Magma, Maple, Mathematica, and Matlab

Dissemination: Sharing code increases our visibility, spreads our national and cross-disciplinary collaborations. Increases productivity, facilitates communication, and fosters interflexible and powerful tools.

“...Indeed the combinat people joined SAGE...”

AGE is free and can be used by students and amateurs, or in low-cost. AGE reuses the best open source math libraries: GAP, PARI, ...

Days 40

...Sage: Leaf = SingletonSpecies()

sage: B = CrystalOfTableaux(['A',3],shape=[3,2])

Wall time: 0.04 s

x + x^2 + 2*x^3 + 5*x^4 + 14*x^5 + 42*x^6 + 132*x^7 + O(x^8)

SAGE-COMBINAT in action

Enumerative combinatorics:

sage: %time Partitions(1000000).cardinality()
CPU times: user 0.00 s, sys: 0.00 s, total: 0.00 s
Wall time: 0.04 s

14716849863 ... one thousand digits ... 67104673818

sage: BinaryTrees = CombinatorialSpecies()
sage: Leaf = SingletonSpecies()

sage: BinaryTrees.defined(Leaf+(BinaryTrees*BinaryTrees))

sage: BinaryTrees.generating_series()

sage: x + x^2 + 2*x^3 + 5*x^4 + 14*x^5 + 42*x^6 + 132*x^7 + O(x^8)

Words:

sage: m = WordMorphism('a->acabb,b->bcacabbb,c->baba')

sage: m.fixed_point('a')

word: acabbabacabbacabbcacacbbcacabcbbacb...