

A decorative graphic on the left side of the page, consisting of white lines and circles on a blue background, resembling a circuit board or a tree structure.

FRUITLAND INTERMEDIATE SPRING INTERNSHIP

BY: RYAN DILLON

CLIENT

- Fruitland Intermediate School
- Ms. White, a 4th grade mathematics teacher

WHAT WAS NEEDED

- Each week Ms. White would test her students by giving them weekly math facts tests.
- They have 6 minutes to complete as many of the 60 problems as they could.
- Once all problems were correctly completed, next week they would go onto the next type.

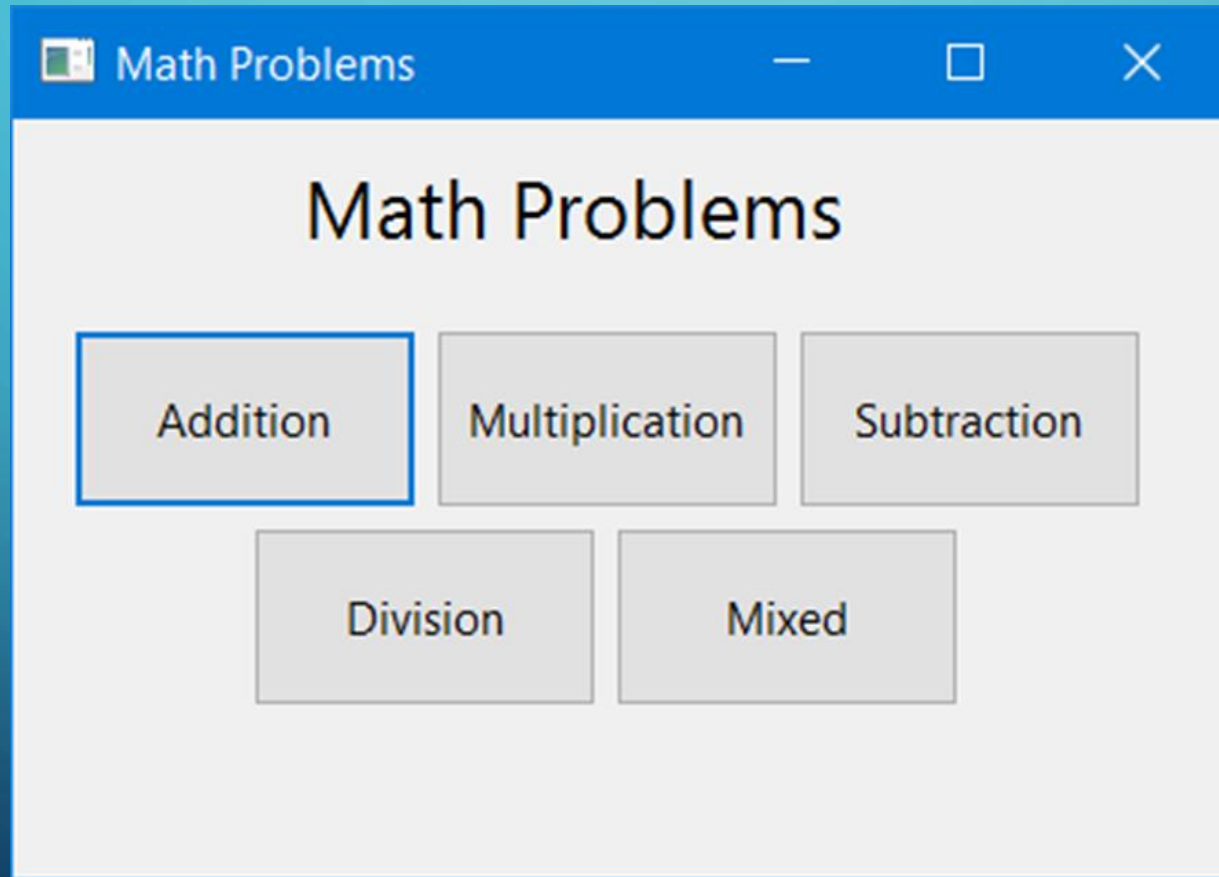
PART ONE

- Ms. White was giving her students the same exact test over and over each week, so some students were able to just memorize the answers, but not how to actually do the problem
- She needed a way to randomly generate weekly math facts tests
- Part one: Duplicate her tests, but make all the problems random

PART TWO

- Create a computer application that can be used by the students to take the math facts test and save the scores of each student

PART ONE



Name: _____
Date: _____
Number Correct: _____

ADDITION FACTS
TEST

Begin with these problems:
A, B, A+B,
C, B+C,
A+B+C

A

$$\begin{array}{r} 4 \\ + 7 \\ \hline \end{array}$$
$$\begin{array}{r} 4 \\ + 2 \\ \hline \end{array}$$
$$\begin{array}{r} 6 \\ + 7 \\ \hline \end{array}$$
$$\begin{array}{r} 8 \\ + 0 \\ \hline \end{array}$$
$$\begin{array}{r} 0 \\ + 6 \\ \hline \end{array}$$
$$\begin{array}{r} 2 \\ + 0 \\ \hline \end{array}$$
$$\begin{array}{r} 4 \\ + 9 \\ \hline \end{array}$$
$$\begin{array}{r} 6 \\ + 4 \\ \hline \end{array}$$
$$\begin{array}{r} 2 \\ + 6 \\ \hline \end{array}$$
$$\begin{array}{r} 4 \\ + 10 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ + 9 \\ \hline \end{array}$$
$$\begin{array}{r} 2 \\ + 8 \\ \hline \end{array}$$
$$\begin{array}{r} 9 \\ + 0 \\ \hline \end{array}$$
$$\begin{array}{r} 9 \\ + 7 \\ \hline \end{array}$$
$$\begin{array}{r} 9 \\ + 5 \\ \hline \end{array}$$
$$\begin{array}{r} 6 \\ + 9 \\ \hline \end{array}$$
$$\begin{array}{r} 0 \\ + 2 \\ \hline \end{array}$$
$$\begin{array}{r} 1 \\ + 7 \\ \hline \end{array}$$
$$\begin{array}{r} 10 \\ + 9 \\ \hline \end{array}$$
$$\begin{array}{r} 5 \\ + 2 \\ \hline \end{array}$$

0 + 6 = 5 + 5 = 0 + 9 = 10 + 9 = 9 + 7 =

6 + 8 = 5 + 10 = 10 + 5 = 3 + 5 = 2 + 10 =

B

$$\begin{array}{r} 3 \\ + 5 \\ \hline \end{array}$$
$$\begin{array}{r} 5 \\ + 8 \\ \hline \end{array}$$
$$\begin{array}{r} 3 \\ + 2 \\ \hline \end{array}$$
$$\begin{array}{r} 2 \\ + 3 \\ \hline \end{array}$$
$$\begin{array}{r} 0 \\ + 8 \\ \hline \end{array}$$
$$\begin{array}{r} 0 \\ + 5 \\ \hline \end{array}$$
$$\begin{array}{r} 0 \\ + 8 \\ \hline \end{array}$$
$$\begin{array}{r} 7 \\ + 10 \\ \hline \end{array}$$
$$\begin{array}{r} 5 \\ + 9 \\ \hline \end{array}$$
$$\begin{array}{r} 0 \\ + 3 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ + 2 \\ \hline \end{array}$$
$$\begin{array}{r} 0 \\ + 1 \\ \hline \end{array}$$
$$\begin{array}{r} 10 \\ + 1 \\ \hline \end{array}$$
$$\begin{array}{r} 10 \\ + 10 \\ \hline \end{array}$$
$$\begin{array}{r} 2 \\ + 6 \\ \hline \end{array}$$
$$\begin{array}{r} 1 \\ + 2 \\ \hline \end{array}$$
$$\begin{array}{r} 4 \\ + 5 \\ \hline \end{array}$$
$$\begin{array}{r} 7 \\ + 10 \\ \hline \end{array}$$
$$\begin{array}{r} 9 \\ + 8 \\ \hline \end{array}$$
$$\begin{array}{r} 0 \\ + 3 \\ \hline \end{array}$$

8 + 7 = 6 + 2 = 2 + 9 = 1 + 5 = 0 + 10 =

6 + 5 = 0 + 9 = 5 + 4 = 1 + 7 = 0 + 5 =

C

$$\begin{array}{r} 7 \\ + 1 \\ \hline \end{array}$$
$$\begin{array}{r} 6 \\ + 0 \\ \hline \end{array}$$
$$\begin{array}{r} 7 \\ + 9 \\ \hline \end{array}$$
$$\begin{array}{r} 10 \\ + 1 \\ \hline \end{array}$$
$$\begin{array}{r} 8 \\ + 5 \\ \hline \end{array}$$
$$\begin{array}{r} 3 \\ + 7 \\ \hline \end{array}$$
$$\begin{array}{r} 10 \\ + 9 \\ \hline \end{array}$$
$$\begin{array}{r} 6 \\ + 0 \\ \hline \end{array}$$
$$\begin{array}{r} 3 \\ + 0 \\ \hline \end{array}$$
$$\begin{array}{r} 4 \\ + 9 \\ \hline \end{array}$$

$$\begin{array}{r} 0 \\ + 9 \\ \hline \end{array}$$
$$\begin{array}{r} 5 \\ + 6 \\ \hline \end{array}$$
$$\begin{array}{r} 0 \\ + 5 \\ \hline \end{array}$$
$$\begin{array}{r} 9 \\ + 2 \\ \hline \end{array}$$
$$\begin{array}{r} 4 \\ + 10 \\ \hline \end{array}$$
$$\begin{array}{r} 6 \\ + 4 \\ \hline \end{array}$$
$$\begin{array}{r} 10 \\ + 9 \\ \hline \end{array}$$
$$\begin{array}{r} 4 \\ + 10 \\ \hline \end{array}$$
$$\begin{array}{r} 10 \\ + 4 \\ \hline \end{array}$$
$$\begin{array}{r} 0 \\ + 9 \\ \hline \end{array}$$

0 + 0 = 4 + 5 = 7 + 3 = 0 + 4 = 3 + 9 =

9 + 0 = 6 + 2 = 4 + 10 = 2 + 10 = 7 + 3 =

Name: _____
Date: _____
Number Correct: _____

ADDITION FACTS
TEST
ANSWERS

Begin with these problems:
A, B, A+B,
C, B+C,
A+B+C

A

$$\begin{array}{r} 4 \\ + 7 \\ \hline 11 \end{array}$$
$$\begin{array}{r} 4 \\ + 2 \\ \hline 6 \end{array}$$
$$\begin{array}{r} 6 \\ + 7 \\ \hline 13 \end{array}$$
$$\begin{array}{r} 8 \\ + 0 \\ \hline 8 \end{array}$$
$$\begin{array}{r} 0 \\ + 6 \\ \hline 6 \end{array}$$
$$\begin{array}{r} 2 \\ + 0 \\ \hline 2 \end{array}$$
$$\begin{array}{r} 4 \\ + 9 \\ \hline 13 \end{array}$$
$$\begin{array}{r} 6 \\ + 4 \\ \hline 10 \end{array}$$
$$\begin{array}{r} 2 \\ + 6 \\ \hline 8 \end{array}$$
$$\begin{array}{r} 4 \\ + 10 \\ \hline 14 \end{array}$$

$$\begin{array}{r} 7 \\ + 9 \\ \hline 16 \end{array}$$
$$\begin{array}{r} 2 \\ + 8 \\ \hline 10 \end{array}$$
$$\begin{array}{r} 9 \\ + 0 \\ \hline 9 \end{array}$$
$$\begin{array}{r} 9 \\ + 7 \\ \hline 16 \end{array}$$
$$\begin{array}{r} 9 \\ + 5 \\ \hline 14 \end{array}$$
$$\begin{array}{r} 6 \\ + 9 \\ \hline 15 \end{array}$$
$$\begin{array}{r} 0 \\ + 2 \\ \hline 2 \end{array}$$
$$\begin{array}{r} 1 \\ + 7 \\ \hline 8 \end{array}$$
$$\begin{array}{r} 10 \\ + 9 \\ \hline 19 \end{array}$$
$$\begin{array}{r} 5 \\ + 2 \\ \hline 7 \end{array}$$

0 + 6 = 6 5 + 5 = 10 0 + 9 = 9 10 + 9 = 19 9 + 7 = 16

6 + 8 = 14 5 + 10 = 15 10 + 5 = 15 3 + 5 = 8 2 + 10 = 12

B

$$\begin{array}{r} 3 \\ + 5 \\ \hline 8 \end{array}$$
$$\begin{array}{r} 5 \\ + 8 \\ \hline 13 \end{array}$$
$$\begin{array}{r} 3 \\ + 2 \\ \hline 5 \end{array}$$
$$\begin{array}{r} 2 \\ + 3 \\ \hline 5 \end{array}$$
$$\begin{array}{r} 0 \\ + 8 \\ \hline 8 \end{array}$$
$$\begin{array}{r} 0 \\ + 5 \\ \hline 5 \end{array}$$
$$\begin{array}{r} 0 \\ + 8 \\ \hline 8 \end{array}$$
$$\begin{array}{r} 7 \\ + 10 \\ \hline 17 \end{array}$$
$$\begin{array}{r} 5 \\ + 9 \\ \hline 14 \end{array}$$
$$\begin{array}{r} 0 \\ + 3 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 5 \\ + 2 \\ \hline 7 \end{array}$$
$$\begin{array}{r} 0 \\ + 1 \\ \hline 1 \end{array}$$
$$\begin{array}{r} 10 \\ + 1 \\ \hline 11 \end{array}$$
$$\begin{array}{r} 10 \\ + 10 \\ \hline 20 \end{array}$$
$$\begin{array}{r} 2 \\ + 6 \\ \hline 8 \end{array}$$
$$\begin{array}{r} 1 \\ + 2 \\ \hline 3 \end{array}$$
$$\begin{array}{r} 4 \\ + 5 \\ \hline 9 \end{array}$$
$$\begin{array}{r} 7 \\ + 10 \\ \hline 17 \end{array}$$
$$\begin{array}{r} 9 \\ + 8 \\ \hline 17 \end{array}$$
$$\begin{array}{r} 0 \\ + 3 \\ \hline 3 \end{array}$$

8 + 7 = 15 6 + 2 = 8 2 + 9 = 11 1 + 5 = 6 0 + 10 = 10

6 + 5 = 11 0 + 9 = 9 5 + 4 = 9 1 + 7 = 8 0 + 5 = 5

C

$$\begin{array}{r} 7 \\ + 1 \\ \hline 8 \end{array}$$
$$\begin{array}{r} 6 \\ + 0 \\ \hline 6 \end{array}$$
$$\begin{array}{r} 7 \\ + 9 \\ \hline 16 \end{array}$$
$$\begin{array}{r} 10 \\ + 1 \\ \hline 11 \end{array}$$
$$\begin{array}{r} 8 \\ + 5 \\ \hline 13 \end{array}$$
$$\begin{array}{r} 3 \\ + 7 \\ \hline 10 \end{array}$$
$$\begin{array}{r} 10 \\ + 9 \\ \hline 19 \end{array}$$
$$\begin{array}{r} 6 \\ + 0 \\ \hline 6 \end{array}$$
$$\begin{array}{r} 3 \\ + 0 \\ \hline 3 \end{array}$$
$$\begin{array}{r} 4 \\ + 9 \\ \hline 13 \end{array}$$

$$\begin{array}{r} 0 \\ + 9 \\ \hline 9 \end{array}$$
$$\begin{array}{r} 5 \\ + 6 \\ \hline 11 \end{array}$$
$$\begin{array}{r} 0 \\ + 5 \\ \hline 5 \end{array}$$
$$\begin{array}{r} 9 \\ + 2 \\ \hline 11 \end{array}$$
$$\begin{array}{r} 4 \\ + 10 \\ \hline 14 \end{array}$$
$$\begin{array}{r} 6 \\ + 4 \\ \hline 10 \end{array}$$
$$\begin{array}{r} 10 \\ + 9 \\ \hline 19 \end{array}$$
$$\begin{array}{r} 4 \\ + 10 \\ \hline 14 \end{array}$$
$$\begin{array}{r} 10 \\ + 4 \\ \hline 14 \end{array}$$
$$\begin{array}{r} 0 \\ + 9 \\ \hline 9 \end{array}$$

0 + 0 = 0 4 + 5 = 9 7 + 3 = 10 0 + 4 = 4 3 + 9 = 12

TECHNOLOGIES USED FOR PART ONE

- iText: an open source library for creating and manipulating PDF files in Java.
- Eclipse: an integrated development environment (IDE) used in computer programming.
- Java Swing/AWT



PART TWO

- Specifications:
 - Create a test containing 60 problems
 - Displays the selected type of questions one at a time
 - Timer: 6 minutes to complete the test
 - Reusability: needs to be able to be reused year after year
 - Simple interface
 - Saves the score and test type at the end for each student
 - 2 chances to get a problem right



PART TWO

	A	B	C	D	E
1	Name	ID	05/01/2016	05/02/2016	
2	Akenbrack	14279	60 Addition	58 Subtraction	
3	Best	15197	39 Addition		
4	Brasure	14316	28 Addition		
5	Brittinghar	12603	50 Subtraction		
6	Brown	12125	20 Multiplication		
7	Campell	15390	57 Addition		
8	Carter	14332	40 Addition		
9	Cook	14334			
10	Cooper	15677			
11	Fields	15798			
12	Fykes	14444			
13	Garrison	12632			
14	Hayman	24269			
15	Hernandez	23930			
16	Holdai	15211			
17	Jimmerson	11489			
18	Lam	14669			
19	Lewis	15591			
20	Long	14491			
21	Nelson	15070			
22	Osman	10780			
23	Reaves	12744			
24	Schoolfield	12260			
25	Schoolfield	12946			
26	Scott	14527			
27	Shue	14528			
28	Wongus	20115			
29					

Math Facts

Akenbrack 14279

Addition

Start

Ready?

Math Facts

Time: 5:44



3 Correct
1 Wrong

5) $4 + 9 =$

1	2	3
4	5	6
7	8	9
C	0	OK

You Finished!

You got 40 out of 60 Correct!

Review

Review Incorrect Problems

$5 + 2 = 7$

$0 + 8 = 8$

$7 + 4 = 11$

$0 + 9 = 9$

$8 + 5 = 13$

$4 + 2 = 6$

$10 + 6 = 16$

$3 + 5 = 8$

$1 + 9 = 10$

$4 + 5 = 9$

$4 + 5 = 9$

$2 + 10 = 12$

$4 + 1 = 5$

$5 + 10 = 15$

$5 + 4 = 9$

$3 + 10 = 13$

$7 + 1 = 8$

$3 + 2 = 5$

$10 + 0 = 10$

$3 + 9 = 12$

TECHNOLOGIES USED FOR PART TWO

- Apache POI: Apache POI is a popular API that allows programmers to create, modify, and display MS Office files using Java programs.
- Eclipse: an integrated development environment (IDE) used in computer programming.
- Java Swing/AWT



CHALLENGES

- Time management
- Working alone so if I had a problem I had to do research online or come to campus to ask one of my professors
- Learning how to use different libraries (Apache POI, iText)
- Communicating with a client

CLASSROOM EXPERIENCE

- I used my Java experience that I learned in class
- I used my knowledge of Java Swing that I developed in Software Engineering
- Projects in the classroom are slightly smaller examples of real world problems

WHAT DID I GAIN FROM THIS?

- A greater understanding of Java Swing
- How to use iText to generate a PDF file
- How to use Apache POI to read and write to a Microsoft Excel file
- How to use classroom knowledge to solve real world problems
- Experience working outside of the classroom
- Time Management

The image features a dark blue gradient background with white circuit-like lines in the corners. These lines consist of straight paths that branch out and terminate in small circles, resembling a network or data flow diagram. The lines are positioned in the top-left, top-right, bottom-left, and bottom-right corners, framing the central text.

QUESTIONS?