WeBWorK

WeBWork: Online Homework for Math and Science

http://webwork.maa.org

Template prepared by Jason Aubrey and modified by Mike Gage

WeBWorK

Welcome!

- Main site:
  - http://webwork.maa.org
- Main course site:
  - https://courses.webwork.maa.org
- Experimental site
  - https://test.webwork.maa.org/webwork2
- URL for workshop assessment:
  - https://www.surveymonkey.com/s/3P2NMZP

Obtain surveymonkey ID from Flora McMartin flora.mcmartin@gmail.com

WeBWorK

The goal of this workshop is to demonstrate the benefits WeBWorK gives to students and instructors and to make it as easy and simple as possible for an instructor to get started using WeBWorK.

- WeBWorK: What, Why?
  - Key features, testimonials
  - Who uses WeBWorK?
  - AMS Homework Software Survey
- Play time --
- How to get your own WeBWorK course, further resources
- Workshop survey

WeBWorK

What is WeBWorK?

- WeBWorK is a free, open-source, web-application for delivering individualized homework problems over the web.
- It was originally developed in 1995 by mathematicians Arnold Pizer and Michael Gage at the University of Rochester.
- It is now supported by a team of developers from several institutions and is used in math, physics, chemistry, engineering and computer science.

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WeBWorK's Goal:
Make homework more effective and efficient

- It increases the effectiveness of traditional homework as a learning tool by:
  - Providing students with immediate feedback on the validity of their answers and giving students the opportunity to correct mistakes while they are still thinking about the problem.
  - Providing students with individualized versions of problems so each student must develop an answer to his or her own version of the problem

WeBWorK

- It increases the efficiency of traditional homework by:
  - Providing automatic grading of assignments
  - Providing information on the performance of individual students and the course as a whole

WeBWorK

A few key features:

- Using WeBWorK, instructors can ask most questions typically found in mathematics and other scientific textbooks as well as more advanced interactive questions.
- Students persist with WeBWorK. As one professor said: "My students are finally doing homework!"
- WeBWorK's National Problem Library contains more than 20,000 questions covering trigonometry, college algebra, pre-calculus through calculus, linear algebra, differential equations, vector calculus, complex variables, probability, statistics, and other subjects.

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- For mathematics courses, WeBWork comes packaged with the National Problem Library (NPL), a collection of over 25,000 problems contributed by mathematics faculty from institutions which use WeBWork.

- The NPL contains problems from, for example,
  - College Algebra
  - Calculus (Single and Multivariable)
  - Differential Equations
  - Complex Analysis
  - Linear Algebra
  - Probability and Statistics
  - Financial Mathematics

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- The NPL contains problems corresponding to a large selection of problems from many popular textbooks such as, for example,
  - College Algebra and Precalc: Stewart, Larson, Harshberger, others
  - Calculus: Stewart, Rogawski, Hughes-Hallet, Marsden, others
  - Texts for Complex Analysis, Linear Algebra, Financial Mathematics, Statistics and Discrete Mathematics.

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Who uses WeBWorK?

- WeBWork is used successfully at many large universities such as the University of Michigan, Rutgers, the University of Wisconsin, Arizona State, and many others (see The List of WeBWork Server Sites).

- WeBWork is also used at smaller institutions and at high schools and middle schools. As a type of outreach, many mathematics departments host courses for local high schools and middle schools.

WeBWorK

- As of Fall 2011, there were approximately 350 active WeBWorK users.

http://webwork.maa.org/wiki/WeBWorK_Sites

AMS Homework Software Suvey

AMS Homework Software Survey, Notices of the AMS, Vol. 57, No. 6 (June/July 2010), p.753
Full Report: http://www.ams.org/profession/leaders/webassess.htm (quotes taken from Full Report)

AMS Homework Software Survey

Key Findings :

- Overall, users were happy with homework software; almost no department discontinued or reduced its use.

- Current users were more positive about the benefits of homework software than prospective users and much less concerned about drawbacks than prospective users: the primary benefit being better student learning; the primary drawback being students not showing their work.

AMS Homework Software Suvey

The most widely used software was MyMathLab (110 departments, 230,000 students annually among survey responders), which is available with textbooks from most Pearson owned publishers. The two other most popular systems were WebAssign (80 users, about 100,000 students annually) and WeBWorK (55 users, about 100,000 students annually).

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AMS Homework Software Suvey

The popularity of the different homework systems varied little among the different types of departments with the exception that the top-80 doctoral departments are twice as likely to use WeBWorK (almost 40%) as M.S. or B.S. institutions. This pattern may be explained by the fact that WeBWorK needs local technical support to be mounted and maintained …

WeBWorK

AMS Homework Software Suvey

The MAA is coming to the rescue on this. They will provide hosting for $200 per course per semester. There is a one year free trial period for small courses.

http://webwork.maa.org/faq.html#hosting

Actually WeBWorK is in second place. In terms of total number of students … WeBWorK, used at 55 departments, was second with a little over 100,000 students; and WebAssign, used at 80 departments, was third with a little under 100,000 students.

Of course, as seen in from our map, WeBWorK is used by far more than 55 departments (closer to 400).

WeBWorK

Now for the fun part....

Give a hands on demo. You can use

http://courses.webwork.maa.org/webwork2/maa101
or
http://test.webwork.maa.org/webwork2/maa10x
or
http://hosted2.webwork.rochester.edu/webwork2/maa10x

login: profa
password: profa

login: student1
password: student1

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How to get started:

Have courses hosted at MAA

- Easiest and a good way to start - go to webwork.maa.org for more information ($200 per semester per course)
- One year free trial for one course under 100 students.
- Existing WeBWorK institutions may be willing to host your courses.
- Set up your own WeBWorK system

Workshop Survey

Our assessment work is designed to address two questions:

- Do dissemination activities result in the successful implementation of WeBWorK?
- Does WeBWorK promote student learning in mathematics?
- https://www.surveymonkey.com/s/3P2NMZP

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