

TimeLock

Write a Python program that implements our TimeLock algorithm. This is a group programming assignment (i.e., **only one submission per group is needed**).

Requirements:

- Submit your source code only;
- Read the epoch from `stdin` in the format `YYYY MM DD HH mm SS`;
- Use the system's current time (although you can manually set the time when testing and debugging); and
- Send the calculated 4-character code to `stdout`.

Algorithm:

- Calculate the time elapsed (in seconds) of the current system time since an epoch time (e.g., 1999 12 31 23 59 59). Please note that you must consider a potential difference in the daylight saving window for both the epoch time and the current time!
- Compute `MD5(MD5(time elapsed))`.
- Extract and concatenate the first two letters (`[a-f]`) of the hash from left-to-right followed by the first two single-digit integers (`[0-9]`) of the hash from right-to-left.
- Output this “code.” Note that each code is valid for 60 seconds even though the code actually changes every second! So the very first code is valid from 1999 12 31 23 59 59 through (including) 2000 01 01 00 00 58; the second code is valid from 2000 01 01 00 00 59 through 2000 01 01 00 01 58.

Example: Suppose the current system time is 2013 05 06 07 43 25 and the epoch time is 1999 12 31 23 59 59. The seconds elapsed is then 421,137,806. But this is in a 60 second interval. The beginning of the relevant 60 second interval is at 421,137,780 elapsed seconds (FYI, the end of the relevant 60 second interval is at 421,137,839 elapsed seconds). The resulting compound hash is `3ee1df13bc19a968b89629c749fee39d`; so the TimeLock “code” is `ee93`.

Please, no GUIs. Make this a command line application without frills that I can execute at the command line. It should output the calculated 4-character code as in the various examples illustrated below.

Sample runs:

```
epoch.txt: 2017 01 01 00 00 00  
current system time: 2017 03 23 18 02 06
```

```
prof@latech:~$ python timelock.py < epoch.txt  
fa51
```

```
-----  
current system time: 2017 04 23 18 02 30
```

```
prof@latech:~$ echo "1999 12 31 23 59 59" | python timelock.py  
ca45
```

```
-----  
current system time: 2010 06 13 12 55 34
```

```
prof@latech:~$ echo "2001 02 03 04 05 06" | python timelock.py  
dd15
```

```
-----  
current system time: 2015 05 15 14 00 00
```

```
prof@latech:~$ echo "2015 01 01 00 00 00" | python timelock.py  
ba26
```

```
-----  
current system time: 2015 01 01 00 00 00
```

```
prof@latech:~$ echo "2014 12 31 00 00 00" | python timelock.py  
dc24
```

```
-----  
current system time: 2015 01 01 00 00 30
```

```
prof@latech:~$ echo "2014 12 31 00 00 00" | python timelock.py  
dc24
```

```
-----  
current system time: 2015 01 01 00 01 00
```

```
prof@latech:~$ echo "2014 12 31 00 00 00" | python timelock.py  
ec29
```

```
-----  
current system time: 2015 01 01 00 01 30
```

```
prof@latech:~$ echo "2014 12 31 00 00 00" | python timelock.py  
ec29
```

```
-----  
current system time: 2017 04 26 15 14 30
```

```
prof@latech:~$ echo "1974 06 01 08 57 23" | python timelock.py  
de25
```