NAME: ASJID TAHIR

ROLL NO: 19P-0085

COURSE: OPERATING SYSTEM

ASSIGNMENT NO: 01

Speed test comparison b/w Sys-calls & Int-calls:

- Number of experiments run N =**50**
- Average "User-time" for hello (**int**-based calls) I =**1.12**
- Average "User-time" for hello1 (**Sys**-based calls) S =**1.1**
- Percentage speedup: (I-S)*100/I = **1.785674**

hello1.asm — nasm-lab — Visual Studio Code

Activities — Visual Studio Code — اكتوبر 9 01:10

EXPLORER

NASM-LAB
- rdoff
- AFD.EXE
- cwsdpmi.doc
- cwsdpmi.exe
- hello
- hello.asm
- hello.o
- hello.txt
- hello1
- hello1.asm
- hello1.o
- hello2.txt
- LICENSE
- nasm.exe
- nasmdoc.txt
- ndisasm.exe
- README
- README.md
- runner.sh
- setup.sh

```asm
5    global _start
6    _start:
7    mov ecx, 5000000
8    l1:
9    mov ebx,ecx
10   mov rdi,1
11   mov rsi,hello
12   mov rdx,helloLen
13   mov rax,1
14   syscall
15
16   mov ecx,ebx
17   loop l1
18
19   mov rdi,0
20   mov rax,60
21   syscall
22
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   **TERMINAL**

```
asjid@asjid-Vostro-14-3468:~/nasm-lab$ nasm -f elf64 -o hello1.o hello1.asm
asjid@asjid-Vostro-14-3468:~/nasm-lab$ nasm -f elf64 -o hello.o hello.asm
asjid@asjid-Vostro-14-3468:~/nasm-lab$ ld -s -o hello1 hello1.o
asjid@asjid-Vostro-14-3468:~/nasm-lab$ ld -s -o hello hello.o
asjid@asjid-Vostro-14-3468:~/nasm-lab$ chmod +x runner.sh
asjid@asjid-Vostro-14-3468:~/nasm-lab$ ./runner.sh
asjid@asjid-Vostro-14-3468:~/nasm-lab$
```

bash
bash
bash

Ln 22, Col 1   Spaces: 4   UTF-8   LF   x86 and x86_64 Assembly

---

runner.sh — nasm-lab — Visual Studio Code

Activities — Visual Studio Code — اكتوبر 9 01:11

EXPLORER

NASM-LAB
- rdoff
- AFD.EXE
- cwsdpmi.doc
- cwsdpmi.exe
- hello
- hello.asm
- hello.o
- hello.txt
- hello1
- hello1.asm
- hello1.o
- hello2.txt
- LICENSE
- nasm.exe
- nasmdoc.txt
- ndisasm.exe
- README
- README.md
- runner.sh
- setup.sh

```bash
1    #!/bin/bash
2    x=1
3    while [ $x -le 50 ]
4    do
5        (time ./hello2 > /dev/null)   &>> hello2.txt
6        (time ./hello  > /dev/null)   &>> hello.txt
7    x=$(( $x + 1 ))
8    done
9
10
11
12
13
```

Ln 11, Col 1   Spaces: 2   UTF-8   LF   Shell Script

Screenshot 1

Activities — Visual Studio Code — 01:16 اكتوبر 9

hello.txt - nasm-lab - Visual Studio Code

File Edit Selection View Run Terminal Help

EXPLORER

NASM-LAB
- rdoff
- AFD.EXE
- cwsdpmi.doc
- cwsdpmi.exe
- hello
- hello.asm
- hello.o
- hello.txt
- hello1
- hello1.asm
- hello1.o
- hello2.txt
- LICENSE
- nasm.exe
- nasmdoc.txt
- ndisasm.exe
- README
- README.md
- runner.sh
- setup.sh

Tabs: hello.asm hello1.asm hello.txt runner.sh

hello.txt

```
31   user   0m0.000s
32   sys 0m0.000s
33
34   real   0m0.000s
35   user   0m0.000s
36   sys 0m0.000s
37
38   real   0m0.000s
39   user   0m0.000s
40   sys 0m0.000s
41
42   real   0m0.000s
43   user   0m0.000s
44   sys 0m0.000s
45
46   real   0m0.000s
47   user   0m0.000s
48   sys 0m0.000s
49
50   real   0m0.000s
51   user   0m0.000s
52   sys 0m0.000s
53
54   real   0m0.000s
55   user   0m0.000s
56   sys 0m0.000s
57
58   real   0m0.000s
59   user   0m0.000s
60   sys 0m0.000s
61
62   real   0m0.000s
```

Ln 61, Col 1   Spaces: 4   UTF-8   LF   Plain Text

Screenshot 2

Activities — Visual Studio Code — 01:16 اكتوبر 9

hello.txt - nasm-lab - Visual Studio Code
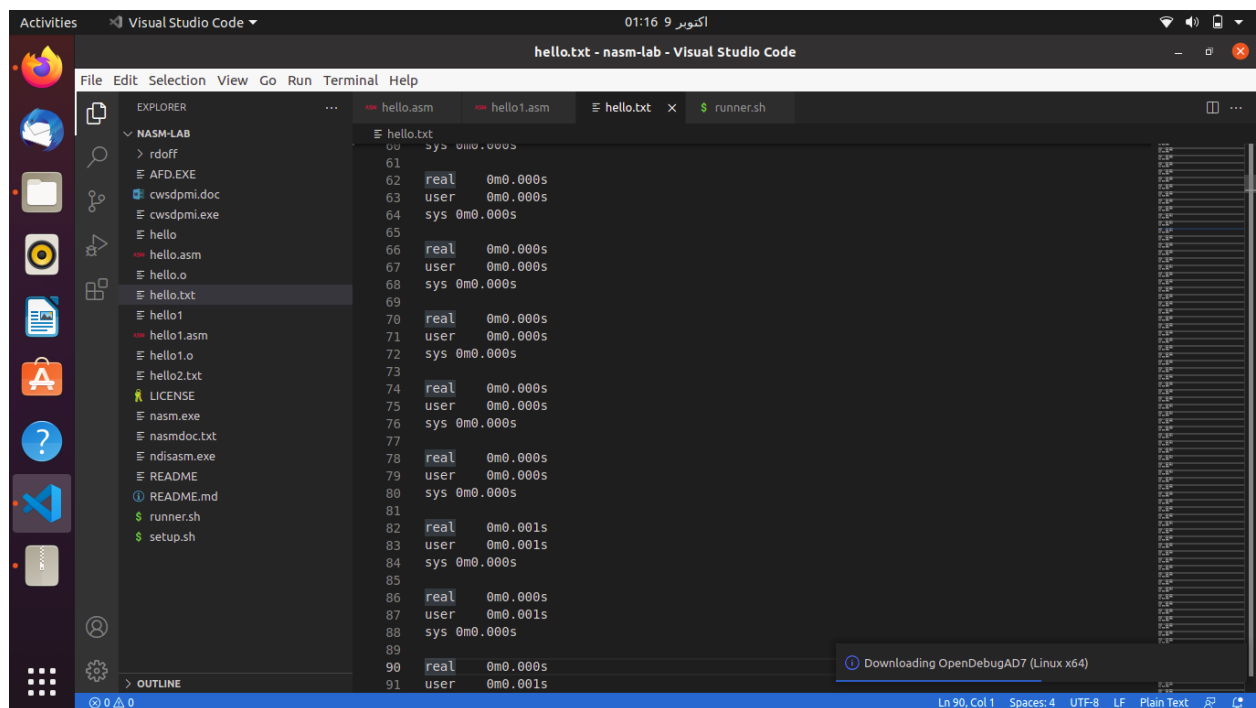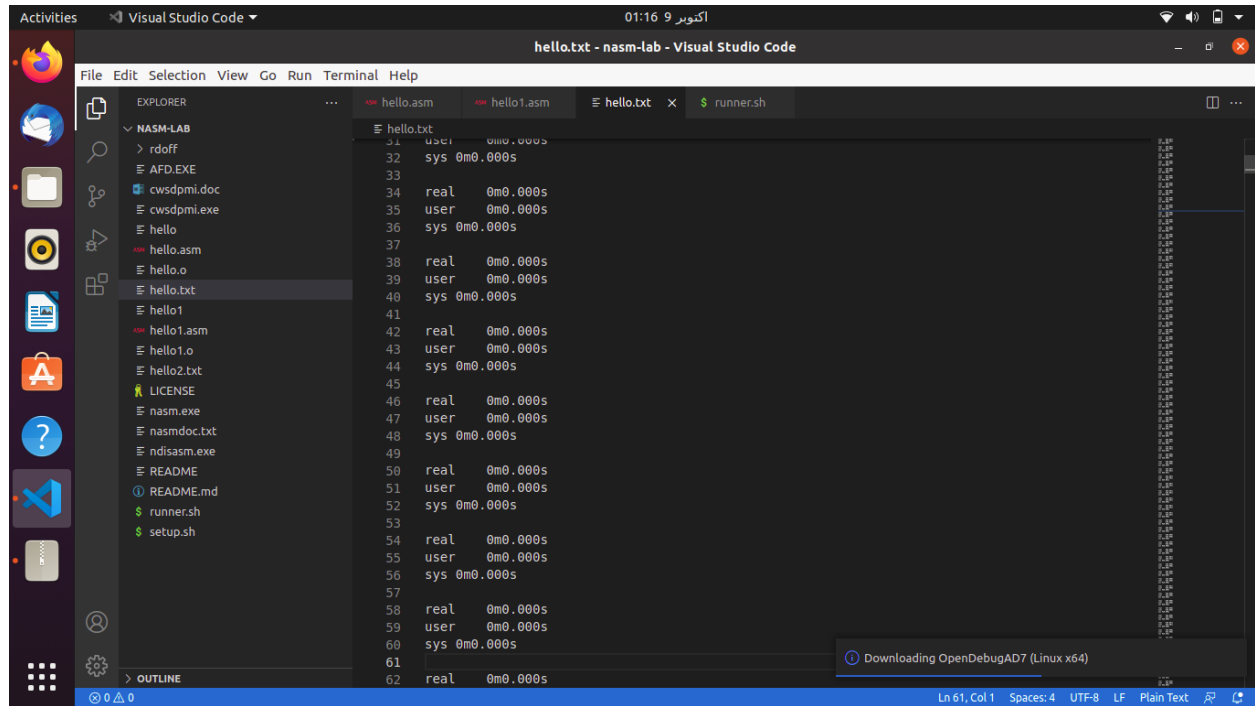
File Edit Selection View Run Terminal Help

EXPLORER

NASM-LAB
- rdoff
- AFD.EXE
- cwsdpmi.doc
- cwsdpmi.exe
- hello
- hello.asm
- hello.o
- hello.txt
- hello1
- hello1.asm
- hello1.o
- hello2.txt
- LICENSE
- nasm.exe
- nasmdoc.txt
- ndisasm.exe
- README
- README.md
- runner.sh
- setup.sh

Tabs: hello.asm hello1.asm hello.txt runner.sh

hello.txt

```
60   sys 0m0.000s
61
62   real   0m0.000s
63   user   0m0.000s
64   sys 0m0.000s
65
66   real   0m0.000s
67   user   0m0.000s
68   sys 0m0.000s
69
70   real   0m0.000s
71   user   0m0.000s
72   sys 0m0.000s
73
74   real   0m0.000s
75   user   0m0.000s
76   sys 0m0.000s
77
78   real   0m0.000s
79   user   0m0.000s
80   sys 0m0.000s
81
82   real   0m0.001s
83   user   0m0.001s
84   sys 0m0.000s
85
86   real   0m0.000s
87   user   0m0.001s
88   sys 0m0.000s
89
90   real   0m0.000s
91   user   0m0.001s
```

Ln 90, Col 1   Spaces: 4   UTF-8   LF   Plain Text

hello2.txt - nasm-lab - Visual Studio Code

File Edit Selection View Go Run Terminal Help

EXPLORER

NASM-LAB
> rdoff
AFD.EXE
cwsdpmi.doc
cwsdpmi.exe
hello
hello.asm
hello.o
hello.txt
hello1
hello1.asm
hello1.o
hello2.txt
LICENSE
nasm.exe
nasmdoc.txt
ndisasm.exe
README
README.md
runner.sh
setup.sh

hello.asm   hello1.asm   hello.txt   hello2.txt ×   runner.sh

hello2.txt

```
45   sys 0m0.000s
46   ./runner.sh: line 5: ./hello2: No such file or directory
47
48   real    0m0.001s
49   user    0m0.001s
50   sys 0m0.000s
51   ./runner.sh: line 5: ./hello2: No such file or directory
52
53   real    0m0.001s
54   user    0m0.001s
55   sys 0m0.000s
56   ./runner.sh: line 5: ./hello2: No such file or directory
57
58   real    0m0.001s
59   user    0m0.000s
60   sys 0m0.001s
61   ./runner.sh: line 5: ./hello2: No such file or directory
62
63   real    0m0.001s
64   user    0m0.001s
65   sys 0m0.000s
66   ./runner.sh: line 5: ./hello2: No such file or directory
67
68   real    0m0.001s
69   user    0m0.001s
70   sys 0m0.000s
71   ./runner.sh: line 5: ./hello2: No such file or directory
72
73   real    0m0.001s
74   user    0m0.001s
75   sys 0m0.000s
76   ./runner.sh: line 5: ./hello2: No such file or directory
```

Ln 1, Col 1   Spaces: 4   UTF-8   LF   Plain Text

---

hello2.txt - nasm-lab - Visual Studio Code

File Edit Selection View Go Run Terminal Help

EXPLORER

NASM-LAB
> rdoff
AFD.EXE
cwsdpmi.doc
cwsdpmi.exe
hello
hello.asm
hello.o
hello.txt
hello1
hello1.asm
hello1.o
hello2.txt
LICENSE
nasm.exe
nasmdoc.txt
ndisasm.exe
README
README.md
runner.sh
setup.sh

hello.asm   hello1.asm   hello.txt   hello2.txt ×   runner.sh

hello2.txt

```
1    ./runner.sh: line 5: ./hello2: No such file or directory
2
3    real    0m0.004s
4    user    0m0.001s
5    sys 0m0.003s
6    ./runner.sh: line 5: ./hello2: No such file or directory
7
8    real    0m0.004s
9    user    0m0.004s
10   sys 0m0.000s
11   ./runner.sh: line 5: ./hello2: No such file or directory
12
13   real    0m0.002s
14   user    0m0.002s
15   sys 0m0.000s
16   ./runner.sh: line 5: ./hello2: No such file or directory
17
18   real    0m0.001s
19   user    0m0.001s
20   sys 0m0.000s
21   ./runner.sh: line 5: ./hello2: No such file or directory
22
23   real    0m0.001s
24   user    0m0.000s
25   sys 0m0.001s
26   ./runner.sh: line 5: ./hello2: No such file or directory
27
28   real    0m0.001s
29   user    0m0.001s
30   sys 0m0.000s
31   ./runner.sh: line 5: ./hello2: No such file or direct
32
```

Ln 1, Col 1   Spaces: 4   UTF-8   LF   Plain Text

hello2.txt - nasm-lab - Visual Studio Code

File Edit Selection View Go Run Terminal Help

EXPLORER

∨ NASM-LAB
  > rdoff
  ≡ AFD.EXE
  🗎 cwsdpmi.doc
  ≡ cwsdpmi.exe
  ≡ hello
  ⊞ hello.asm
  ≡ hello.o
  ≡ hello.txt
  ≡ hello1
  ⊞ hello1.asm
  ≡ hello1.o
  ≡ hello2.txt
  🧍 LICENSE
  ≡ nasm.exe
  ≡ nasmdoc.txt
  ≡ ndisasm.exe
  ≡ README
  ⓘ README.md
  $ runner.sh
  $ setup.sh

hello.asm   hello1.asm   hello.txt   hello2.txt ✕ $ runner.sh

≡ hello2.txt

```
104    user    0m0.001s
105    sys 0m0.000s
106    ./runner.sh: line 5: ./hello2: No such file or directory
107
108    real    0m0.001s
109    user    0m0.001s
110    sys 0m0.000s
111    ./runner.sh: line 5: ./hello2: No such file or directory
112
113    real    0m0.001s
114    user    0m0.001s
115    sys 0m0.000s
116    ./runner.sh: line 5: ./hello2: No such file or directory
117
118    real    0m0.001s
119    user    0m0.001s
120    sys 0m0.000s
121    ./runner.sh: line 5: ./hello2: No such file or directory
122
123    real    0m0.001s
124    user    0m0.001s
125    sys 0m0.000s
126    ./runner.sh: line 5: ./hello2: No such file or directory
127
128    real    0m0.000s
129    user    0m0.001s
130    sys 0m0.000s
131    ./runner.sh: line 5: ./hello2: No such file or directory
132
133    real    0m0.000s
134    user    0m0.000s
135    sys 0m0.000s
```

ⓘ Downloading OpenDebugAD7 (Linux x64)

> OUTLINE

⊗ 0 ⚠ 0   Ln 1, Col 1   Spaces: 4   UTF-8   LF   Plain Text