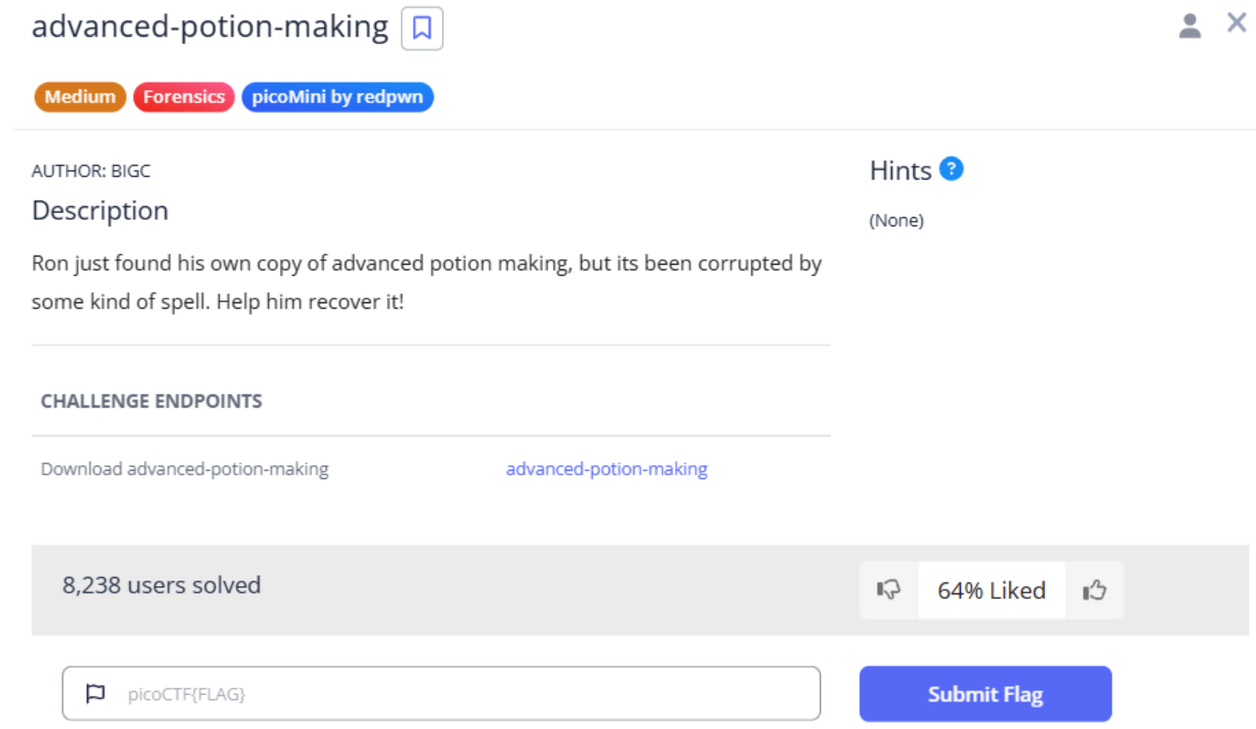
advanced-potion-maker



Attached file: `advanced-potion-making`

My first instincts

```
$ file advanced-potion-making
advanced-potion-making: data
```

Which yielded nothing, this usually prompts me to analyze what type of data is inside, so…

1. **Strings & hex dump** – nothing human-readable in the strings output, but the first few bytes in the hex dump look *almost* like a PNG:

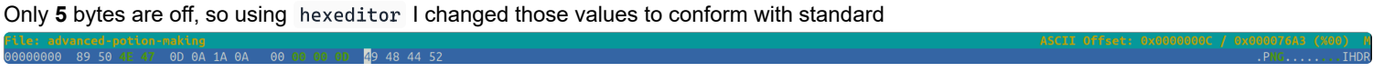
```
$ xxd -g1 -l 16 advanced-potion-making > APM-hex.txt
```

```
00000000: 8950 4211 0d0a 1a0a 0012 1314 4948 4452  .PB.........IHDR
```

Based on this example I found, a real PNG should look something like this:

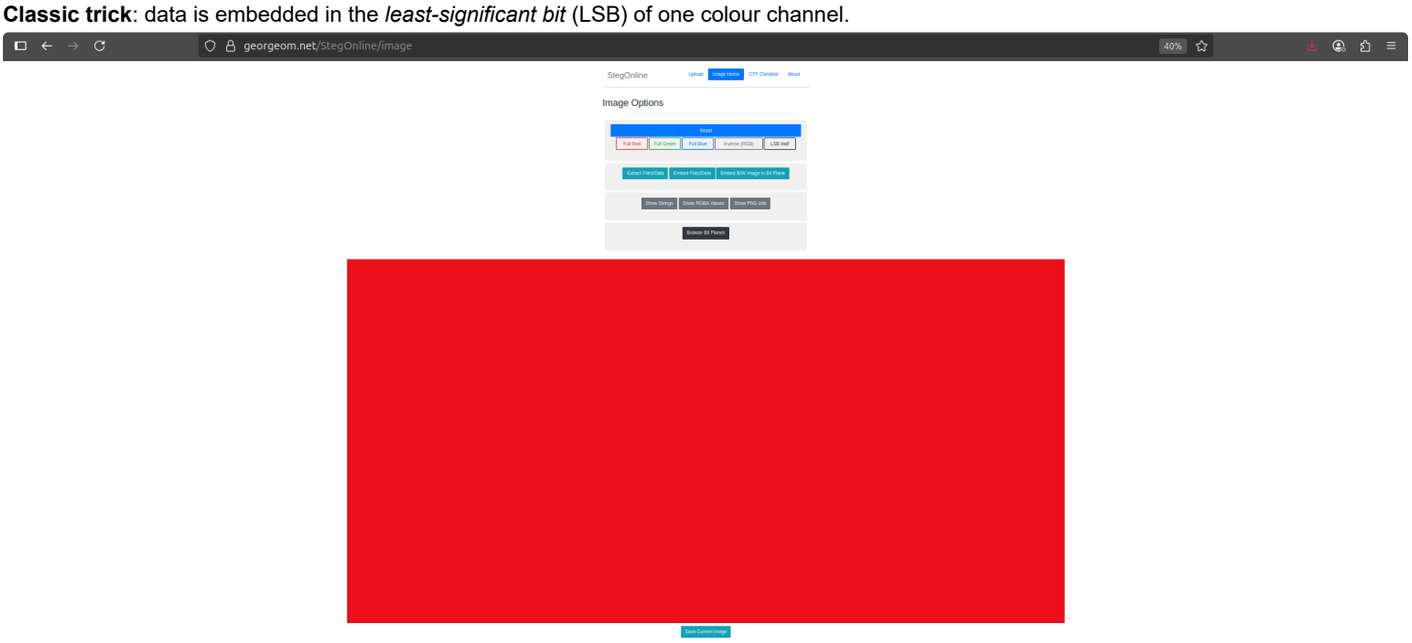
```
[00000000] 89 50 4E 47 0D 0A 1A 0A 00 00 00 0D 49 48 44 52   .PNG........IHDR
[00000016] 00 00 00 20 00 00 00 20 01 00 00 00 00 5B 01 47   ...........[.G
[00000032] 59 00 00 00 04 67 41 4D 41 00 01 86 A0 31 E8 96   Y....gAMA....1..
[00000048] 5F 00 00 00 5B 49 44 41 54 78 9C 2D CC B1 09 03   _...[IDATx.-....
[00000064] 30 0C 05 D1 EB D2 04 B2 4A 20 0B 7A 34 6F 90 15   0.......J..z4o..
[00000080] 3C 82 C1 8D 0A 61 45 07 51 F1 E0 8A 2F AA EA D2   <....aE.Q.../...
[00000096] A4 84 6C CE A9 25 53 06 E7 53 34 57 12 E2 11 B2   ..l..%S..S4W....
[00000112] 21 BF 4B 26 3D 1B 42 73 25 25 5E 8B DA B2 9E 6F   !.K&=.Bs%%^....o
[00000128] 6A CA 30 69 2E 9D 29 61 6E E9 6F 30 65 F0 BF 1F   j.0i..)an.o0e...
[00000144] 10 87 49 2F D0 2F 14 C9 00 00 00 00 49 45 4E 44   ..I/./......IEND
[00000160] AE 42 60 82
-- Sector 1 -- Assuming 512 Bytes ---
```

2. **Assumption** – If the rest of the file is intact, fixing those bytes should give a valid PNG the usual tools can parse.
   Only **5** bytes are off, so using `hexeditor` I changed those values to conform with standard

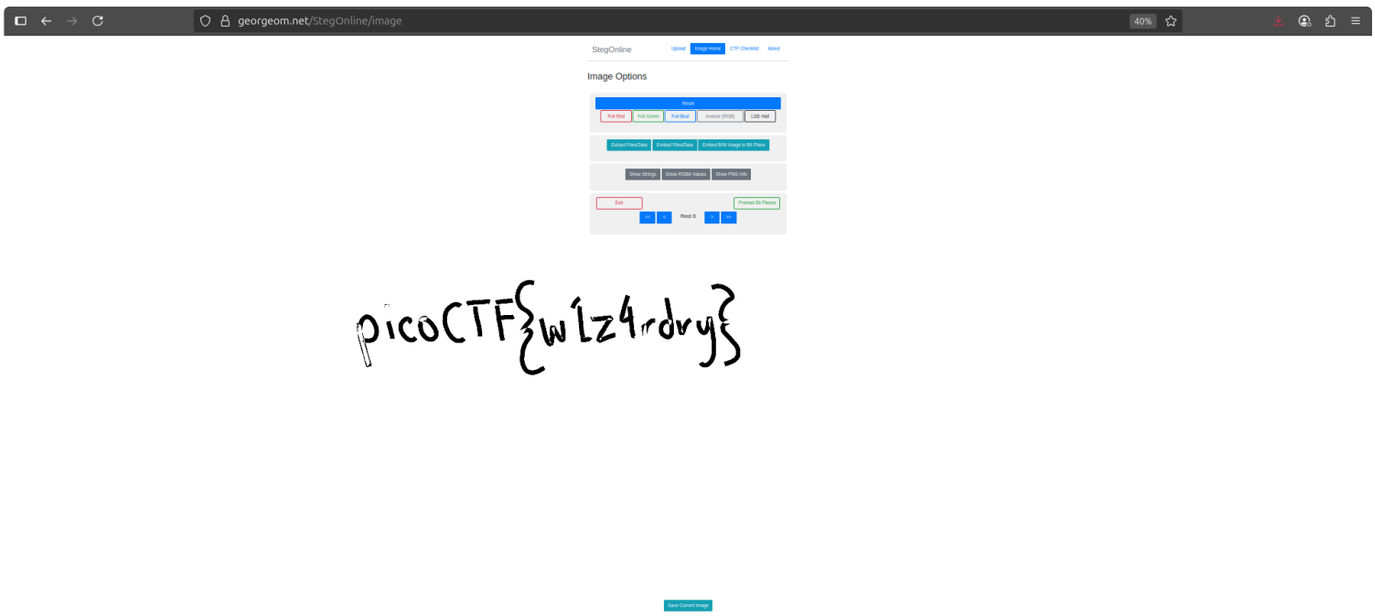


At this point the image opens—and it's just a red canvas. The flag clearly isn't in the visible pixels, so we shift to steganography.

Classic trick: data is embedded in the *least-significant bit* (LSB) of one colour channel.



1. choose **browse Bit Planes** → **Red 0** (that's the lowest bit of the red channel).
2. Boom—black text on white background spells out:




```
picoCTF{w1z4rdry}
```