THE UNIVERSITY OF AKRON
Mathematics and Computer Science

Web and Exerquiz Packages
Test File

D. P. Story

> **Legend:** In Section 5, a ✔ indicates that the student gave the correct response; a ✘, indicates an incorrect response, in this case, the correct answer is marked with a ●.

Last Revision Date: February 3, 2000   Version 1.30

Table of Contents

1. Introduction

This is a sample file to give templates of the environments defined in `exerquiz`.

2. On-Line Exercises

A well-designed sequences of exercises can be of aid to the student. The `exercise` environment makes it easy to produce electronic exercises. By using the `forpaper` option, you can also make a paper version of your exercises. See the `Webeqman.pdf` reference manual.

EXERCISE 1. Evaluate the integral $\int x^2 e^{2x}\, dx$.

In the preamble of this document, we defined a `problem` environment with its own counter. Here is an example of it.

Problem 2.1. Is $F(t) = \sin(t)$ an antiderivative of $f(x) = \cos(x)$? Explain your reasoning.

Problem 2.2. Is $F(t) = \sin(t)$ an antiderivative of $f(x) = \cos(x)$? Explain your reasoning.

By modifying the `exercise` environment, you can also create an `example` environment. The one defined in the preamble of this document has no associated counter.

Example. Give an example of a set that is *clopen*.

Solution: The real number line is both closed and open in the usual topology of the real line. □

3. Short Quizzes with/without Solutions

Below is a `shortquiz` without solution.

Quiz Was it in Xanadu did Kubla Kahn a stately pleasure dome decree?

(a) True   (b) False

Below is a `shortquiz` with a solution.

Quiz In what year did Columbus sail the ocean blue?

(a) 1490   (b) 1491   (c) 1492   (d) 1493

These two types can be bundled together using the `questions` environment.

Quiz Answer each of the following. Passing is 100%.

1. Was it in Xanadu did Kubla Kahn a stately pleasure dome decree?

(a) True   (b) False

2. In what year did Columbus sail the ocean blue?

(a) 1490   (b) 1491   (c) 1492   (d) 1493

4. Graded Quizzes with JavaScript

You can create graded quizzes using the `quiz` environment.

Here is a graded quiz using simple links. Might be suitable for a limited number of questions.

Begin Quiz Using the discriminant, $b^2 - 4ac$, respond to each of the following questions.

  1. Is the quadratic polynomial $x^2 - 4x + 3$ irreducible?
    (a) Yes   (b) No

  2. Is the quadratic polynomial $2x^2 - 4x + 3$ irreducible?
    (a) Yes   (b) No

  3. How many solutions does the equation $2x^2 - 3x - 2 = 0$ have?
    (a) none   (b) one   (c) two

End Quiz

By using the ∗-option, you can create a multiple choice set of question using check boxes.

Begin Quiz Using the discriminant, $b^2 - 4ac$, respond to each of the following questions.

  1. Is the quadratic polynomial $x^2 - 4x + 3$ irreducible?

Yes   No

2. Is the quadratic polynomial $2x^2 - 4x + 3$ irreducible?

Yes   No

3. How many solutions does the equation $2x^2 - 3x - 2 = 0$ have?

none   one   two

End Quiz

5. Correcting Quizzes with JavaScript

Beginning with version 1.2 of exerquiz, you can now grade the quizzes created by the quiz environment. In this section, we illustrate the quiz environment with corrections.

There are two types: link-style and form-style. This is the link-style format:

Begin Quiz Answer each of the following. Passing is 100%.

1. Who created TEX?

    (a) Knuth   (b) Lamport   (c) Carlisle   (d) Rahtz

2. Who originally wrote LATEX?

    (a) Knuth   (b) Lamport   (c) Carlisle   (d) Rahtz

End Quiz

    We can obtain the forms-style quiz simply by inserting an ∗ before the quiz field name. Important! Be sure to name each quiz field differently!

Begin Quiz Answer each of the following. Passing is 100%.

1. Who created TEX?

       Knuth   Lamport   Carlisle   Rahtz

2. Who originally wrote LATEX?

       Knuth   Lamport   Carlisle   Rahtz

End Quiz

The "corrections" button can be modified to suite your needs. The quiz below queries your knowledge of the people who maintain various freeware TeX Systems for UNIX and Win95/98/NT. The corrections button has been modified to take on a different look.

Begin Quiz Answer each of the following. Passing is 100%.

1. What TeX System does Thomas Esser maintain?

     MikTeX   csTeX   teTeX   fpTeX

2. What TeX System does Fabrice Popineau maintain?

     MikTeX   csTeX   teTeX   fpTeX

3. What TeX System does Christian Schenk maintain?

     MikTeX   csTeX   teTeX   fpTeX

End Quiz

Solutions to Exercises

Exercise 1. We evaluate by `integration by parts`:

$$\int x^2 e^{2x}\,dx = \frac{1}{2}x^2 e^{2x} - \int x e^{2x}\,dx \qquad u = x^2,\ dv = e^{2x}\,dx$$

$$= \frac{1}{2}x^2 e^{2x} - \left[\frac{1}{2}x e^{2x} - \int \frac{1}{2}e^{2x}\,dx\right] \quad \text{integration by parts}$$

$$= \frac{1}{2}x^2 e^{2x} - \frac{1}{2}x e^{2x} + \frac{1}{2}\int e^{2x}\,dx \qquad u = x^2,\ dv = e^{2x}\,dx$$

$$= \frac{1}{2}x^2 e^{2x} - \frac{1}{2}x e^{2x} + \frac{1}{4}e^{2x} \qquad \text{integration by parts}$$

$$= \frac{1}{4}(2x^2 - 2x + 1)e^{2x} \qquad \text{simplify!}$$

Exercise 1

Problem 2.1. The answer is yes. The definition states that F is an antiderivative of f if $F'(x) = f(x)$. Note that

$$F(t) = \sin(t) \implies F'(t) = \cos(t)$$

hence, $F(x) = \cos(x) = f(x)$. ◀

Problem 2.2. The answer is yes. The definition states that F is an antiderivative of f if $F'(x) = f(x)$. Note that

$$F(t) = \sin(t) \implies F'(t) = \cos(t)$$

hence, $F(x) = \cos(x) = f(x)$. ◀

Solutions to Quizzes

Solution to Quiz: Columbus sailed the ocean blue in 1492.

End Quiz

Solution to Quiz: Columbus sailed the ocean blue in 1492.