Software engineering

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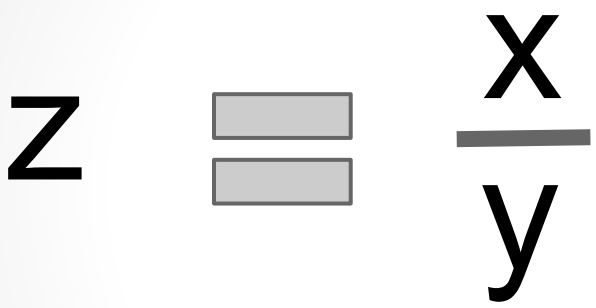
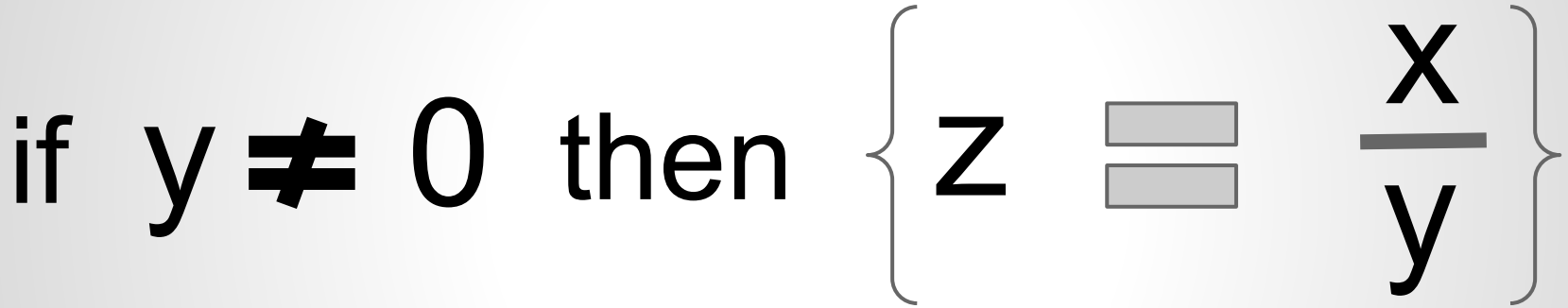
What is software engineering? Why does it matter?

Math is one thing



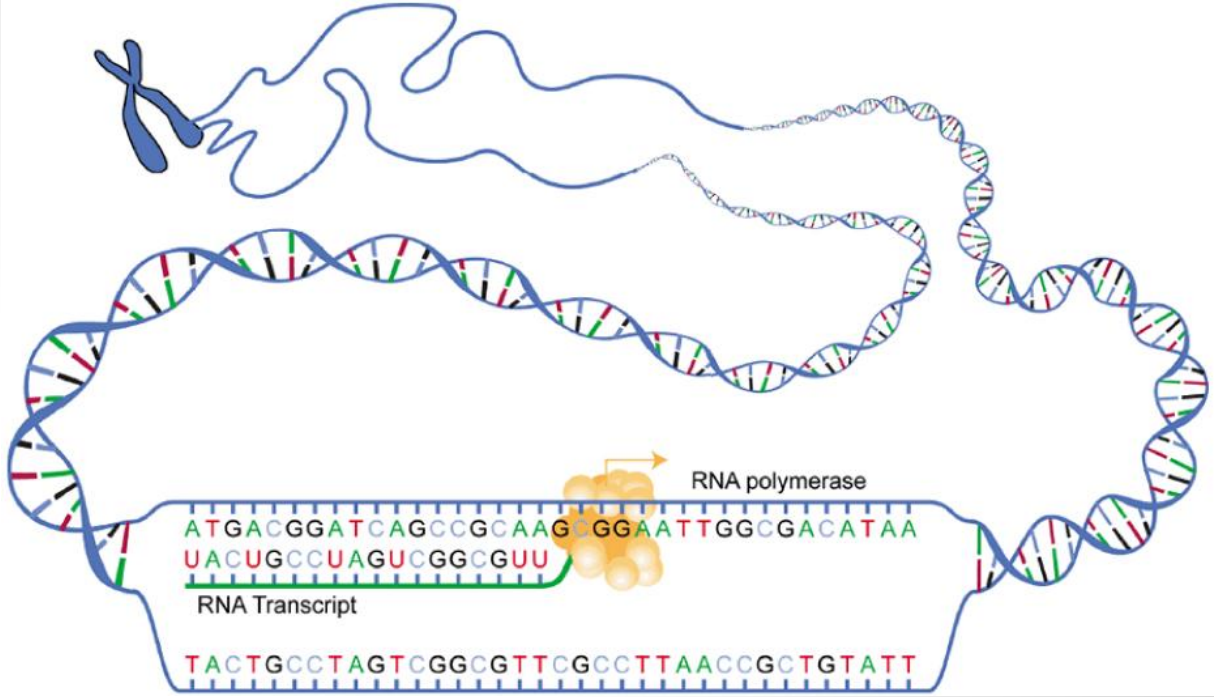
Programming is another



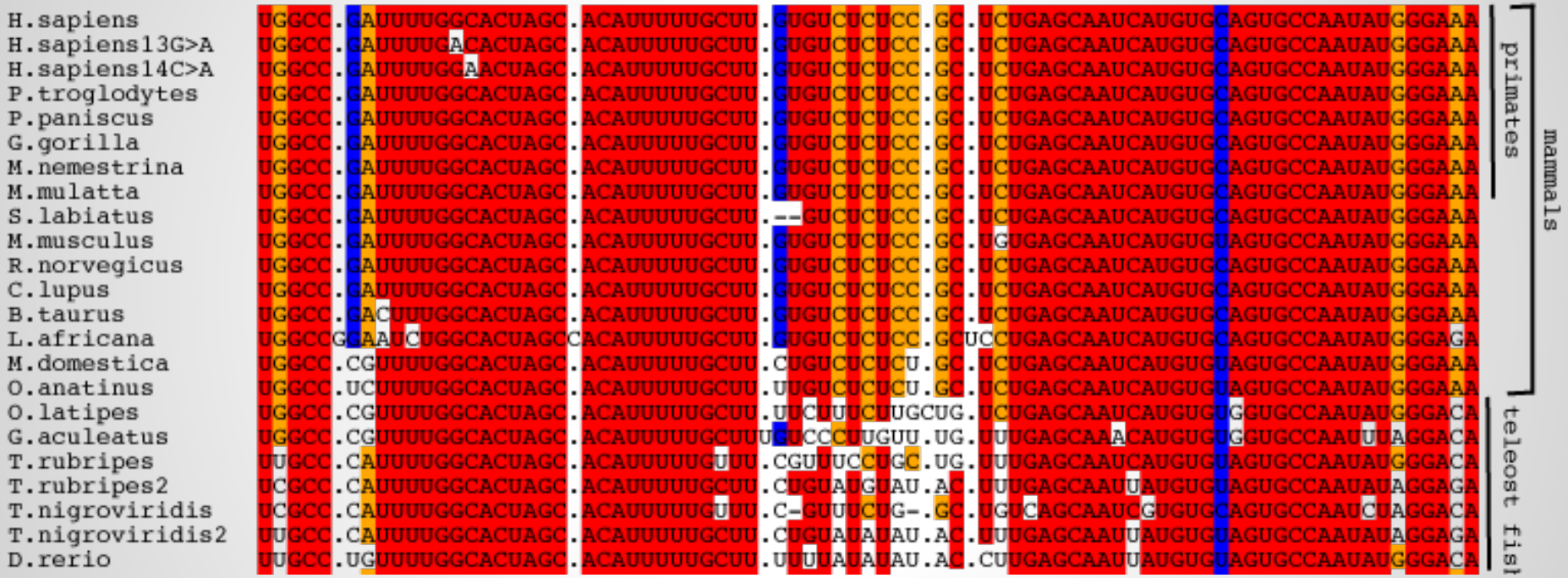
Why do we need to understand genomics software?


DNA
ACTGACCTAGATCAGTCGATCGATCGTATACGATTACAAAATCATCGGCAT
transcription
RNA
AUCAGUCGAUCACCGAU
editing?
AUCAGUCGCUCACCGAU

How can we detect RNA editing?



Alignment reveals RNA-DNA differences



Are they real?

Mostly….

...but 1 mis-alignment in 1 million

...yields 100s of errors in large genomic data sets

Trust, but verify

Understand your algorithms and how they can go wrong

Just because it runs doesn’t mean it’s free of bugs

Photograph of praying mantis by Annika Salzberg