

# What's the answer to this Microsoft PDC challenge?

Asked 16 years, 3 months ago   Modified 7 years, 3 months ago

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In [today's channel9.msdn.com video](http://today's.channel9.msdn.com/video), the PDC guys posted a challenge to decipher this code:

4



```
2973853263233233753482843823642933243283
6434928432937228939232737732732535234532
9335283373377282333349287338349365335325
3283443783243263673762933373883363333472
8936639338428833535236433333237634438833
3275387394324354374325383293375366284282
3323383643473233852922933873933663333833
9228632439434936334633337636632933333428
9285333384346333346365364364365365336367
2873353883543533683523253893663653393433
8837733538538437838338536338232536832634
8284348375376338372376377364368392352393
3883393733943693253343433882852753933822
7533337432433532332332328232332332932432
3323323323323336323333323323323327323324
2873323253233233233892792792792792792792
7934232332332332332332332733432333832336
9344372376326339329376282344
```

Decipher it and win a t-shirt. (Lame, I know, was hoping for a free trip to the PDC.)

I notice some interesting patterns in this code, such as the 332 pattern towards the end, but I'm at a loss as to

where to go from here. They've said the answer is a text question.

Any ideas on deciphering this code?

encryption

pdc

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edited Sep 1, 2008 at 2:04

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asked Aug 30, 2008 at 19:43



Judah Gabriel Himango

60k ● 39 ● 161 ● 215

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if we solve this, do we <b>all</b> get T-shirts? – [Danimal](#)

Aug 30, 2008 at 22:25

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4 Answers

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3

I'm still fiddling with this -- no answer yet, or even a clear direction, but some of this random assortment of facts might be useful to someone..



**Meta: Is there any way to mark "read more" in an answer? Sorry in advance for all the scrolling this answer will cause!**



The code is 708 digits long. Prime factorization: 2 2 3 59. Unless they're being tricky by padding the ends, the chunk size must be 1, 2, 4, 6, or 12; the higher factors are silly. This assumes, of course, that the code is based on concatenated chunks, which may not be the case.

Mike Stone suggested a chunk size of 3. Here's the distribution for that:

```
Number of distinct chunks: 64
Number of chunks: 236 (length of message)
```

```
275: ###
279: #####
282: #####
283: #
284: #####
285: ##
286: #
287: ###
288: #
289: ###
292: #
293: #####
297: #
323: #####
324: #####
325: #####
326: #####
327: #####
328: ##
329: #####
332: ###
333: #####
334: ###
335: #####
336: ###
337: #
338: #####
339: ###
```

```
342: #
343: ##
344: ###
345: #
346: ###
347: ##
```

If it's base64 encoded then we might have something ;) but my gut tells me that there are too many distinct chunks of length 3 for plain English text. There is indeed that odd blip for the symbol "323" though.

Somewhat more interesting is a chunk size of 2:

```
Number of distinct chunks: 49
Number of chunks: 354 (length of message)
```

```
22: ##
23: #####
24: #####
25: #####
26: #
27: #####
28: #####
29: #####
32: #####
33: #####
34: #####
35: #####
36: #####
37: #####
38: #####
39: #####
42: ##
43: #####
44: ###
45: #
46: #
47: #
49: ##
```

```
52: #
53: #####
54: ##
62: #
63: #####
64: ####
65: ###
66: ##
67: ##
```

As for letter frequency, that's a good strategy, but remember that the text is likely to contain spaces and punctuation. Space might be the most common character by far!

Meta: This question re-asks a question found elsewhere. Does that count as homework? :)

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answered Aug 30, 2008 at 21:54

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[Anonymoose](#)

5,962 ● 4 ● 34 ● 41



2



Well, based on the 332 pattern you pointed out and the fact that the number of numbers is divisible by 3, and that several of the first 3 digit groups have matches... it might be that each 3 digits represent a character. Get a distribution of the number matches for all the 3 digit groups, then see if that distribution looks like the distribution of common letters.

If so, each 3 digit code could then be mapped to a character, and you might get a lot of the characters filled in for you this way, then just see if you can fill in the

blanks of the less common letters that may not match the distribution perfectly.

A quick google search revealed [this source for distribution of frequency](#) in the English language.

This, of course, may not be fruitful, but it's a good first attempt.

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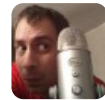
edited Sep 12, 2017 at 18:33



Vineet Jain

1,565 ● 4 ● 21 ● 32

answered Aug 30, 2008 at 19:57



Mike Stone

44.6k ● 30 ● 114 ● 140



0



I wrote some C# code to scan the cipher and give me some stats back. Here are some interesting results:

With a chunk size of 3,

- There are 236 chunks.
- There are 172 duplicates.
- The 323 code shows up a whopping total of 29 times!
- The 333 code shows up 11 times.
- All other codes show up 7 times or less.
- 35 chunks start with a 2.
- 200 chunks start with a 3. (Interesting!)

- 1 chunk starts with a 4.
- Despite the cipher containing 2s, 3s, 4s, 5s, 6s, 7s, 8s, and 9s, chunks only start with 2 and 3, except the 1 chunk that starts with 4.
- There are no 0s.
- There are no 1s.
- There are 115 2s.
- There are 293 3s.
- There are 56 4s.
- There are 38 5s.
- There are 49 6s.
- There are 52 7s.
- There are 63 8s.
- There are 42 9s.

I'd describe the 323 appearance count highly irregular. I'd also suggest that the fact that all of the chunks start with either 3 or 2 (barring the 1 appearance of a 4 chunk) is also highly irregular.

I've ran the same analysis using chunks of 2, 4, and 8, and the results look more or less random. At this point, I'm leaning towards a 3 chunk.

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edited Aug 31, 2008 at 0:41

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answered Aug 31, 2008 at 0:27



[Judah Gabriel Himango](#)

60k ● 39 ● 161 ● 215



0



I'd say that anyone that finds the answer should keep it to themselves, and instead of posting it should just add a note that you can go read a particular url to find it, or send someone an email or something if they want to know the answer to it. At the time when Channel9 says its broken or posts the answer themselves, post it here, but until then, just let the discussion and pondering going. Much better for the brain.

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answered Aug 31, 2008 at 12:35



[Lasse V. Karlsen](#)

391k ● 106 ● 646 ● 844