Module: R2: Intro to RISC-V Assembly
Section: CALL **Task:** Spike Installation

Activity
Spike Installation

1: Running a Simple C Program:

- **Code Snippet:**

```
#include<stdio.h>

int main()
{     int x,y;
      printf("Enter two Numbers (x, y):\n");
      scanf("%d\n", &x);
      printf("\n");
      scanf("%d", &y);

      int sum = 0;
      sum = x + y;

      printf("Sum of x and y is: %d\n", sum);
      return 0;
}
```

Compiling the **main.c** file to create a relocatable object file which will then pass to the linker in the later stage.

```
riscv64-unknown-elf-gcc -c main.c -o main.o
```

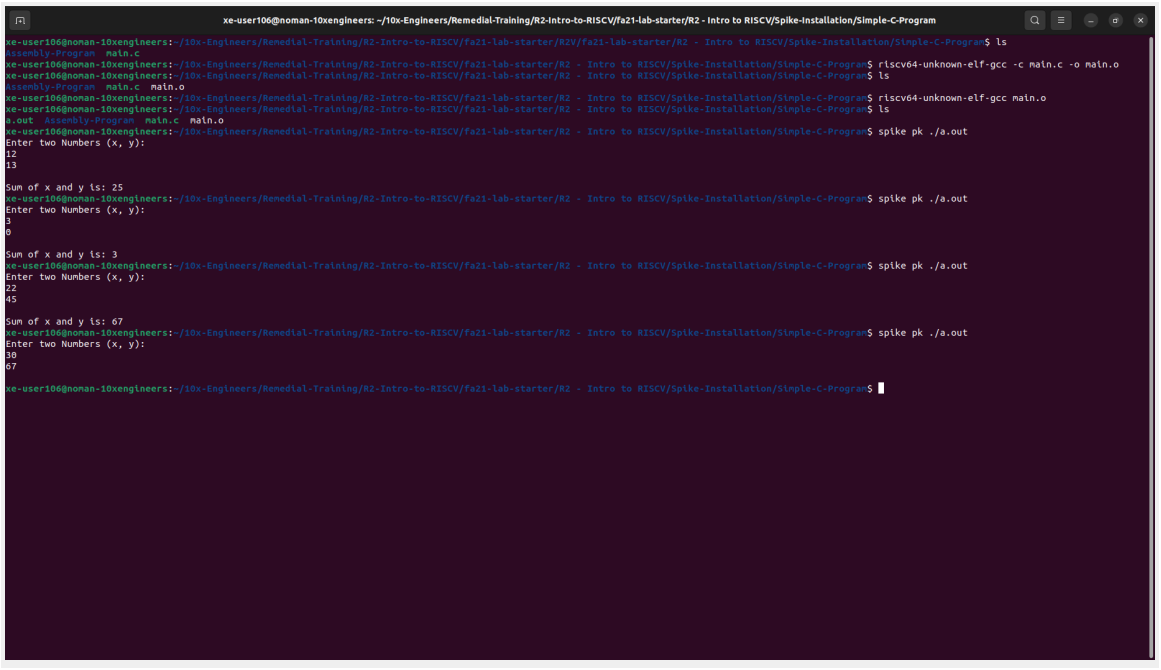
Now, creating the final executable by linking this relocatable object file **main.o** and other necessary standard library files. (It produces a binary executable with .out extension).

```
riscv64-unknown-elf-gcc -c main.c -o main.o
```

Now, running the executable using spike

```
spike pk ./a.out
```

Terminal Output:



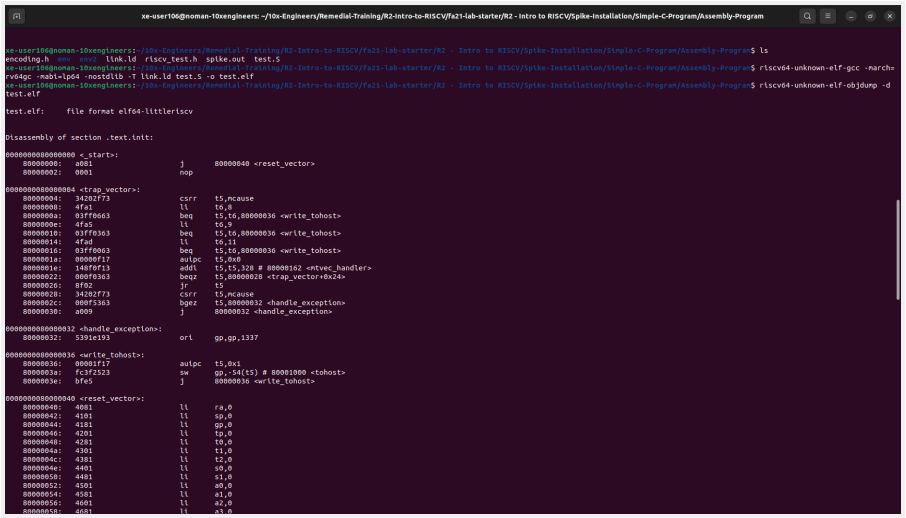
2: Running RISCV Assembly on Spike:

Downloaded Linked and other header files in the directory and run the assembly program:

```
riscv64-unknown-elf-gcc -march=rv64gc -mabi=lp64 -nostdlib -T link.ld test.S -o test.elf
```

Run the following command to see the dis-assembly file:

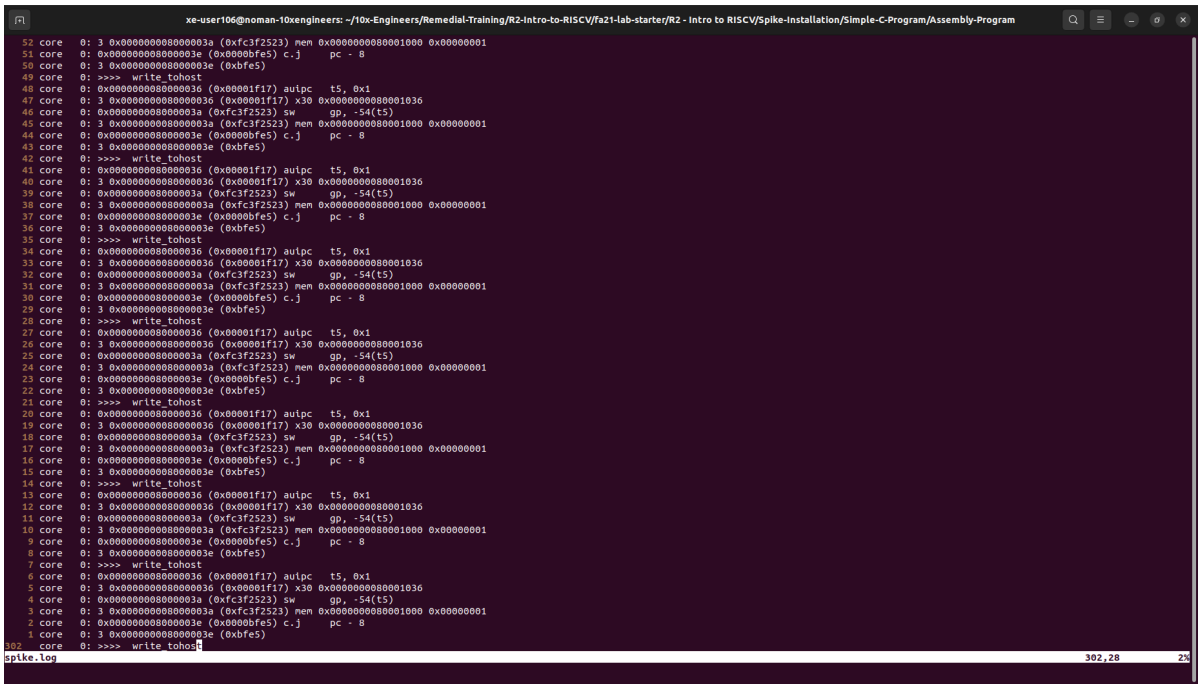
```
riscv64-unknown-elf-objdump -d test.elf
```



Run the following command to see the get the spike.log to see how the instructions were executed and learn about the contents of the registers:

```
spike --isa=RV64IMAFDC -l --log-commits test.elf 1>spike.out 2>spike.log
```

spike.log:

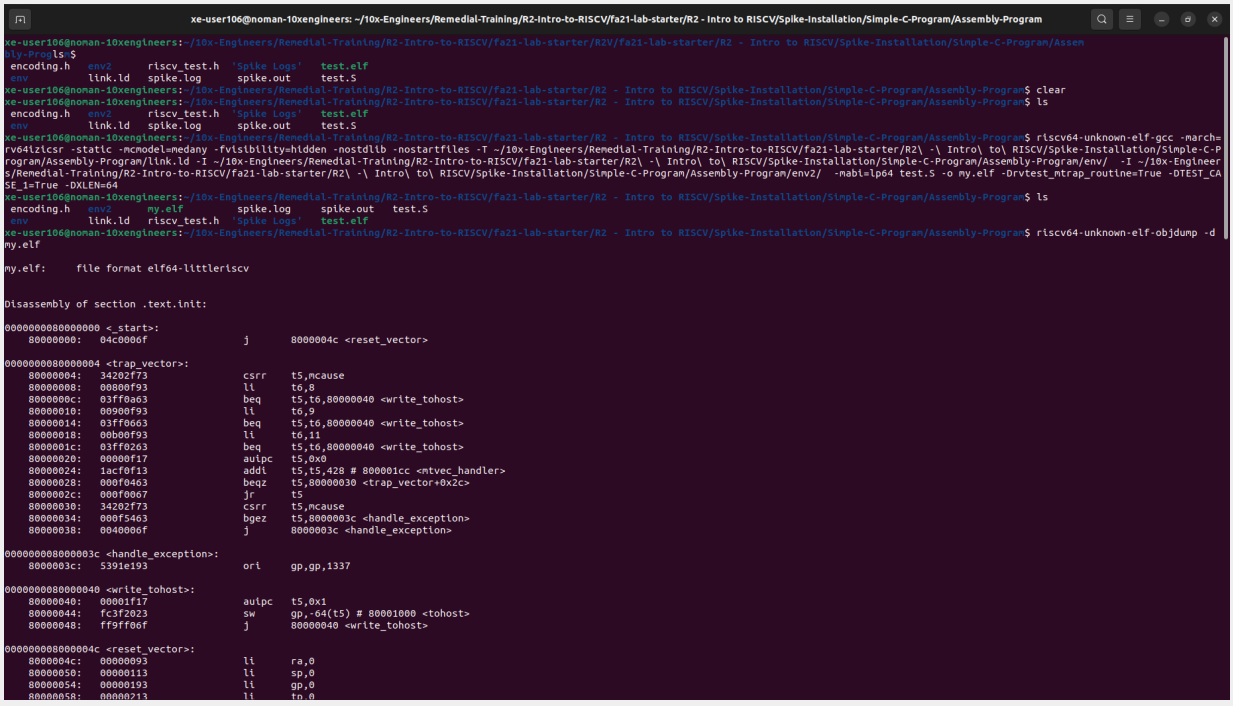


3 . Running Risc-V Assembly programs compatible to RiscOf on spike:
Downloaded the files from the given link and pasted in my **Assembly-Program/** folder. Now, run this command:

```
riscv64-unknown-elf-gcc -march=rv64izicsr -static -mcmodel=medany
-fvisibility=hidden -nostdlib -nostartfiles -T
~/10x-Engineers/Remedial-Training/R2-Intro-to-RISCV/fa21-lab-starter/R2\ -\
Intro\ to\ RISCV/Spike-Installation/Simple-C-Program/Assembly-Program/link.ld
-I ~/10x-Engineers/Remedial-Training/R2-Intro-to-RISCV/fa21-lab-starter/R2\ -\
Intro\ to\ RISCV/Spike-Installation/Simple-C-Program/Assembly-Program/env/  -I
~/10x-Engineers/Remedial-Training/R2-Intro-to-RISCV/fa21-lab-starter/R2\ -\
Intro\ to\ RISCV/Spike-Installation/Simple-C-Program/Assembly-Program/env2/
-mabi=lp64 test.S -o my.elf -Drvtest_mtrap_routine=True -DTEST_CASE_1=True
-DXLEN=64
```

Run the following command to see the dis-assembly file:

```
Riscv64-unknown-elf-objdump -d my.elf
```



Run the following command to see the get the spike.log to see how the instructions were executed and learn about the contents of the registers:

```
spike --isa=RV64IMAFDC -l --log-commits my.elf 1>spike.out 2>spike.log
```