Phase 3

In phase 3 we have to enter 2 integer in order to proceed to next phase. How we know it should be 2 integer is because of this comment vi bomb.s where we can see the assembly code.

```
362 0000000000400f0d <phase_3>:
363   400f0d:       48 83 ec 18             sub    $0x18,%rsp
364   400f11:       64 48 8b 04 25 28 00    mov    %fs:0x28,%rax
365   400f18:       00 00
366   400f1a:       48 89 44 24 08          mov    %rax,0x8(%rsp)
367   400f1f:       31 c0                   xor    %eax,%eax
368   400f21:       48 8d 4c 24 04          lea    0x4(%rsp),%rcx
369   400f26:       48 89 e2                mov    %rsp,%rdx
370   400f29:       be b7 25 40 00          mov    $0x4025b7,%esi
371   400f2e:       e8 7d fc ff ff          callq  400bb0 <__isoc99_sscanf@plt>
372   400f33:       83 f8 01                cmp    $0x1,%eax
373   400f36:       7f 05                   jg     400f3d <phase_3+0x30>
374   400f38:       e8 fb 04 00 00          callq  401438 <explode_bomb>
375   400f3d:       83 3c 24 07             cmpl   $0x7,(%rsp)
376   400f41:       77 5b                   ja     400f9e <phase_3+0x91>
377   400f43:       8b 04 24                mov    (%rsp),%eax
378   400f46:       ff 24 c5 00 24 40 00    jmpq   *0x402400(,%rax,8)
379   400f4d:       b8 80 03 00 00          mov    $0x380,%eax
380   400f52:       eb 05                   jmp    400f59 <phase_3+0x4c>
381   400f54:       b8 00 00 00 00          mov    $0x0,%eax
382   400f59:       2d e4 03 00 00          sub    $0x3e4,%eax
383   400f5e:       eb 05                   jmp    400f65 <phase_3+0x58>
384   400f60:       b8 00 00 00 00          mov    $0x0,%eax
385   400f65:       05 1e 02 00 00          add    $0x21e,%eax
386   400f6a:       eb 05                   jmp    400f71 <phase_3+0x64>
387   400f6c:       b8 00 00 00 00          mov    $0x0,%eax
388   400f71:       83 e8 34                sub    $0x34,%eax
389   400f74:       eb 05                   jmp    400f7b <phase_3+0x6e>
390   400f76:       b8 00 00 00 00          mov    $0x0,%eax
391   400f7b:       83 c0 34                add    $0x34,%eax
392   400f7e:       eb 05                   jmp    400f85 <phase_3+0x78>
```

Step 1:

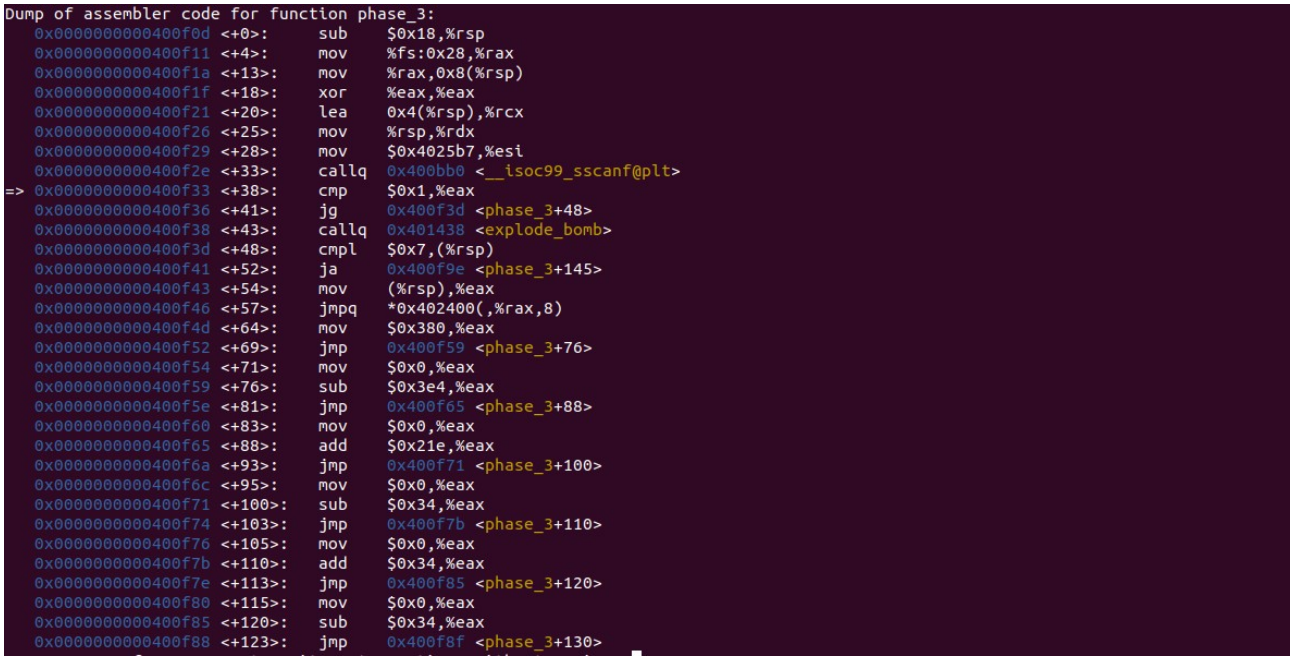
First we have to enter gdb bomb command in order to enter the assembly code and we have to set break point for phase 3 so that bomb donot defuse when we enter the value for phase 3 . so I have enter 4 and 3 as a input for phase 3.

```
For help, type "help".
Type "apropos word" to search for commands related to "word"...
Reading symbols from bomb...
(gdb) b phase_3
Breakpoint 1 at 0x400f0d
(gdb) run
Starting program: /home/kezang/Downloads/Assignment 1_2/Assignment 1/bomb002/bomb
Welcome to my fiendish little bomb. You have 6 phases with
which to blow yourself up. Have a nice day!
Public speaking is very easy.
Phase 1 defused. How about the next one?
1 2 4 8 16 32
That's number 2.  Keep going!
4 3

Breakpoint 1, 0x0000000000400f0d in phase_3 ()
(gdb) disas
```

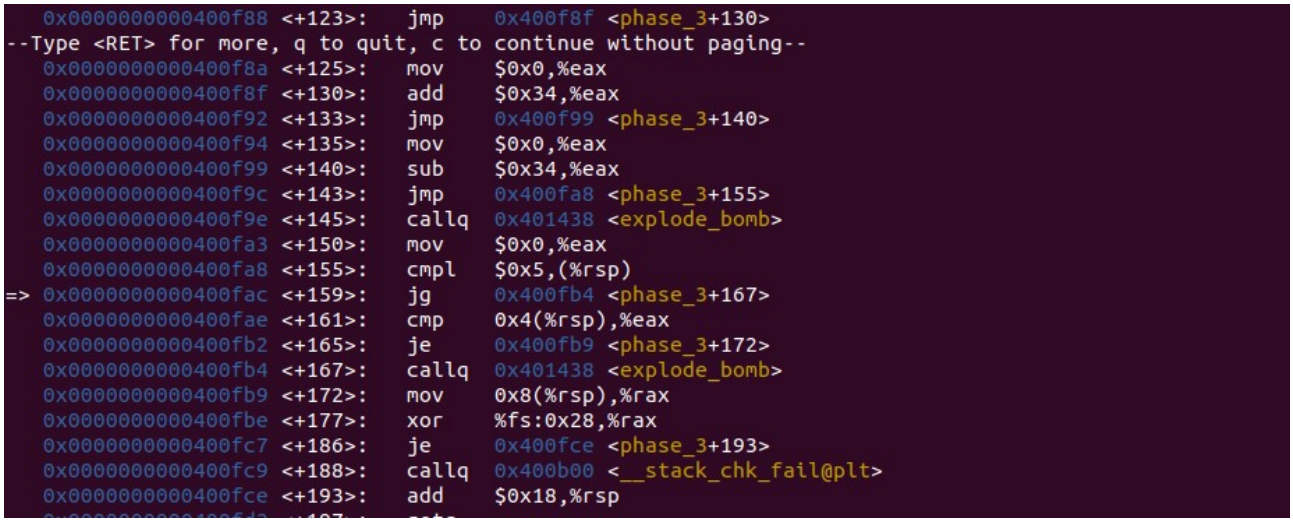
Step 2:

After completion of above step I have used disas command to enter into phase 3 assembly code and I have shifted the execution of code using u* address of place where we want to shift and run the program.



Step 3:

I have used ni and disas command to execute the program line by line till it reach to compare the rsp and eax where we compare rsp and eax to jump to phase_3+172 line.



Step 4:

After finding the value for rsp we get 4 and for eax we get 0 so it will not jump to phase_3+172 line instead will cause the bomb to explode so we get hint that key for phase 3 will be 4 and 0.

Step 5:

From above step we are able to get hint of answer that could be our key for the phase 3 because we have got 4 and 0 so we can guess that it will be addition of same number till 2 integer. So we get the key for the phase 3 is **4 0** so when we put key for phase 3 we are able to defuse the bomb.