Computational Mathematics

Dr. Jayantha Lanel

Lecture 1

Outline

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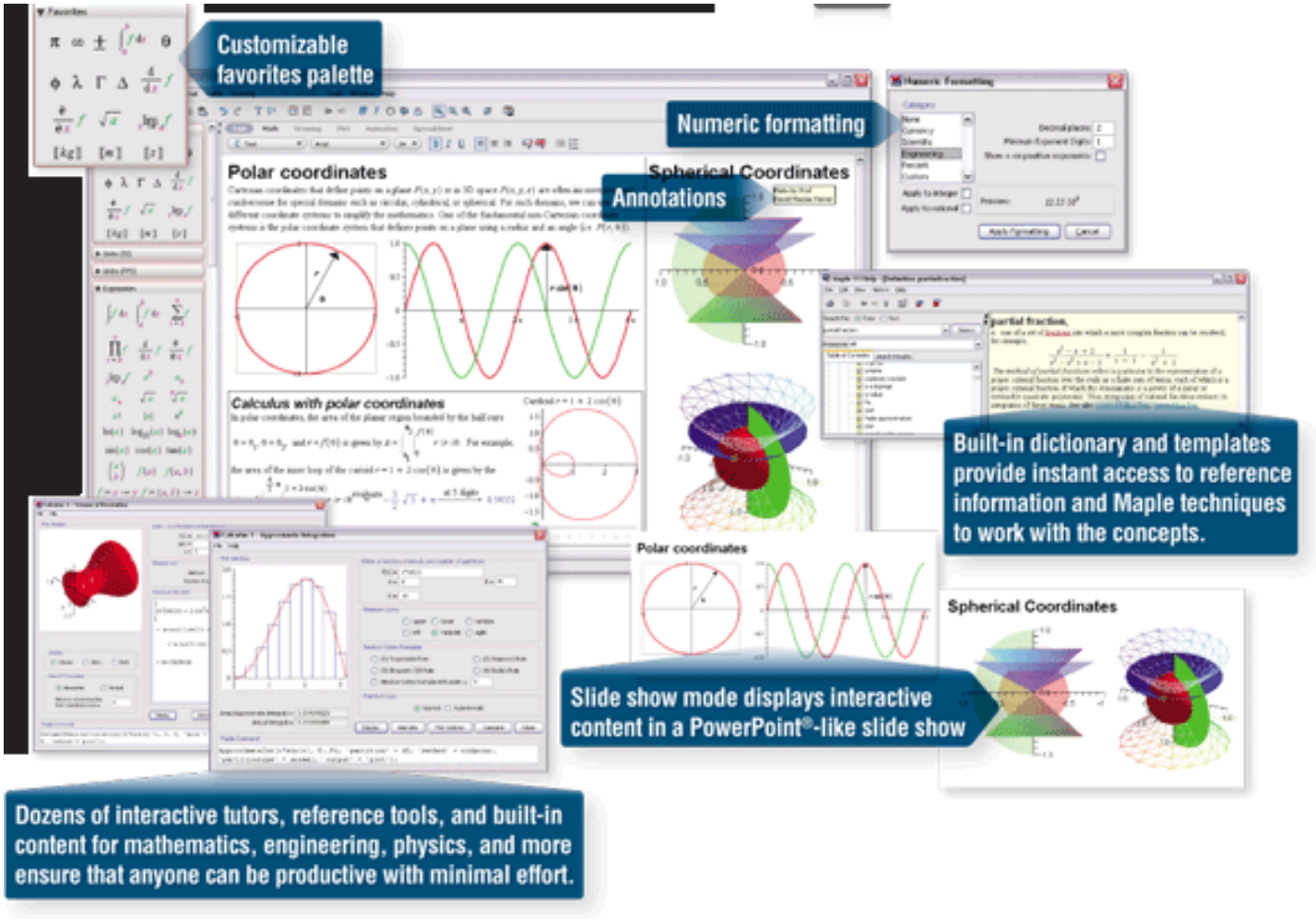
- Nowadays, every programmer is facing lots of mathematical problems
- Solving them on a paper takes time and puts us in danger of making mistakes and getting wrong solutions
- The material of this course covers two popular mathematics computation systems, namely Maple and MATLAB

- Maple contains advanced symbolic computation tools, which makes solving problems from the area of discrete mathematics and calculus fast and simple
- MATLAB was created mainly for algebra (numerical computation), it has been optimized for handling problems involving matrices
- Both these languages are easy to learn, their syntax is very intuitive, which allows to concentrate on the mathematical side of the problem and avoid dealing with programming intricacies
- Moreover, variety of graphical tools in both systems enables fast and attractive visualization of computed solutions

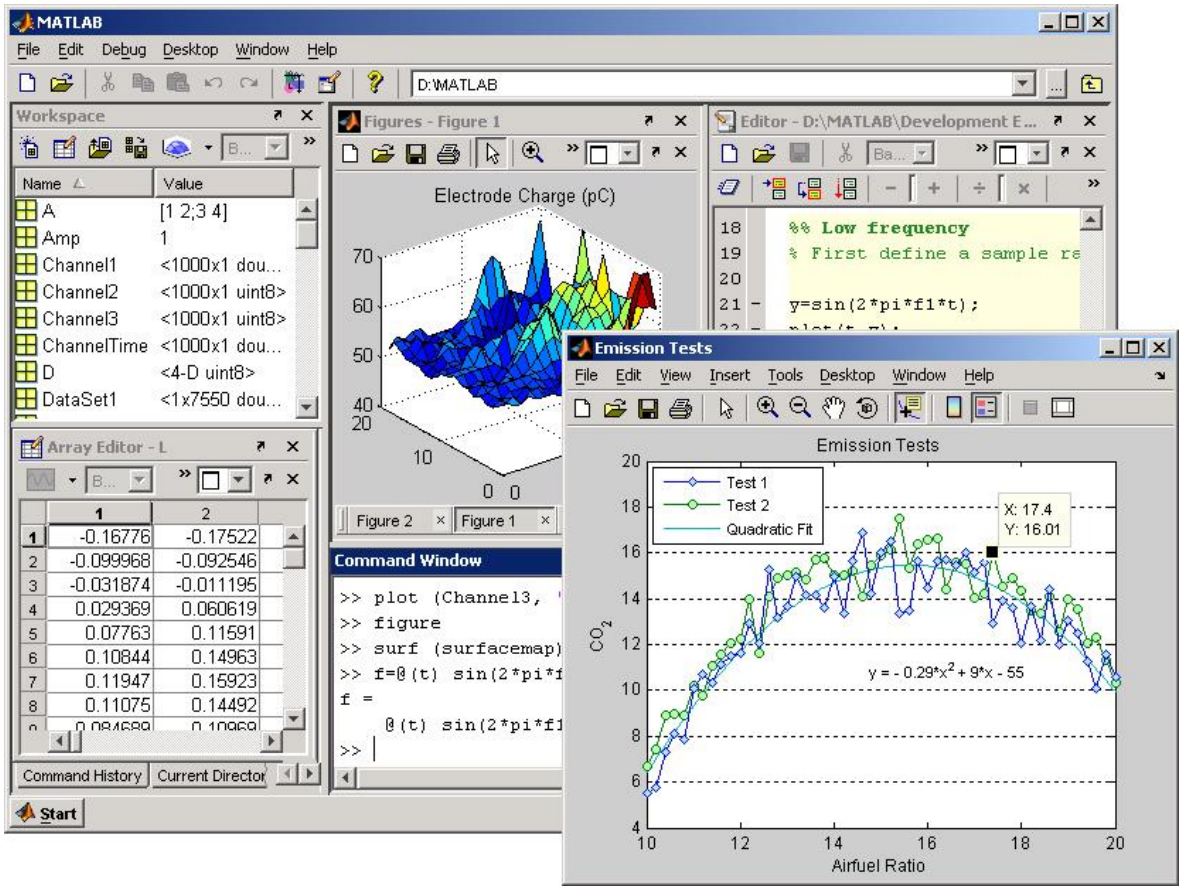
”Shifting the emphasis from creating math to making it more accessible and easy to use.”



https://www.youtube.com/watch?v=NHB1GdynBo8

- Origins: A company founded in 1988 to commercialize intellectual property developed at the University of Waterloo in the early 1980s. A privately held company in Waterloo, Ontario.
- List price: $1,895 (regular), $995 (academic), $99 (student)
- Employees: ???
- Approximate annual revenue: $20 million
- Estimated number of users: One million. In press releases, Maple claimed a million users in 2002, five million in 2003, then two million in 2005.

”Mathematical computation, analysis, visualization, and algorithm development.”



https://www.youtube.com/watch?v=jTS5ZmrrzMs

- Origins: Founded in 1984 to create a more productive computation environment beyond that provided by the languages Fortran and C. Headquartered in Natick, Massachusetts. Privately held company.
- List price: $1,900/per copy. Tens of thousands of dollars in ad-dons are available.
- Employees: ” More than 1,500 people worldwide ”
- Approximate annual revenue: About $100 million (i.e., roughly three times the size of Mathematica).
- Estimated number of users:I guess 5 million, though they write”Our customers are 1,000,000 of the worlds leading technical people, in over 100 countries, on all seven continents.”

End!