0m0.129s
iffishells@iffishells:~/Desktop/Assignment_1$ time ./hello2 >/dev/null

real	0m0.232s
user	0m0.164s
sys	0m0.068s
iffishells@iffishells:~/Desktop/Assignment_1$ 
```