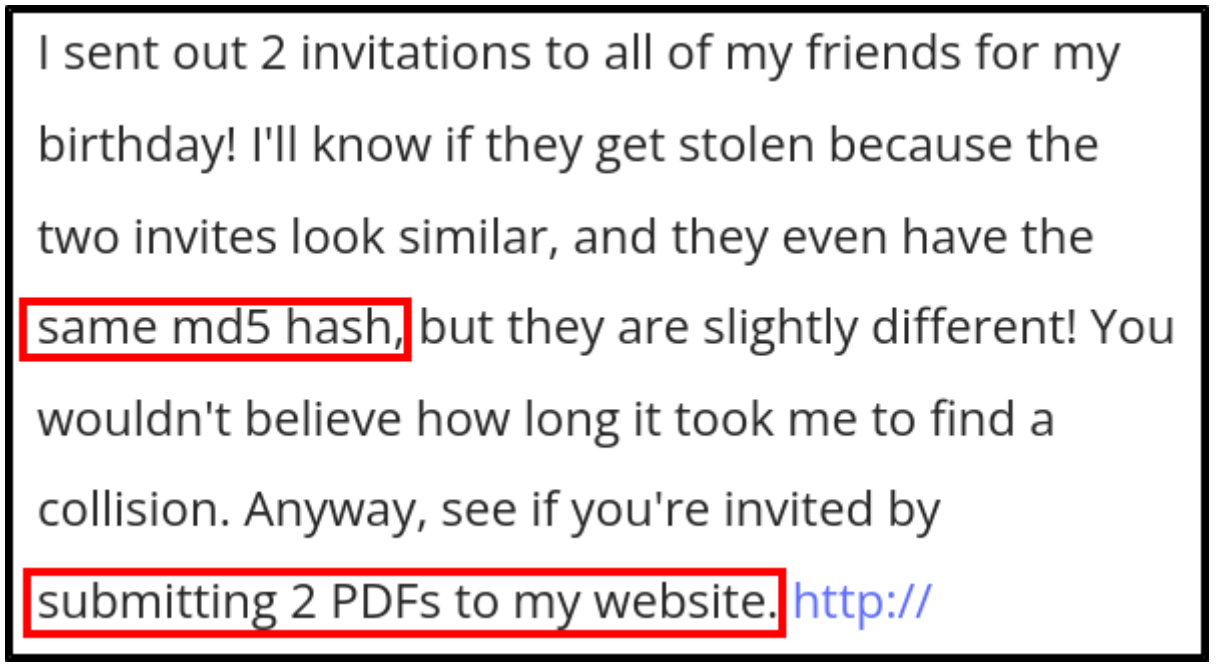
PicoCTF 2021 – It's My Birthday



The web application is written in PHP, and requires us to submit two PDF files with different contents, but the same MD5 hash value

PHP Magic Hashes

```php
$hashOne = "0e462097431906509019562988736854";
$hashTwo = "0e830400451993494058024219903391";

if ($hashOne == $hashTwo) {
    echo("These two hashes are the same!");
}
```

However, there's a vulnerability in PHP when using the “loose” comparison operator ==, such that data of different types can be compared to each other, e.g., integers compared to strings

PHP Magic Hashes

```php
$hashOne = "0e462097431906509019562988736854";
$hashTwo = "0e830400451993494058024219903391";

if ($hashOne == $hashTwo) {
    echo("These two hashes are the same!");
}
```

```
These two hashes are the same!
```

This can result in “magic hashes” in PHP, where hashes that start with `0e`, and the rest of the value is only numbers, are all considered the same in PHP hash checking

PHP Magic Hashes

```php
$hashOne = "0e462097431906509019562988736854";
$hashTwo = "0e830400451993494058024219903391";

if ($hashOne === $hashTwo) {
    echo("These two hashes are the same!");
} else {
    echo("These hashes are not the same!");
```

```
These hashes are not the same!
```

However, when using the strict comparison operator (===) versus the loose comparison operator (==), magic hashes no longer work