

Regular Languages and Finite-State Machines

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Regular Expressions and chatGPT

Give a regular expression that will generate a sequence of natural numbers that are multiple of 3.

That is ...




0, 3, 6, 9, ...

Solution:

`(0*|(1(01*?0)*?1|0))$`

According to a question posted on Stack Overflow searching for multiples of 48. I was able to conclude that through this search, it would be able to check for multiples of three. The problem was broken up to see if a number was divisible by both 16 then 3, for our case it is only necessary to check to see if it is divisible by three. Therefore, I believe that the regular expression listed above is sufficient in solving the problem.

Ask chatGPT to do the same.

 A regular expression that matches natural numbers that are multiples of 3 is:  

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```
^(3|6|9|\d*[02468][13579])$
```

This regular expression matches any number that starts with 3, 6, or 9, or any number that ends with an even digit (0, 2, 4, 6, or 8) and has a sum of digits that is divisible by 3.

Here is a breakdown of the regular expression:

- `^` matches the start of the string`
- ``(3|6|9|\d*[02468][13579])` matches any of the following:`
- ``3`, `6`, or `9``
- ``\d*` matches zero or more digits`
- ``[02468]` matches any even digit`
- ``[13579]` matches any odd digit`
- ``$` matches the end of the string`

Examples of numbers that match this regular expression are:

- 0
- 3
- 6
- 9
- 12
- 15
- 18
- 21
- 24
- 27
- 30
- 33
- 36
- 39
- ... and so on