



The Sanders Theatre Server Sabotage

Grade 5 math · Addition, Subtraction, Fractions of a number, Multiplication · Reading level grades 5-6

Detective: _____ **Date:** _____

Oh no! A mysterious Rogue Compiler has locked down the CS50 grading servers right before the final project deadline. The Head Teaching Assistant has been locked out of the system. We must analyze the code logs, decrypt the network clues, and find out which campus coder is behind this cyber mischief before the submission portal closes forever!

1. Solve each math problem. The answer is a number, and the letter beside it is what that number stands for.
2. In the clue boxes, write that letter in every box showing the same number, then read the secret clue.
3. Use each clue to cross suspects off the list. The one suspect left at the end is the culprit!

My answer: the Rogue Compiler is _____

Possible suspects

Cross off a row as each clue rules it out. The one left at the end is the culprit.

NAME	GLITCH ATTACK	CYBER TRICK	KEYBOARD HABIT	AVATAR HAIR	DEBUGGING TOOL
Shannon	Buffer Overflow	Python Encryption	Right-handed typing	Sleek silver fiber hair	Rubber Duck Debugger
Turing	Stack Overflow	SQL Injection	Left-handed typing	Sleek silver fiber hair	Style50 Command
Diana	Memory Leak	Python Encryption	Left-handed typing	Neon blue terminal glow hair	Rubber Duck Debugger
Ada	Stack Overflow	Scratch Block Lock	Left-handed typing	Sleek silver fiber hair	Rubber Duck Debugger
Ritchie	Infinite Loop	Scratch Block Lock	Left-handed typing	Sleek silver fiber hair	Valgrind Memory Check
Colton	Buffer Overflow	Binary Override	Right-handed typing	Neon blue terminal glow hair	Style50 Command
Doug	Infinite Loop	C Pointer Hijack	Left-handed typing	Copper wire curls	Valgrind Memory Check
Margaret	Memory Leak	Python Encryption	Left-handed typing	Sleek silver fiber hair	Style50 Command
Grace	Stack Overflow	C Pointer Hijack	Left-handed typing	Neon blue terminal glow hair	Valgrind Memory Check
Hamilton	Stack Overflow	Binary Override	Left-handed typing	Sleek silver fiber hair	Style50 Command
Lovelace	Buffer Overflow	SQL Injection	Left-handed typing	Neon blue terminal glow hair	Style50 Command
Alan	Memory Leak	C Pointer Hijack	Right-handed typing	Neon blue terminal glow hair	Valgrind Memory Check
Torvalds	Memory Leak	Binary Override	Left-handed typing	Sleek silver fiber hair	Style50 Command
Babbage	Memory Leak	Scratch Block Lock	Right-handed typing	Sleek silver fiber hair	Style50 Command
Brian	Infinite Loop	Binary Override	Left-handed typing	Sleek silver fiber hair	Style50 Command
Hopper	Infinite Loop	C Pointer Hijack	Left-handed typing	Sleek silver fiber hair	Style50 Command
Wozniak	Syntax Error	C Pointer Hijack	Left-handed typing	Sleek silver fiber hair	Style50 Command
Carter	Infinite Loop	Scratch Block Lock	Left-handed typing	Copper wire curls	Style50 Command
Gates	Buffer Overflow	Python Encryption	Left-handed typing	Sleek silver fiber hair	Valgrind Memory Check
David	Buffer Overflow	C Pointer Hijack	Left-handed typing	Copper wire curls	Valgrind Memory Check
Berners	Memory Leak	Scratch Block Lock	Right-handed typing	Copper wire curls	Style50 Command

CLUE 1

We tallied up the total number of bug reports coming from the sandbox servers. Adding the freshman reports to the sophomore reports gave us the code we needed.

Solve each problem, then write its letter in every clue box that shows the same number.



$$2059 + 2392 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$3567 + 4421 = \boxed{} \rightarrow \boxed{\text{D}}$$

$$1712 + 1779 = \boxed{} \rightarrow \boxed{\mathbf{Y}}$$

$1397 + 3211 = \boxed{} \rightarrow \boxed{\text{S}}$

$$3040 + 6313 = \boxed{} \rightarrow \boxed{\text{U}}$$

$$2424 + 1055 = \boxed{} \rightarrow \boxed{\text{N}}$$

$$3784 + 3933 = \boxed{} \rightarrow \boxed{\mathbf{A}}$$

$$5062 + 4297 = \boxed{} \rightarrow \boxed{\text{E}}$$

$$1511 + 3344 = \boxed{} \rightarrow \boxed{\mathbf{B}}$$

$$2954 + 4221 = \boxed{} \rightarrow \boxed{}$$

$$3220 + 6306 = \boxed{} \rightarrow \boxed{\text{R}}$$

$$941 + 1450 = \boxed{} \rightarrow \boxed{\text{L}}$$

$$4368 + 2136 = \boxed{} \rightarrow \boxed{\text{H}}$$

$$4225 + 5052 = \boxed{} \rightarrow \boxed{\mathbf{V}}$$

$$2556 + 5829 = \boxed{} \rightarrow \boxed{\text{O}}$$

Scratch space:

CLUE 2 Subtraction

The compiler erased several lines of our code. Subtracting the broken lines from the original file size left us with the secret key.

Solve each problem, then write its letter in every clue box that shows the same number.

T										T	T								
7660	5477	6520	1786	8168	1786	3639	6520	6291	7660	7660	4596	3639	6520	8733	7288	5115	2927	4596	
		T		T						T									
5241	1606	7660	5477	7660	5477	6520	2927	6520	1795	7660	5477	6246	5115	8733					

$$11897 - 4237 = \boxed{} \rightarrow \boxed{\text{T}}$$

$$8573 - 3096 = \boxed{} \rightarrow \boxed{\text{H}}$$

$$5273 - 1634 = \boxed{} \rightarrow \boxed{\text{P}}$$

$$9538 - 4297 = \boxed{} \rightarrow \boxed{\text{W}}$$

$$8623 - 455 = \boxed{} \rightarrow \boxed{\text{U}}$$

$$4823 - 3028 = \boxed{} \rightarrow \boxed{\text{F}}$$

$$13724 - 4991 = \boxed{} \rightarrow \boxed{\text{D}}$$

$$8957 - 1669 = \boxed{} \rightarrow \boxed{\text{O}}$$

$$6842 - 596 = \boxed{} \rightarrow \boxed{\text{A}}$$

$$2778 - 1172 = \boxed{} \rightarrow \boxed{\text{I}}$$

$$9220 - 2700 = \boxed{} \rightarrow \boxed{\text{E}}$$

$$5730 - 3944 = \boxed{} \rightarrow \boxed{\text{S}}$$

$$7413 - 2817 = \boxed{} \rightarrow \boxed{\text{Y}}$$

$$6456 - 3529 = \boxed{} \rightarrow \boxed{\text{L}}$$

$$6287 - 1172 = \boxed{} \rightarrow \boxed{\text{N}}$$

$$6676 - 385 = \boxed{} \rightarrow \boxed{\text{C}}$$

Scratch space:

CLUE 3

Fractions of a number

To unlock the memory banks, we had to analyze a batch of RAM chips. Exactly two thirds of the chips were corrupted by the rogue agent.

Solve each problem, then write its letter in every clue box that shows the same number.

T							T										T		
19	40	17	29	11	14	19	38	40	26	35	14	11	17	28	19	40	17		

	T							T						
18	19	31	11	17	26	14	26	19	31	23	20	13		

$5/10 \text{ of } 38 = \square \rightarrow \boxed{\text{T}}$

$2/10 \text{ of } 115 = \square \rightarrow \boxed{\text{R}}$

$1/5 \text{ of } 90 = \square \rightarrow \boxed{\text{S}}$

$1/5 \text{ of } 100 = \square \rightarrow \boxed{\text{U}}$

$1/6 \text{ of } 66 = \square \rightarrow \boxed{\text{L}}$

$3/6 \text{ of } 34 = \square \rightarrow \boxed{\text{E}}$

$2/6 \text{ of } 120 = \square \rightarrow \boxed{\text{H}}$

$4/5 \text{ of } 35 = \square \rightarrow \boxed{\text{D}}$

$2/6 \text{ of } 105 = \square \rightarrow \boxed{\text{A}}$

$2/10 \text{ of } 155 = \square \rightarrow \boxed{\text{Y}}$

$1/4 \text{ of } 152 = \square \rightarrow \boxed{\text{C}}$

$2/8 \text{ of } 52 = \square \rightarrow \boxed{\text{N}}$

$5/10 \text{ of } 52 = \square \rightarrow \boxed{\text{F}}$

$2/6 \text{ of } 87 = \square \rightarrow \boxed{\text{G}}$

$2/8 \text{ of } 56 = \square \rightarrow \boxed{\text{I}}$

Scratch space:

CLUE 4

Multiplication facts (1-12)

The server room has a massive grid of glowing LED indicators. Multiplying the number of rows by the columns of green lights revealed the security bypass.

Solve each problem, then write its letter in every clue box that shows the same number.

S								S						S						
21	96	64	60	64	60	15		21	50	99	99	32		21	64	50	100	99	20	
										S										
16	64	44	99	20				120	6	21		16	48	1	60	80				

$7 \times 3 = \square \rightarrow \boxed{\text{S}}$

$8 \times 12 = \square \rightarrow \boxed{\text{H}}$

$10 \times 6 = \square \rightarrow \boxed{\text{N}}$

$4 \times 8 = \square \rightarrow \boxed{\text{K}}$

$11 \times 4 = \square \rightarrow \boxed{\text{B}}$

$3 \times 5 = \square \rightarrow \boxed{\text{G}}$

$1 \times 6 = \square \rightarrow \boxed{\text{A}}$

$10 \times 2 = \square \rightarrow \boxed{\text{R}}$

$8 \times 10 = \square \rightarrow \boxed{\text{D}}$

$6 \times 8 = \square \rightarrow \boxed{\text{O}}$

$12 \times 10 = \square \rightarrow \boxed{\text{W}}$

$1 \times 1 = \square \rightarrow \boxed{\text{U}}$

$10 \times 5 = \square \rightarrow \boxed{\text{L}}$

$11 \times 9 = \square \rightarrow \boxed{\text{E}}$

$10 \times 10 = \square \rightarrow \boxed{\text{V}}$

$8 \times 8 = \square \rightarrow \boxed{\text{I}}$

$8 \times 2 = \square \rightarrow \boxed{\text{F}}$

Scratch space:

CLUE 5**Fractions of a number - the last clue**

We sorted a stack of printed code pages into folders. Three fourths of the stack contained hidden instructions from the villain.

First solve each problem. Then find each answer in the numbered list below and cross that sentence out. One sentence will be left - that is exactly what the villain did!

Step 1 - solve these:

$1/2 \text{ of } 10 = \boxed{}$

$2/6 \text{ of } 3 = \boxed{}$

$2/6 \text{ of } 24 = \boxed{}$

$2/4 \text{ of } 6 = \boxed{}$

$1/5 \text{ of } 30 = \boxed{}$

$4/5 \text{ of } 15 = \boxed{}$

$2/6 \text{ of } 27 = \boxed{}$

$2/10 \text{ of } 10 = \boxed{}$

$4/10 \text{ of } 25 = \boxed{}$

$2/4 \text{ of } 8 = \boxed{}$

$1/8 \text{ of } 56 = \boxed{}$

Step 2 - cross out the sentence with each answer:

1. The villain triggered an infinite loop, then scrambled the memory logs with a c pointer hijack.
2. The villain threw a confusing syntax error, then locked down the servers with a scratch block lock.
3. The villain triggered an infinite loop, then bypassed security using a binary override.
4. The villain threw a confusing syntax error, then manipulated the grading system via sql injection.
5. The villain caused a massive memory leak, then sealed the database using python encryption.
6. The villain provoked a stack overflow, then sealed the database using python encryption.
7. The villain executed a buffer overflow, then locked down the servers with a scratch block lock.
8. The villain provoked a stack overflow, then manipulated the grading system via sql injection.
9. The villain executed a buffer overflow, then scrambled the memory logs with a c pointer hijack.
10. The villain caused a massive memory leak, then scrambled the memory logs with a c pointer hijack.
11. The villain threw a confusing syntax error, then scrambled the memory logs with a c pointer hijack.
12. The villain provoked a stack overflow, then locked down the servers with a scratch block lock.

Answer Key

The Sanders Theatre Server Sabotage

Culprit: Wozniak

Syntax Error · C Pointer Hijack · Left-handed typing · Sleek silver fiber hair · Style50 Command

Trail: Start 21 → Clue 1 17 → Clue 2 13 → Clue 3 6 → Clue 4 4 → Clue 5 1

Clue 1 (Addition): "THE VILLAIN DOES NOT USE BINARY OVERRIDE"

$2059 + 2392 = 4451$ (T) · $3567 + 4421 = 7988$ (D) · $1712 + 1779 = 3491$ (Y) · $1397 + 3211 = 4608$ (S) · $3040 + 6313 = 9353$ (U) · $2424 + 1055 = 3479$ (N) · $3784 + 3933 = 7717$ (A) · $5062 + 4297 = 9359$ (E) · $1511 + 3344 = 4855$ (B) · $2954 + 4221 = 7175$ (I) · $3220 + 6306 = 9526$ (R) · $941 + 1450 = 2391$ (L) · $4368 + 2136 = 6504$ (H) · $4225 + 5052 = 9277$ (V) · $2556 + 5829 = 8385$ (O)

Clue 2 (Subtraction): "THE SUSPECT TYPED ONLY WITH THE LEFT HAND"

$11897 - 4237 = 7660$ (T) · $8573 - 3096 = 5477$ (H) · $5273 - 1634 = 3639$ (P) · $9538 - 4297 = 5241$ (W) · $8623 - 455 = 8168$ (U) · $4823 - 3028 = 1795$ (F) · $13724 - 4991 = 8733$ (D) · $8957 - 1669 = 7288$ (O) · $6842 - 596 = 6246$ (A) · $2778 - 1172 = 1606$ (I) · $9220 - 2700 = 6520$ (E) · $5730 - 3944 = 1786$ (S) · $7413 - 2817 = 4596$ (Y) · $6456 - 3529 = 2927$ (L) · $6287 - 1172 = 5115$ (N) · $6676 - 385 = 6291$ (C)

Clue 3 (Fractions of a number): "THE GLITCH FAILED THE STYLE FIFTY RUN"

$5/10$ of 38 = 19 (T) · $2/10$ of 115 = 23 (R) · $1/5$ of 90 = 18 (S) · $1/5$ of 100 = 20 (U) · $1/6$ of 66 = 11 (L) · $3/6$ of 34 = 17 (E) · $2/6$ of 120 = 40 (H) · $4/5$ of 35 = 28 (D) · $2/6$ of 105 = 35 (A) · $2/10$ of 155 = 31 (Y) · $1/4$ of 152 = 38 (C) · $2/8$ of 52 = 13 (N) · $5/10$ of 52 = 26 (F) · $2/6$ of 87 = 29 (G) · $2/8$ of 56 = 14 (I)

Clue 4 (Multiplication facts (1-12)): "SHINING SLEEK SILVER FIBER WAS FOUND"

$7 \times 3 = 21$ (S) · $8 \times 12 = 96$ (H) · $10 \times 6 = 60$ (N) · $4 \times 8 = 32$ (K) · $11 \times 4 = 44$ (B) · $3 \times 5 = 15$ (G) · $1 \times 6 = 6$ (A) · $10 \times 2 = 20$ (R) · $8 \times 10 = 80$ (D) · $6 \times 8 = 48$ (O) · $12 \times 10 = 120$ (W) · $1 \times 1 = 1$ (U) · $10 \times 5 = 50$ (L) · $11 \times 9 = 99$ (E) · $10 \times 10 = 100$ (V) · $8 \times 8 = 64$ (I) · $8 \times 2 = 16$ (F)

Clue 5 (Fractions of a number): surviving statement is box 11 → Wozniak

$1/2$ of 10 = 5 · $2/6$ of 3 = 1 · $2/6$ of 24 = 8 · $2/4$ of 6 = 3 · $1/5$ of 30 = 6 · $4/5$ of 15 = 12 · $2/6$ of 27 = 9 · $2/10$ of 10 = 2 · $4/10$ of 25 = 10 · $2/4$ of 8 = 4 · $1/8$ of 56 = 7