

Prior Knowledge:

A *square number* (平方數) is the product of a number multiplied by itself (eg. $4 = 2 \times 2$, $9 = 3 \times 3$,...)

A *prime number* (質數) is a number that is not 1 and only has 1 and itself as factors (eg. 2, 3, 5, 7, 11, 13, 17, 19, ...)

The Problem:

A number is called *squime* (*made up name*) if

1. It does not repeat any digits (0,1,...,9)
2. Every pair of consecutive digits in the number is either a square number or a prime number.

An example of a squime is 816723 because 81 is square, 16 is square, 67 is prime, 72 is square and 23 is prime.

What is the largest squime?

Hint:

1. 2 digit square numbers:
16, 25, 36, 49, 64, 81.
2 digit prime numbers with no repeating digits:
13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.
2. If you wanted to make a really big number, how would you start? Start with the largest 2 digit number you have and put it at the front. How can you continue?