The project
My other uses of Sage in teaching
Sage for the Dark Side

Sage Widgets for Teaching Calculus (and some other uses of Sage)

J.K. Denny

Department of Mathematics
Mercer University
Macon, GA

Sage Edu Days 5

The project
My other uses of Sage in teaching
Sage for the Dark Side

Widgets for Calculus

The Idea

- Create database of code snippets & interacts for use in teaching calculus
- Should be simple & easy to modify
- Designed for "on the fly" use in class, office hours, etc.
- Should be arranged by topic and run in the single cell server
- Design should follow that of http://www.sagemath.org/eval.html

The project
My other uses of Sage in teaching
Sage for the Dark Side

Widgets for Calculus

The Idea

- Create database of code snippets & interacts for use in teaching calculus
- Should be simple & easy to modify
- Designed for "on the fly" use in class, office hours, etc.
- Should be arranged by topic and run in the single cell server
- Design should follow that of
  http://www.sagemath.org/eval.html

The project
My other uses of Sage in teaching
Sage for the Dark Side

Widgets for Calculus

The Idea

- Create database of code snippets & interacts for use in teaching calculus
- Should be simple & easy to modify
- Designed for "on the fly" use in class, office hours, etc.
- Should be arranged by topic and run in the single cell server
- Design should follow that of http://www.sagemath.org/eval.html

The project
My other uses of Sage in teaching
Sage for the Dark Side

Widgets for Calculus

The Plan

- Select several topics from calculus as focus.
- Consider type of widget (interact, snippet) for each topic.
- Write widgets & test.
- Write supporting code to translate widget code into database format.
- Upload to a server.

The project
My other uses of Sage in teaching
Sage for the Dark Side

Widgets for Calculus

The Plan

- Select several topics from calculus as focus.
- Consider type of widget (interact, snippet) for each topic.
- Write widgets & test.
- Write supporting code to translate widget code into database format.
- Upload to a server.

The project
My other uses of Sage in teaching
Sage for the Dark Side

Widgets for Calculus

The Plan

- Select several topics from calculus as focus.
- Consider type of widget (interact, snippet) for each topic.
- Write widgets & test.
- Write supporting code to translate widget code into database format.
- Upload to a server.

The project
My other uses of Sage in teaching
Sage for the Dark Side

Examples

- Plot functions
- Plot implicit functions
- Bezier curves
- Explore arc length
- Polar plots
- Explore sequences and series

The project
My other uses of Sage in teaching
Sage for the Dark Side

Translating into database format

- Save widget in text file
- Run <u>code</u> to convert to database format
- Output to new text file and. . .
- Add to database

The project
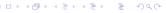My other uses of Sage in teaching
Sage for the Dark Side

Next steps...

- Get my own webpage / database working (similar to http://www.sagemath.org/eval.html)
- Continue cleaning up widgets that I've drafted
- Look for new ideas for widgets

The project
My other uses of Sage in teaching
Sage for the Dark Side

My uses of Sage in teaching

- Demonstrations in differential equations, calculus, and statistics
- Interacts for in-class activities in calculus
- Interacts given to differential equations students for use in
  - lab assignments
  - additional homework review
  - creation of example systems of ODEs
- Daily use in mathematical modeling course by students

The project
My other uses of Sage in teaching
Sage for the Dark Side

My uses of Sage in teaching

- Demonstrations in differential equations, calculus, and statistics
- Interacts for <u>in-class activities</u> in calculus
- Interacts given to differential equations students for use in
  - lab assignments
  - <u>additional homework review</u>
  - creation of <u>example systems of ODEs</u>
- Daily use in mathematical modeling course by students

The project
My other uses of Sage in teaching
Sage for the Dark Side

My uses of Sage in teaching

- Demonstrations in differential equations, calculus, and statistics
- Interacts for in-class activities in calculus
- Interacts given to differential equations students for use in
  - lab assignments
  - additional homework review
  - creation of example systems of ODEs
- Daily use in mathematical modeling course by students

The project
My other uses of Sage in teaching
Sage for the Dark Side

My uses of Sage in teaching

- Demonstrations in differential equations, calculus, and statistics
- Interacts for <u>in-class activities</u> in calculus
- Interacts given to differential equations students for use in
    - lab assignments
    - <u>additional homework review</u>
    - creation of <u>example systems</u> of ODEs
- Daily use in mathematical modeling course by students

The project
My other uses of Sage in teaching
Sage for the Dark Side

Sage for the Dark Side

Have used Sage regularly in my administrative duties as associate dean.

- Analysis of success rates in courses
- Fixing a co-requisite mess
- Data summary of mathematics placement for freshmen
- Future use: Matching freshmen with preferred spring semester writing courses (a happy marriage?)

The project
My other uses of Sage in teaching
Sage for the Dark Side

Sage for the Dark Side

Have used Sage regularly in my administrative duties as associate dean.

- Analysis of success rates in courses
- Fixing a co-requisite mess
- Data summary of mathematics placement for freshmen
- Future use: Matching freshmen with preferred spring semester writing courses (a happy marriage?)

The project
My other uses of Sage in teaching
Sage for the Dark Side

Sage for the Dark Side

Have used Sage regularly in my administrative duties as associate dean.

- Analysis of success rates in courses
- Fixing a co-requisite mess
- Data summary of mathematics placement for freshmen
- Future use: Matching freshmen with preferred spring semester writing courses (a happy marriage?)