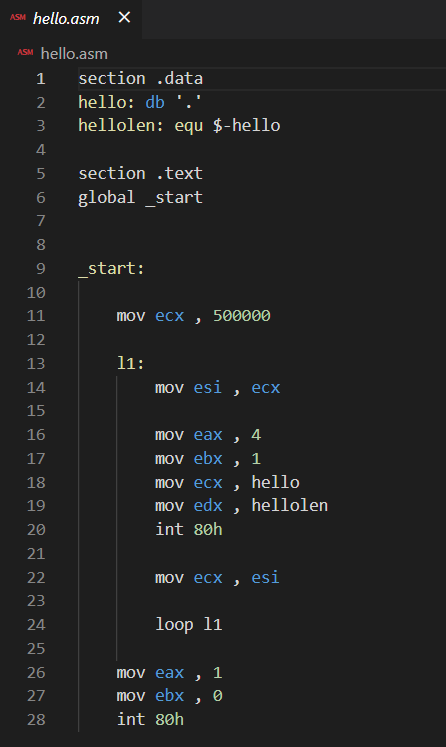
**Saad Ahmad**

**20P-0051**

**BS (CS) – 4A**

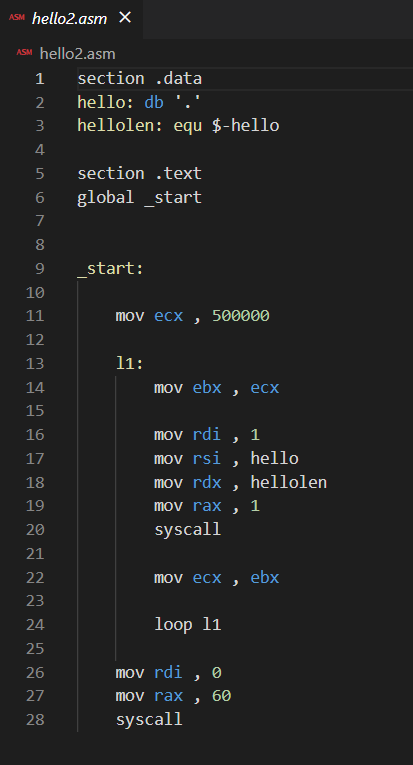
**Code #1**

Using **int 80h**

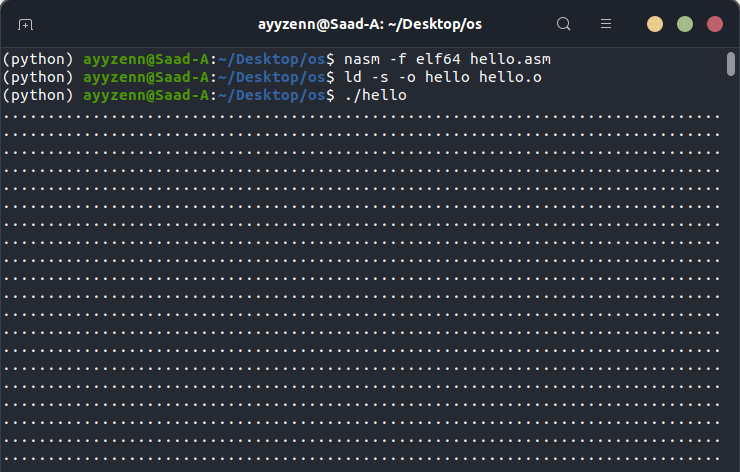


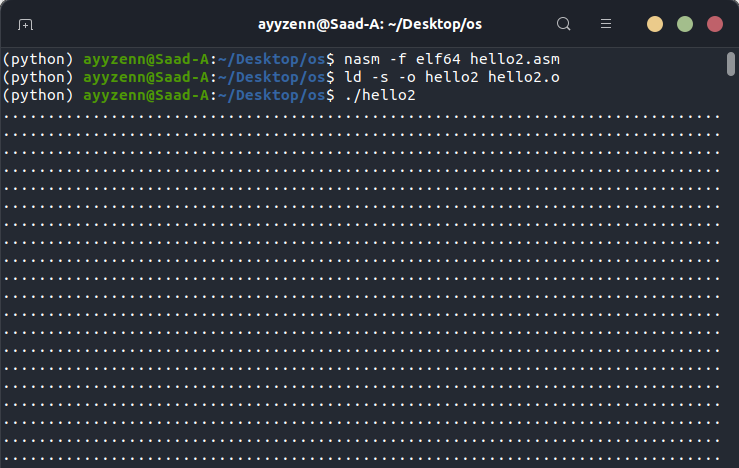
**Code #2**

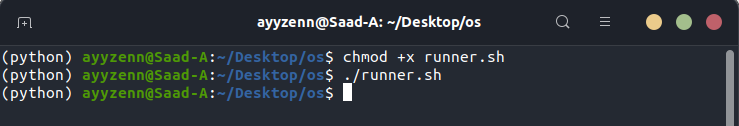
Using **syscall**

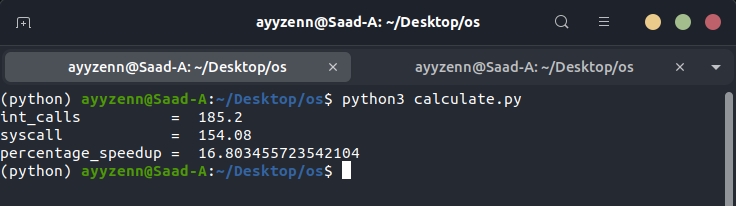


**Terminal commands:**









**Number of experiments run (N):** 50

**Average “user time” for hello (int-based calls) (I):** 185.2

**Average ‘user time’ for hello2 (syscall-based calls) (S):** 154.08

**Percentage speedup [(I-S)\*100/I]:** 16 .803455723542104

**Code for calculating average for int, syscall and percentage speed up is given below:**

def numbers(file\_name):

list1 = []

list2 = []

list3 = []

with open(file\_name, 'r') as f:

for i in f:

if i == '\n':

continue

else:

list1.append(i)

for j in list1:

if j[0] == 'u':

list2.append(j)

else:

continue

for i in list2:

num = int(i[9:12])

list3.append(num)

sum\_all = 0

for i in list3:

sum\_all += i

result = sum\_all/50

return result

int\_calls = numbers("hello.txt")

syscall = numbers("hello2.txt")

print("int\_calls = " , int\_calls)

print("syscall = " , syscall)

percentage\_speedup = (int\_calls - syscall) \* 100 / int\_calls

print("percentage\_speedup = " , percentage\_speedup)