Blaise

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WriteUp来源

https://dunsp4rce.github.io/csictf-2020/reversing/2020/07/22/Blaise.html

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题目描述

> *I recovered a binary from my teacher's computer. I tried to reverse it but I couldn't.*

题目考点

解题思路

On decompiling the binary using Ghidra:

```
ulong process(uint param_1)
{
  int iVar1;
  ulong uVar2;
  undefined4 extraout_var;
  long in_FS_OFFSET;
  int local_1c;
  int local_18;
  uint local_14;
  long local_10;

  local_10 = *(long *)(in_FS_OFFSET + 0x28);
  local_18 = 1;
  local_14 = 0;
  while (uVar2 = (ulong)local_14, (int)local_14 <= (int)param_1) {
    __isoc99_scanf(&DAT_00102008,&local_1c);
    iVar1 = C((ulong)param_1,(ulong)local_14,(ulong)local_14);
    if (iVar1 != local_1c) {
      local_18 = 0;
    }
    local_14 = local_14 + 1;
  }
  if (local_18 == 1) {
    iVar1 = system("cat flag.txt");
    uVar2 = CONCAT44(extraout_var,iVar1);
  }
  if (local_10 != *(long *)(in_FS_OFFSET + 0x28)) {
                    /* WARNING: Subroutine does not return */
    __stack_chk_fail();
  }
  return uVar2;
}
undefined8 main(void)
{
  uint uVar1;
  time_t tVar2;

  setbuf(stdout,(char *)0x0);
  setbuf(stdin,(char *)0x0);
  setbuf(stderr,(char *)0x0);
  tVar2 = time((time_t *)0x0);
  srand((uint)tVar2);
  uVar1 = display_number(0xf,0x14,0x14);
  process((ulong)uVar1);
  return 0;
}
```

In summary, the `main` function calls a function called `process` with a random number as input. The `process` function prints the random number generated and has a while loop, in each iteration `i` an integer `x` is read and `C(input, i) == x` is checked, `C` is nothing but `nCr`. So if we give the correct `nCr` values for the given random number, the flag will be printed. We copy pasted the input manually using a simple function:

```
def C(n, r):
    return fact(n) / (fact(r) * fact(n - r))
```

Flag

```
csictf{y0u_d1sc0v3r3d_th3_p4sc4l's_tr14ngl3}
```

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- ***本文链接：*** *https://writeup.ctfhub.com/Challenge/2020/CSICTF/Reverse/mBPn5yLXh9uS89X1eViHsU.html*
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 # Challenge # 2020 # Reverse # CSICTF
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