Exact matching: naïve algorithm

Let $x = |P|, y = |T|$

How many alignments are possible given x and y?

$$y - x + 1$$

P: $\leftarrow x \rightarrow$

T: $\longleftarrow y \longrightarrow$

Exact matching: naïve algorithm

Let $x = |P|, y = |T|$

What's the greatest # character comparisons possible?

$$x(y - x + 1)$$

Exact matching: naïve algorithm

Let $x = |P|, y = |T|$

What's the greatest # character comparisons possible?

$$x(y - x + 1)$$

P: aaaa
T: aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
   aaaa aaaa aaaa aaaa aaaa aaaa aaaa aaaa aaaa
    aaaa aaaa aaaa aaaa aaaa aaaa aaaa aaaa
     aaaa aaaa aaaa aaaa aaaa aaaa aaaa aaaa
      aaaa aaaa aaaa aaaa aaaa aaaa aaaa aaaa
       aaaa aaaa aaaa aaaa aaaa aaaa aaaa aaaa

Well the worst case
scenario looks like this.

Exact matching: naïve algorithm

How many character comparisons in this example?

P: word
T: There would have been a time for such a word
  word word word word word word word word word
   word word word word word word word word
    word word word word word word word word
     word word word word word word word word
      word word word word word word word word

40 mismatches + 6 matches = 46 character comparisons

Much closer to minimum (41) than maximum (164)

Exact matching: naïve algorithm

Let $x = |P|, y = |T|$

What's the **least** # character comparisons possible?

$$y - x + 1$$

Exact matching: naïve algorithm

Let $x = |P|, y = |T|$

What's the **least** # character comparisons possible?

$$y - x + 1$$

P: abbb

T: bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb

abbb abbb abbb abbb abbb abbb abbb abbb abbb
abbb abbb abbb abbb abbb abbb abbb abbb
abbb abbb abbb abbb abbb abbb abbb abbb
abbb abbb abbb abbb abbb abbb abbb abbb
abbb abbb abbb abbb abbb abbb abbb abbb

So the first character of the pattern is a, and yet the text consists of all b's.