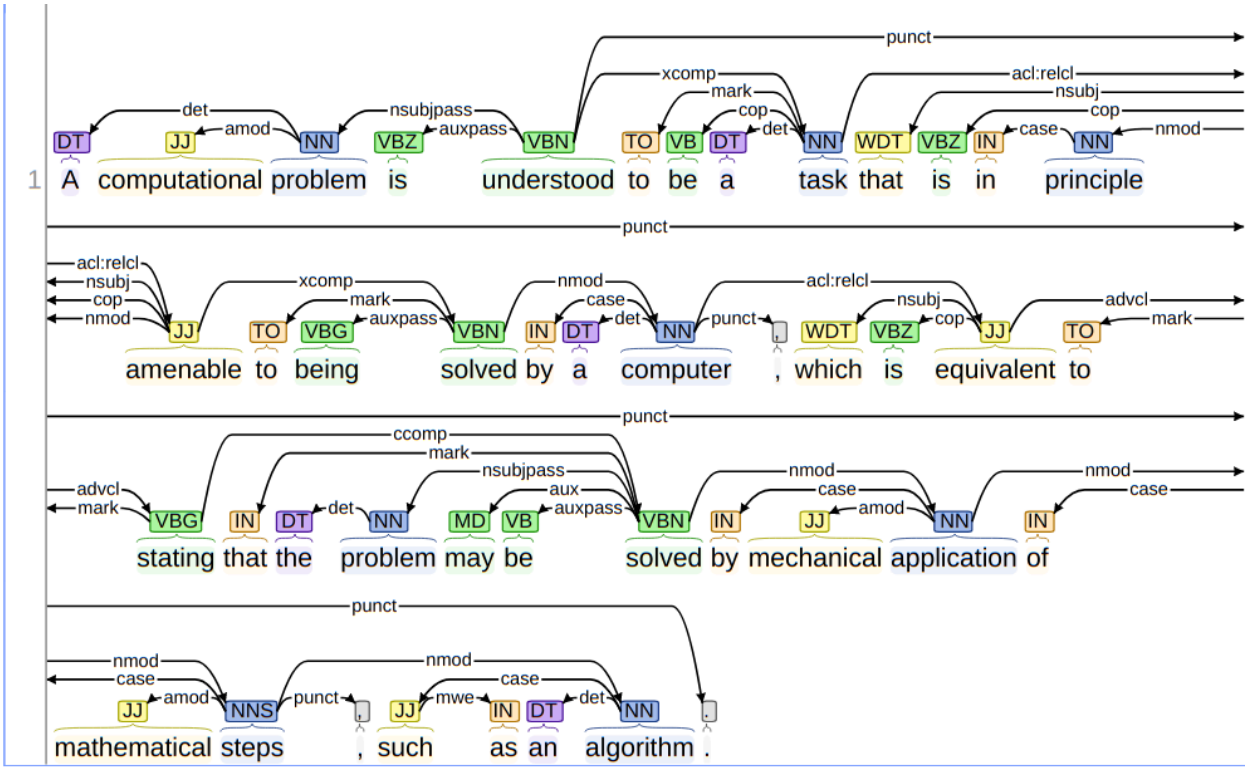
Computational/NNP complexity/NN theory/NN is/VBZ a/DT branch/NN of/IN the/DT theory/NN of/IN computation/NN in/IN theoretical/JJ computer/NN science/NN that/WDT focuses/VBZ on/IN classifying/NN computational/JJ problems/NNS according/VBG to/TO their/PRP$ inherent/NN difficulty/NN ,/, and/CC relating/VBG those/DT classes/NNS to/TO each/DT other/JJ ./.. A/DT computational/JJ problem/NN is/VBZ understood/VBN to/TO be/VB a/DT task/NN that/WDT is/VBZ in/IN principle/NN amenable/JJ to/TO being/VBG solved/VBN by/IN a/DT computer/NN ,/, which/WDT is/VBZ equivalent/NN to/TO stating/NN that/IN the/DT problem/NN may/MD be/VB solved/VBN by/IN mechanical/JJ application/NN of/IN mathematical/JJ steps/NNS ,/, such/JJ as/IN an/DT algorithm/NN ./.

Non descriptive:

What/WP is/VBZ the/DT term/NN for/IN a/DT task/NN that/WDT generally/RB lends/VBZ itself/PRP to/TO being/VBG solved/VBN by/IN a/DT computer/NN ?/.

- *Ground Truth Answers:* computational problems computational problemcomputational problem
- *Prediction:* A computational problem



What/WP branch/NN of/IN theoretical/JJ computer/NN science/NN deals/NNS with/IN broadly/RB classifying/VBG computational/JJ problems/NNS by/IN difficulty/NN and/CC class/NN of/IN relationship/NN ?/.

- *Ground Truth Answers:* Computational complexity theoryComputational complexity theoryComputational complexity theory
- *Prediction:* Computational complexity theory

Descriptive;
What/WP is/VBZ computational/JJ complexity/NN principle/NN ?/.

- ***Ground Truth Answers:*** `<No Answer>`
- ***Prediction:*** `<No Answer>`

A/DT problem/NN is/VBZ regarded/VBN as/RB inherently/RB difficult/JJ if/IN its/PRP$ solution/NN requires/VBZ significant/JJ resources/NNS ,/, whatever/RB the/DT algorithm/NN used/VBD ./.. The/DT theory/NN formalizes/VBZ this/DT intuition/NN ,/, by/IN introducing/NN mathematical/JJ models/NNS of/IN computation/NN to/TO study/NN these/DT problems/NNS and/CC quantifying/VBG the/DT amount/NN of/IN resources/NNS needed/VBN to/TO solve/VB them/PRP ,/, such/JJ as/IN time/NN and/CC storage/NN ./.. Other/JJ complexity/NN measures/NNS are/VBP also/RB used/VBN ,/, such/JJ as/IN the/DT amount/NN of/IN communication/NN (/: used/VBN in/IN communication/NN complexity/NN),/: the/DT number/NN of/IN gates/NNS in/IN a/DT circuit/NN (/: used/VBN in/IN circuit/NN complexity/NN)/: and/CC the/DT number/NN of/IN processors/NNS (/: used/VBN in/IN parallel/NN computing/NN)./.. One/CD of/IN the/DT roles/NNS of/IN computational/JJ complexity/NN theory/NN is/VBZ to/TO determine/VB the/DT practical/JJ limits/NNS on/IN what/WP computers/NNS can/MD and/CC cannot/VB do/VBP ./.

What/WP measure/NN of/IN a/DT computational/JJ problem/NN broadly/RB defines/VBZ the/DT inherent/JJ difficulty/NN of/IN the/DT solution/NN ?/.

- ***Ground Truth Answers:*** **if its solution requires significant resourcesits solution requires significant resourcesif its solution requires significant resources**
- ***Prediction:*** **significant resources**

what/WP method/VBD is/VBZ used/VBN to/TO intuitively/RB assess/NN or/CC quantify/VB the/DT amount/NN of/IN resources/NNS required/VBN to/TO solve/VB a/DT computational/JJ problem/NN ?/.

- ***Ground Truth Answers:*** **mathematical models of computationmathematical models of computationmathematical models of computation**
- ***Prediction:*** **mathematical models of computation**

What/WP are/VBP two/CD basic/JJ primary/JJ resources/NNS used/VBN to/TO guage/NN complexity/NN ?/.

- ***Ground Truth Answers:*** **time and storagetime and storagetime and storage**
- ***Prediction:*** **the amount of communication (used in communication complexity), the number of gates in a circuit**

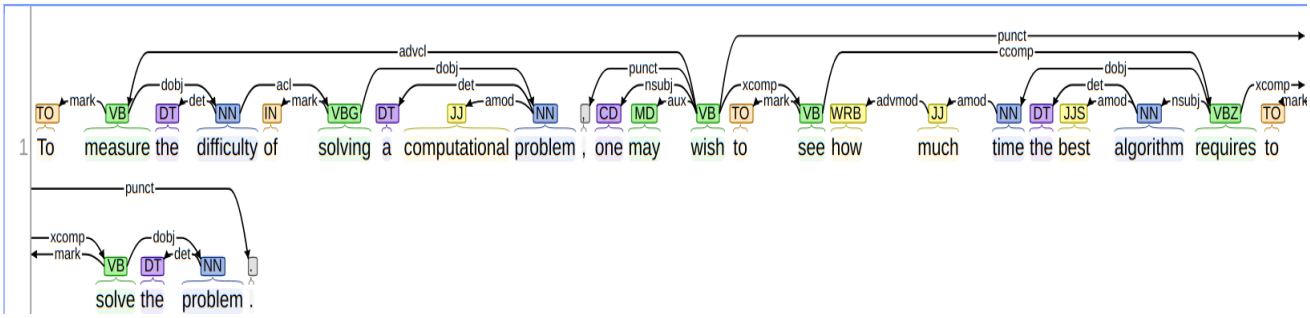
What/WP unit/NN is/VBZ measured/VBN to/TO determine/VB circuit/NN complexity/NN ?/.

- ***Ground Truth Answers:*** **number of gates in a circuitnumber of gates in a circuitnumber of gates**
- ***Prediction:*** **gates**

To/TO measure/VB the/DT difficulty/NN of/IN solving/VBG a/DT computational/JJ problem/NN ,/, one/CD may/MD wish/VB to/TO see/VB how/WRB much/RB time/NN the/DT best/JJS algorithm/NN requires/VBZ to/TO solve/VB the/DT problem/NN ./.. However/RB ,/, the/DT running/NN time/NN may/MD ,/, in/IN general/JJ ,/, depend/NN on/IN the/DT instance/NN ./.. In/IN particular/JJ ,/, larger/JJR instances/NNS will/MD require/VB more/RBR time/NN to/TO solve/VB ./.. Thus/RB the/DT time/NN required/VBN to/TO solve/VB a/DT problem/NN (/: or/CC the/DT space/NN required/VBN ,/, or/CC any/DT measure/NN of/IN complexity/NN)/: is/VBZ calculated/VBN as/RB a/DT function/NN of/IN the/DT size/NN of/IN the/DT instance/NN ./.. This/DT is/VBZ usually/RB taken/VBN to/TO be/VB the/DT size/NN of/IN the/DT input/NN in/IN bits/NNS ./.. Complexity/NN theory/NN is/VBZ interested/VBN in/IN how/WRB algorithms/NNS scale/VBP with/IN an/DT increase/NN in/IN the/DT input/NN size/NN ./.. For/IN instance/NN ,/, in/IN the/DT problem/NN of/IN finding/NN whether/IN a/DT graph/NN is/VBZ connected/VBN ,/, how/WRB much/JJ more/RBR time/NN does/VBZ it/PRP take/VB to/TO solve/VB a/DT problem/NN for/IN a/DT graph/NN with/IN 2n/CD vertices/NNS compared/VBN to/TO the/DT time/NN taken/VBN for/IN a/DT graph/NN with/IN n/NN vertices/NNS ?/.

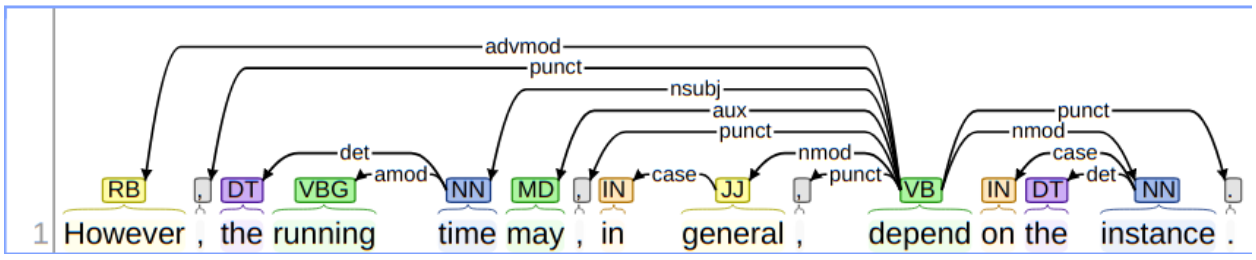
DESCRIPTIVE
What/WP is/VBZ a/DT commonly/RB used/VBN measurement/NN used/VBN to/TO determine/VB the/DT complexity/NN of/IN a/DT computational/JJ problem/NN ?/.

- ***Ground Truth Answers:*** **how much time the best algorithm requires to solve the problemtimetime**
- ***Prediction:*** `<No Answer>`



What/WP is/VBZ one/CD variable/JJ on/IN which/WDT the/DT running/VBG time/NN may/MD be/VB <u>contingent/NN</u> ?/.

- ***Ground Truth Answers:*** **the instancethe instancethe size of the instance**
- ***Prediction:*** **the instance**



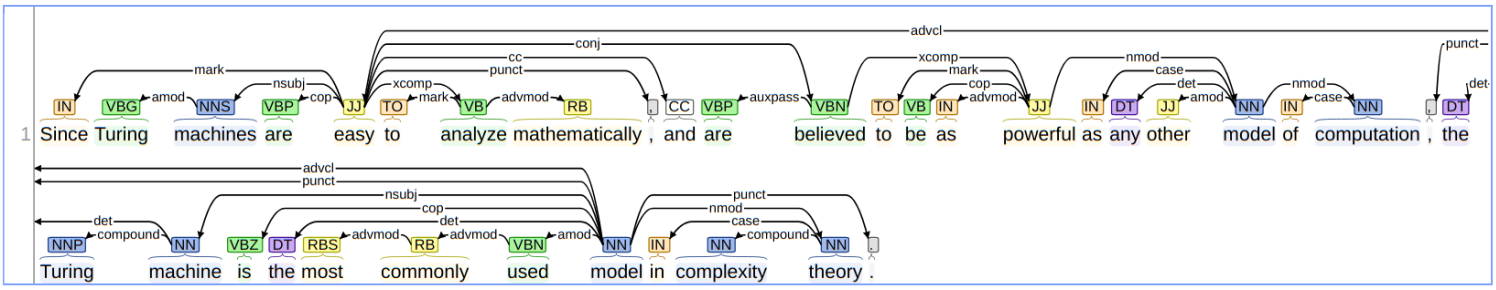
A/DT Turing/NNP machine/NN is/VBZ a/DT mathematical/JJ model/NN of/IN a/DT general/JJ computing/NN machine/NN ./.. It/PRP is/VBZ a/DT theoretical/JJ device/NN that/WDT manipulates/VBZ symbols/NNS contained/VBN on/IN a/DT strip/NN of/IN tape/NN ./.. Turing/VBG machines/NNS are/VBP not/RB intended/VBN as/IN a/DT practical/JJ computing/NN technology/NN ,/, but/CC rather/RB as/IN a/DT thought/NN experiment/NN representing/VBG a/DT computing/NN machineâ/NN €”/: anything/NN from/IN an/DT advanced/JJ supercomputer/NN to/TO a/DT mathematician/JJ with/IN a/DT pencil/NN and/CC paper/NN ./.. It/PRP is/VBZ believed/VBN that/IN if/IN a/DT problem/NN can/MD be/VB solved/VBN by/IN an/DT algorithm/NN ,/, there/EX exists/NNS a/DT Turing/NNP machine/NN that/WDT solves/VBZ the/DT problem/NN ./.. Indeed/RB ,/, this/DT is/VBZ the/DT statement/NN of/IN the/DT Churchâ/JJ €“/NN Turing/NNP thesis/NN ./.. Furthermore/NNP ,/, it/PRP is/VBZ known/VBN that/IN everything/NN that/WDT can/MD be/VB computed/VBN on/IN other/JJ models/NNS of/IN computation/NN known/VBN to/TO us/PRP today/NN ,/, such/JJ as/IN a/DT RAM/NNP machine/NN ,/, Conway/NNP '/POS s/NNS Game/NNP of/IN Life/NNP ,/, cellular/JJ automata/NN or/CC any/DT programming/NN language/NN can/MD be/VB computed/VBN on/IN a/DT Turing/NNP machine/NN ./.. Since/IN Turing/NNP machines/NNS are/VBP easy/JJ to/TO analyze/VB mathematically/RB ,/, and/CC are/VBP believed/VBN to/TO be/VB as/RB powerful/JJ as/IN any/DT other/JJ model/NN of/IN computation/NN ,/, the/DT Turing/NNP machine/NN is/VBZ the/DT most/RBS commonly/RB used/JJ model/NN in/IN complexity/NN theory/NN ./.

What/WP is/VBZ the/DT term/NN for/IN a/DT mathematical/JJ model/NN that/WDT theoretically/RB represents/VBZ a/DT general/JJ computing/NN machine/NN ?/.

- ***Ground Truth Answers:*** **A Turing machineA Turing machineTuring machine**
- ***Prediction:*** **A Turing machine**

What/WP is/VBZ the/DT most/RBS commonplace/NN model/NN utilized/VBD in/IN complexity/NN theory/NN ?/.

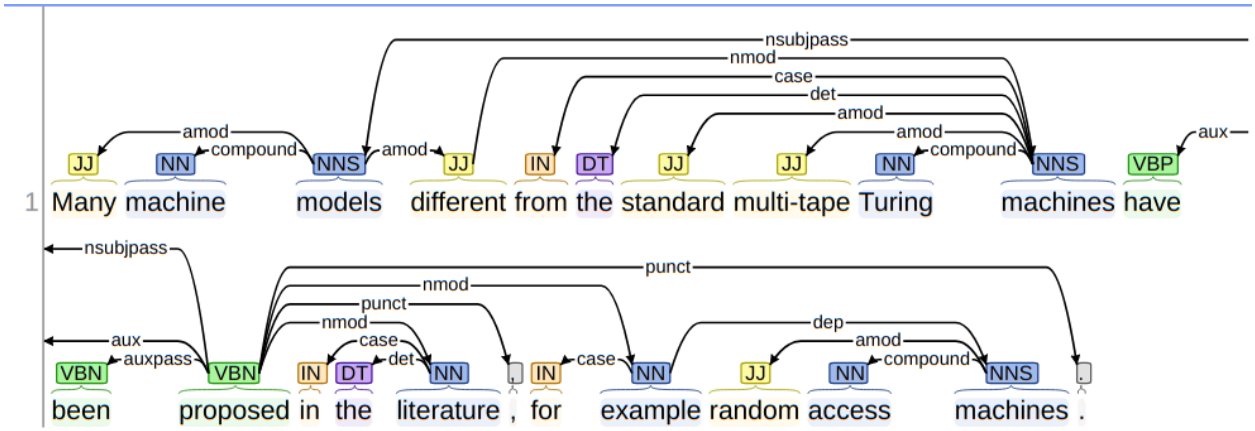
- ***Ground Truth Answers:*** **the Turing machinethe Turing machineTuring machine**
- ***Prediction:*** **the Turing machine**



Many machine models different from the standard multi-tape Turing machines have been proposed in the literature, for example random access machines. Perhaps surprisingly, each of these models can be converted to another without providing any extra computational power. The time and memory consumption of these alternate models may vary. What all these models have in common is that the machines operate deterministically.

What is an example of a machine model that deviates from a generally accepted multi-tape Turing machine?

- ***Ground Truth Answers:*** **random access machinesrandom access machinesrandom access machines**
- ***Prediction:*** **random access machines**

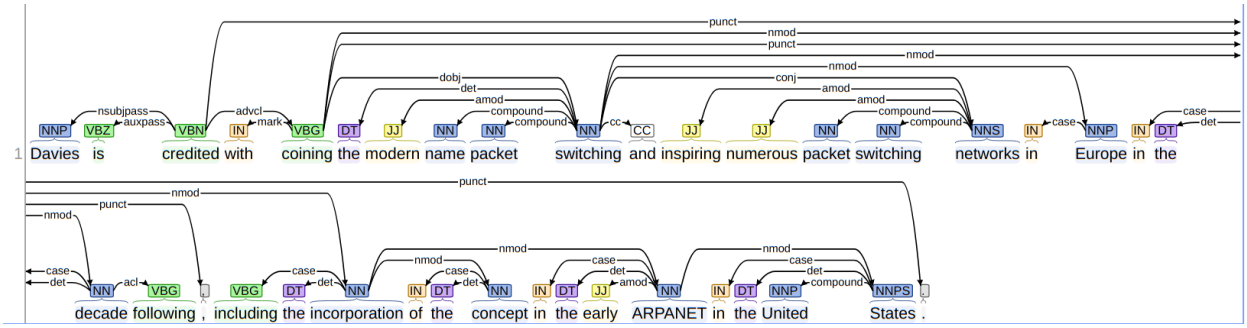


Starting in the late 1950s, American computer scientist Paul Baran developed the concept Distributed Adaptive Message Block Switching with the goal to provide a fault-tolerant, efficient routing method for telecommunication messages as part of a research program at the RAND Corporation, funded by the US Department of Defense. This concept contrasted and contradicted the theretofore established principles of pre-allocation of network bandwidth, largely fortified by the development of telecommunications in the Bell System. The new concept found little resonance among network implementers until the independent work of Donald Davies at the National Physical Laboratory (United Kingdom) (NPL) in the late 1960s. Davies is credited with coining the modern name packet switching and inspiring numerous packet switching networks in Europe in the decade following, including the incorporation of the concept in the early ARPANET in the United States.

What is Donald Davies credited with

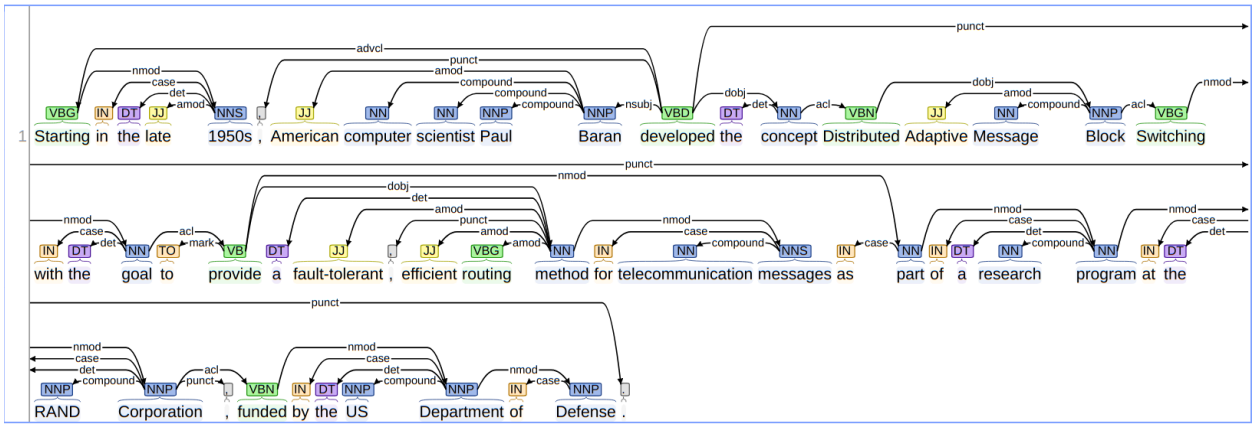
- ***Ground Truth Answers:*** **Davies is credited with coining the modern name packet switching and inspiring numerous packet switching networks in Europ ecoining the modern name packet switching and inspiring numerous packet switching networkscoining the modern name packet switching**

- ***Prediction:*** **coining the modern name packet switching**



What was the goal of the system

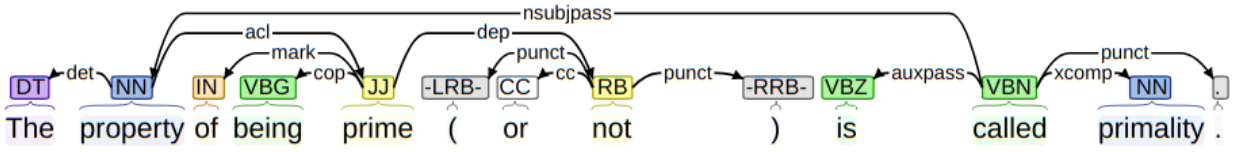
- ***Ground Truth Answers:*** **to provide a fault-tolerant, efficient routing method for telecommunication messagesprovide a fault-tolerant, efficient routing method for telecommunication messages**
- ***Prediction:*** `<No Answer>`



The property of being prime (or not) is called primality. A simple but slow method of verifying the primality of a given number n is known as trial division. It consists of testing whether n is a multiple of any integer between 2 and . Algorithms much more efficient than trial division have been devised to test the primality of large numbers. These include the Miller–Rabin primality test, which is fast but has a small probability of error, and the AKS primality test, which always produces the correct answer in polynomial time but is too slow to be practical. Particularly fast methods are available for numbers of special forms, such as Mersenne numbers. As of January 2016[update], the largest known prime number has 22,338,618 decimal digits.

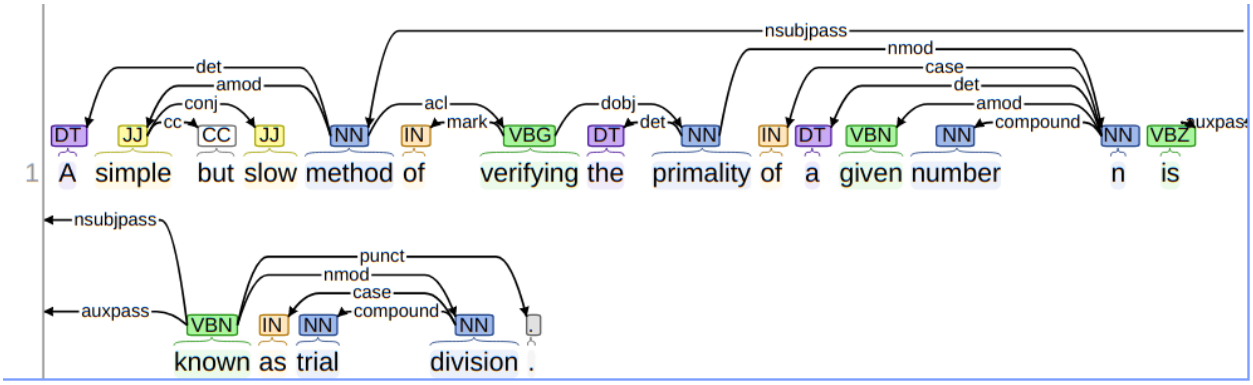
What is the name of the property that designates a number as being prime or not?

- ***Ground Truth Answers:*** primality primality primality primality primality
- ***Prediction:*** primality



What is the name of the process which confirms the primality of a number n?

- ***Ground Truth Answers:*** trial divisiontrial divisiontrial divisiontrial divisiontrial division
- ***Prediction:*** trial division



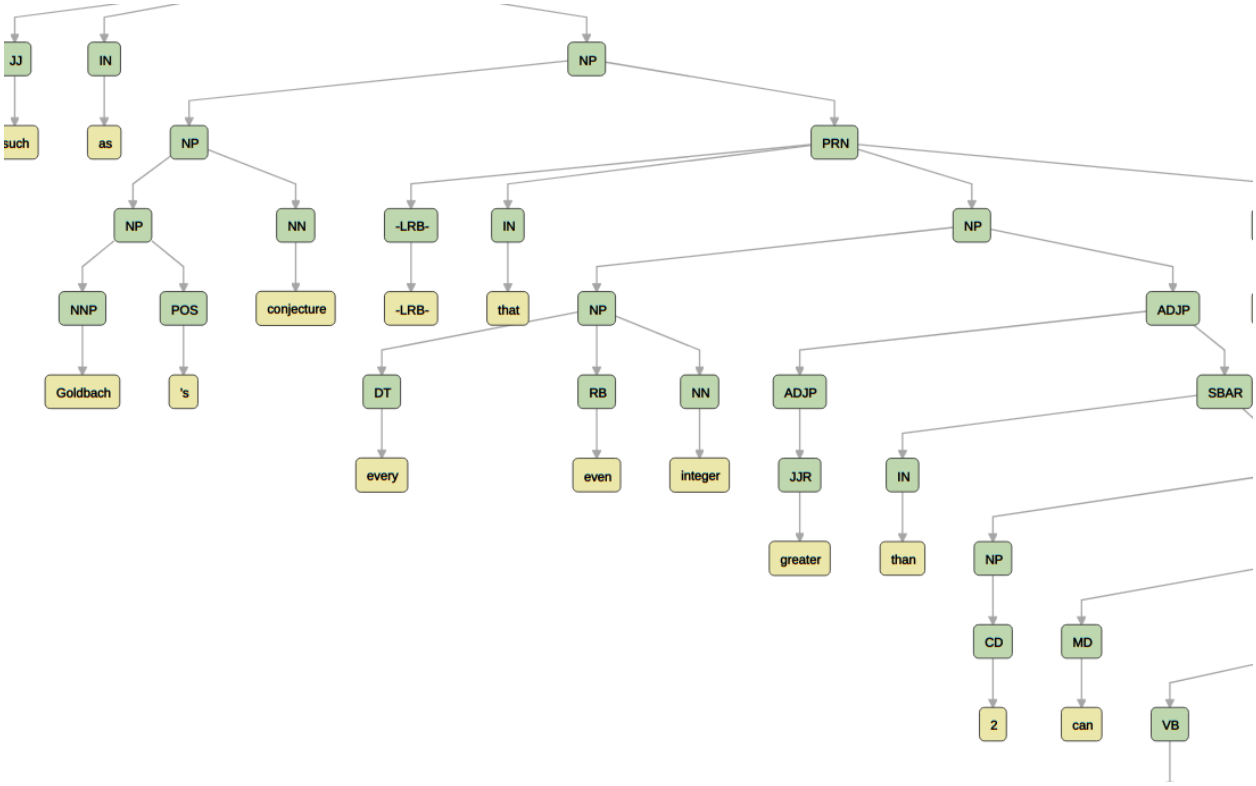
What is the name of one algorithm useful for conveniently testing the primality of large numbers?

- ***Ground Truth Answers:*** **the Miller–Rabin primality testMiller–Rabin primality testMiller–Rabin primality testMiller–Rabin primality testMiller–Rabin primality test**
- ***Prediction:*** **Miller–Rabin primality test**

Many questions regarding prime numbers remain open, such as Goldbach's conjecture (that every even integer greater than 2 can be expressed as the sum of two primes), and the twin prime conjecture (that there are infinitely many pairs of primes whose difference is 2). Such questions spurred the development of various branches of number theory, focusing on analytic or algebraic aspects of numbers. Primes are used in several routines in information technology, such as public-key cryptography, which makes use of properties such as the difficulty of factoring large numbers into their prime factors. Prime numbers give rise to various generalizations in other mathematical domains, mainly algebra, such as prime elements and prime ideals.

What is the name of the supposition that any number larger than 2 can be represented as the sum of two primes?

- ***Ground Truth Answers:*** **Goldbach's conjectureGoldbach's conjectureGoldbach's conjectureGoldbach's conjectureGoldbach's conjecture**
- ***Prediction:*** **Goldbach's conjecture**

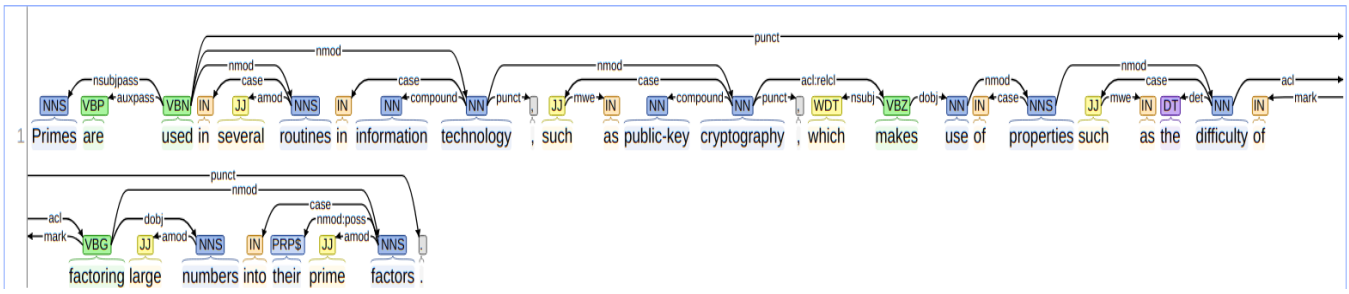


What is the name of the supposition that there are infinite pairs of primes whose difference is 2?

- ***Ground Truth Answers:*** **the twin prime conjecturetwin prime conjecturetwin prime conjecturetwin prime conjecturetwin prime conjecture**
- ***Prediction:*** **twin prime conjecture**

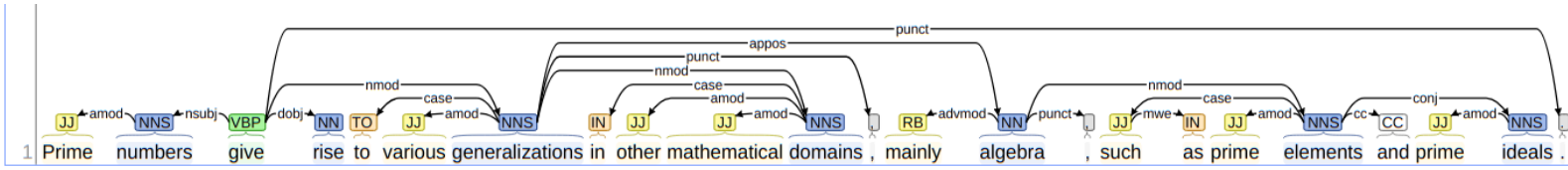
What is the application of prime numbers used in information technology which utilizes the fact that factoring very large prime numbers is very challenging?

- ***Ground Truth Answers:*** **public-key cryptographypublic-key cryptographypublic-key cryptographycryptographypublic-key cryptography**
- ***Prediction:*** **public-key cryptography**



What is the name of one algebraic generalization prime numbers have inspired?

- ***Ground Truth Answers:*** **prime idealsprime elementsprime elementsprime elements**
- ***Prediction:*** **`<No Answer>`**



Problems encountered in code:

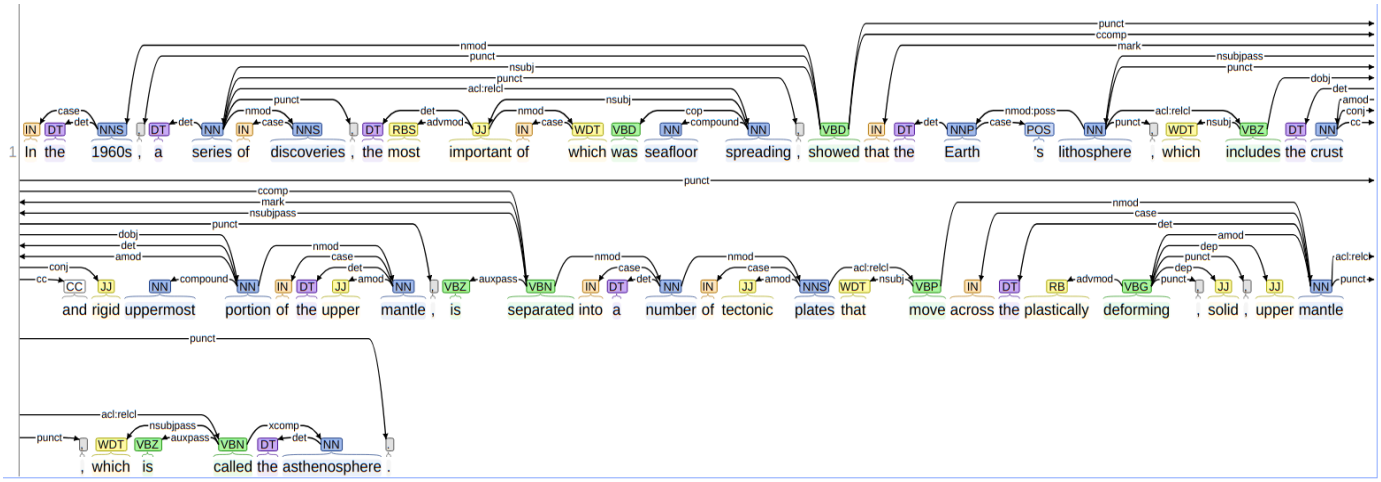
1.Descriptive answers need to be to the point.
2. The cosine similarity isnt giving good accuracy
3. Need to implement wordnet (to check if the root word of dependency tree is in question) and to improve similarity

New errors facing:

Rules are colliding. If one rule works for one question, the other question is wrong. And viceversa

A synonym of word in question (not matching the meaning) is present in sentence hence it passes the condition.

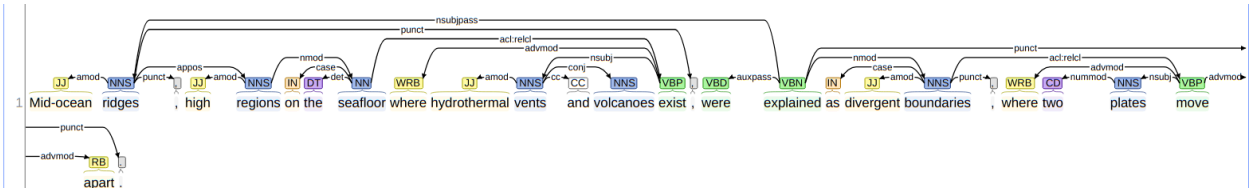
In the 1960s, a series of discoveries, the most important of which was seafloor spreading, showed that the Earth's lithosphere, which includes the crust and rigid uppermost portion of the upper mantle, is separated into a number of tectonic plates that move across the plastically deforming, solid, upper mantle, which is called the asthenosphere.



What is another word for the Earth's upper mantle?

answer: asthenosphere

Mid-ocean ridges, high regions on the seafloor where hydrothermal vents and volcanoes exist, were explained as divergent boundaries, where two plates move apart.



question: What is the area called where two plates move apart?

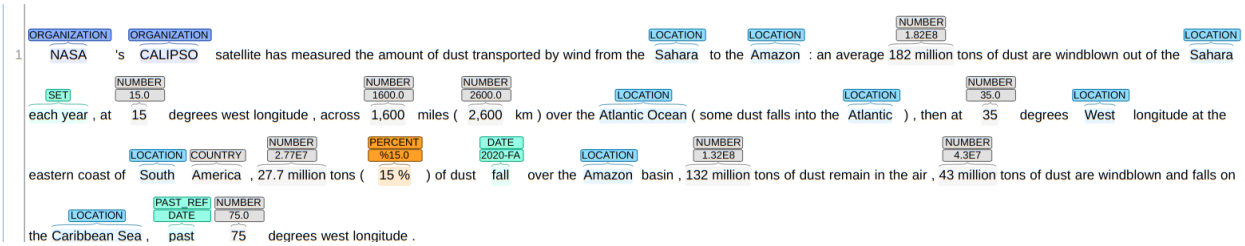
Ground answer: divergent boundaries

As the Andes Mountains rose, however, a large basin was created that enclosed a lake; now known as the Solimões Basin.

question: What is the lake known as which was created by the rise of the Andes Mountains?

Ground answer: Solimões Basin

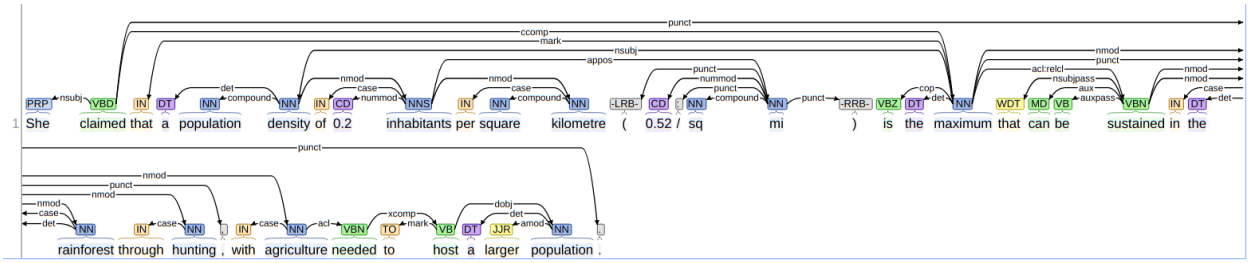
NASA's CALIPSO satellite has measured the amount of dust transported by wind from the Sahara to the Amazon: an average 182 million tons of dust are windblown out of the Sahara each year, at 15 degrees west longitude, across 1,600 miles (2,600 km) over the Atlantic Ocean (some dust falls into the Atlantic), then at 35 degrees West longitude at the eastern coast of South America, 27.7 million tons (15%) of dust fall over the Amazon basin, 132 million tons of dust remain in the air, 43 million tons of dust are windblown and falls on the Caribbean Sea, past 75 degrees west longitude.



question: What is the name of the satellite that measured the amount of dust?

Ground answer: CALIPSO

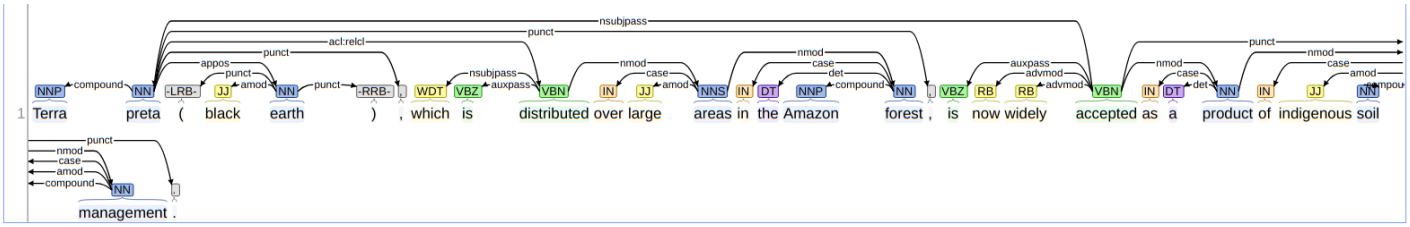
She claimed that a population density of 0.2 inhabitants per square kilometre (0.52/sq mi) is the maximum that can be sustained in the rainforest through hunting, with agriculture needed to host a larger population.



question: What is the maximum square miles did Betty Meggers claim that can be sustained in the rainforest?

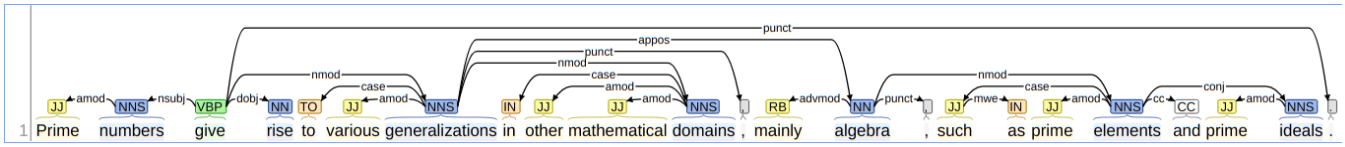
Ground answer: 0.52/sq mi

Terra preta (black earth), which is distributed over large areas in the Amazon forest, is now widely accepted as a product of indigenous soil management.



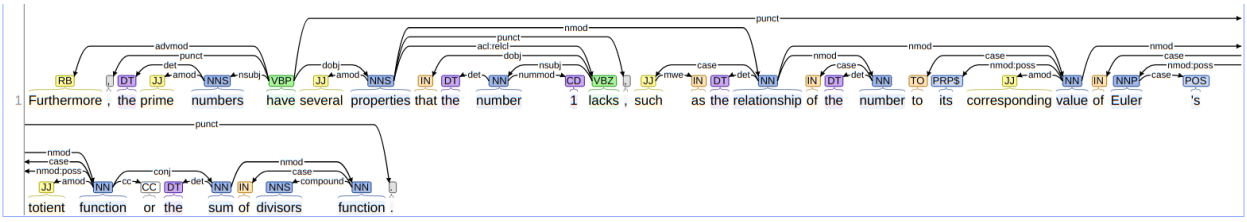
question: What is terra preta called?

Ground answer: (black earth



Prime numbers give rise to various generalizations in other mathematical domains, mainly algebra, such as prime elements and prime ideals.

What is the name of one algebraic generalization prime numbers have inspired?
Ground answer: prime elements



Furthermore, the prime numbers have several properties that the number 1 lacks, such as the relationship of the number to its corresponding value of Euler's totient function or the sum of divisors function.

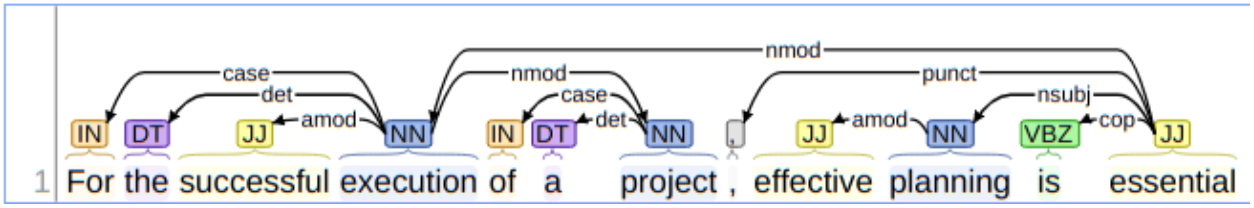
question: What is one function that prime numbers have that 1 does not?

Ground answer: relationship of the number to its corresponding value of Euler's totient function or the sum of divisors function.

What is another function that primes have that the number 1 does not?

Ground answer: the sum of divisors function

For the successful execution of a project, effective planning is essential.

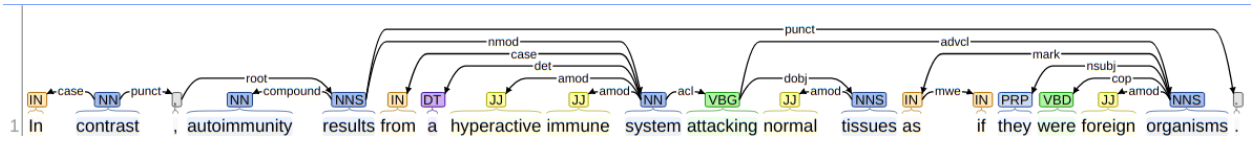


question: What is essential for the successful execution of a project?
Ground answer: effective planning

Engineering News-Record (ENR) is a trade magazine for the construction industry.

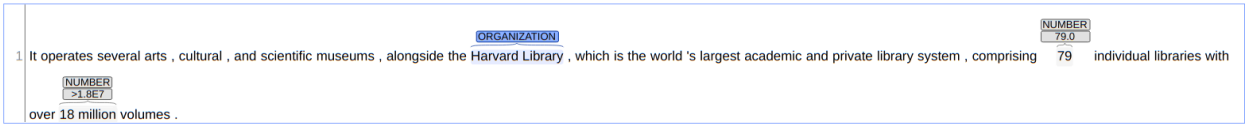
question: What is Engineering News-Record?
Ground answer: a trade magazine for the construction industry

In contrast, autoimmunity results from a hyperactive immune system attacking normal tissues as if they were foreign organisms.



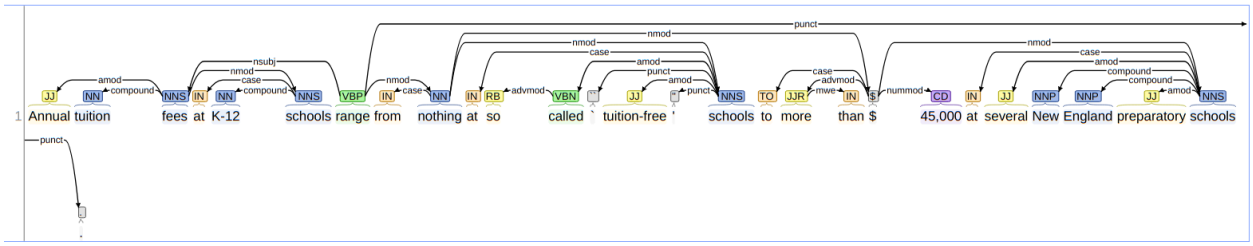
question: What is the term for a hyperactive immune system that attacks normal tissues?
Ground answer: autoimmunity

It operates several arts, cultural, and scientific museums, alongside the Harvard Library, which is the world's largest academic and private library system, comprising 79 individual libraries with over 18 million volumes.



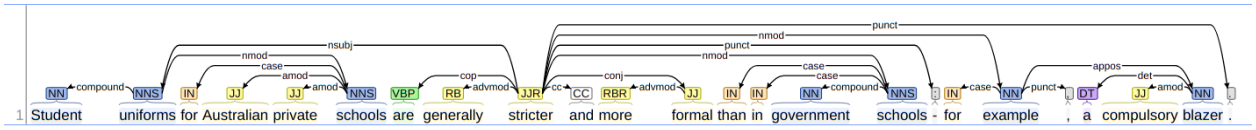
question: What is the worlds largest academic and private library system?
Ground answer: Harvard Library
Answer: None

Annual tuition fees at K-12 schools range from nothing at so called 'tuition-free' schools to more than $45,000 at several New England preparatory schools.



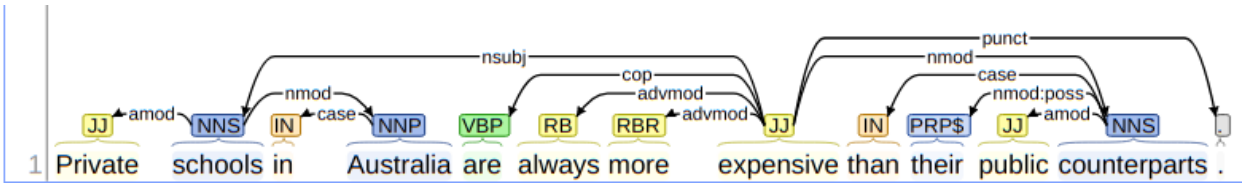
question: What is the yearly cost of some notable prep schools in New England?
Ground answer: $45,000
Answer: nothing

Student uniforms for Australian private schools are generally stricter and more formal than in government schools - for example, a compulsory blazer.



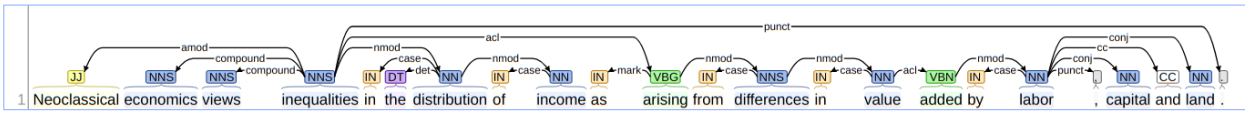
question: What is an example of an article of uniform clothing typically present in Australian private schools?
Ground answer: blazer
Answer: None

Private schools in Australia are always more expensive than their public counterparts.

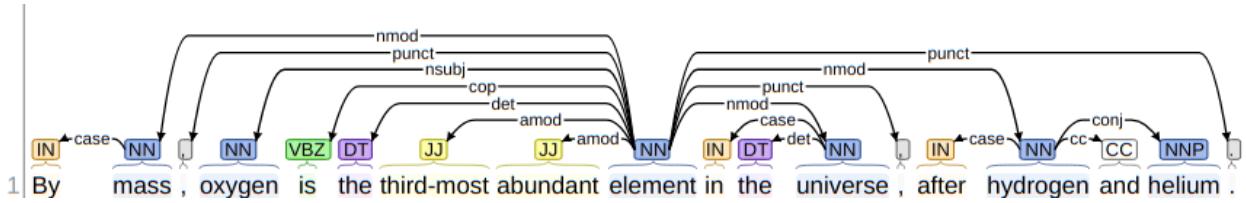


question: What is the comparison in price between Australian private schools versus public?
Ground answer: more expensive
Answer: counterparts

Neoclassical economics views inequalities in the distribution of income as arising from differences in value added by labor, capital and land.



question: What is income inequality attributed to?
Ground answer: differences in value added by labor, capital and land
Answer: distribution
By mass, oxygen is the third-most abundant element in the universe, after hydrogen and helium.



question: What is the second most abundant element?
Ground answer: helium
Answer: universe