

THE ACADEMY SERIES

BOOK THREE

INFORMATION TECHNOLOGY

DIGITAL GHOST

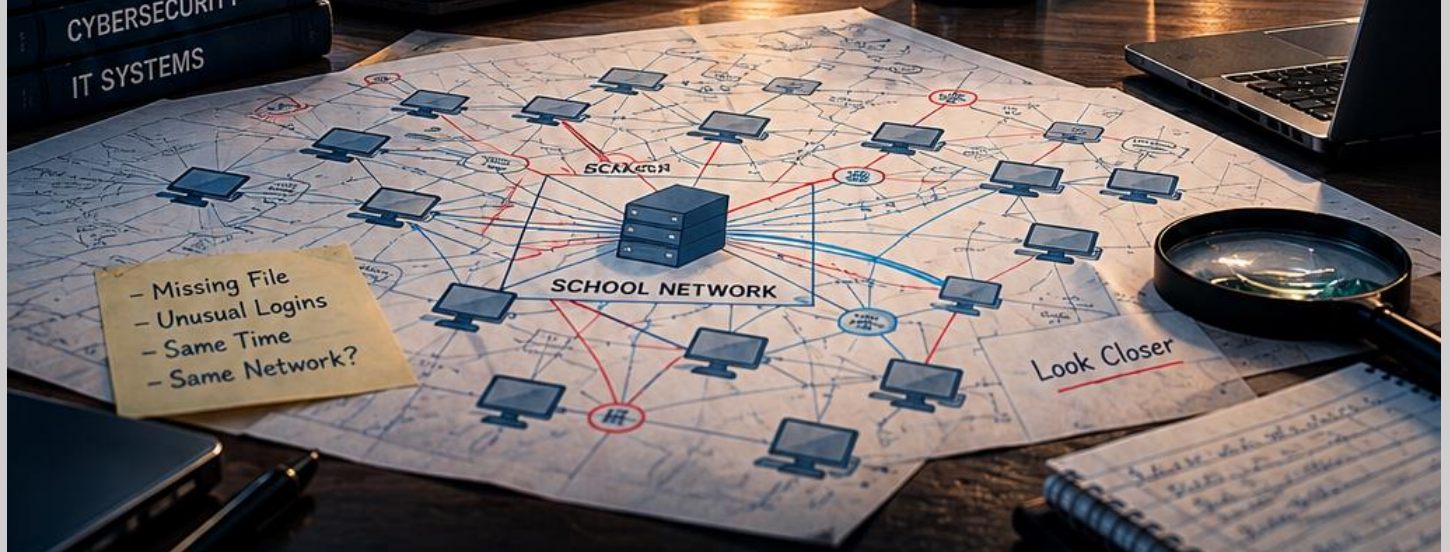
Cyber Mystery • School Adventure • Technology



LEARN
THINK
SOLVE
GROW



- Missing File
- Unusual Logins
- Same Time
- Same Network?



Look Closer

PRESENTED BY

HIRRA ACADEMY

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THE ACADEMY SERIES

BOOK THREE

Information Technology

DIGITAL GHOST

Cyber Mystery • School Adventure • Technology

A Hirra Academy Story

About This Book

The Academy Series follows the students of Hirra Academy as ordinary school life quietly opens onto something larger — a mystery, an investigation, a question that won't let go. Each book is built around a different subject, not as a lesson to be memorised, but as something the characters must actually use to understand their world.

PART I

The Ghost Appears

Chapter 1

The Missing File

Mrs. Balogun's voice carried down the corridor before she reached the staff room door, which was how most of Hirra Academy learned, within the hour, that something odd had happened to her computer.

"It was here yesterday," she was saying, to anyone who would listen. "My entire presentation. Two weeks of work. This morning is gone."

The IT department was called in before the first period even started. Yusuf Malgwi heard about it at break time, the way everyone did, in the exaggerated, half-invented version that travels fastest through a school by the time it reached him, the file hadn't simply gone missing, it had apparently vanished from three computers at once, which turned out, on every count Yusuf later checked, not to be true.

Still. A file had disappeared. That much was real.

At assembly, the Head of IT, Mr. Kareem, stepped up to the microphone with his usual unhurried calm, as though a missing file were no more urgent than a change to the lunch schedule.

"Some of you have heard about an incident involving a staff computer," he said. "We are looking into it. In the meantime, I want to make something clear to the whole school." He paused, the way he always did before something worth remembering. "Any student who provides useful information leading to a proper understanding of what happened will receive a special award."

The effect was immediate. By lunch, half the school had a theory. Most of the theories, Yusuf noticed, had nothing to do with anything anyone could actually prove.

"It was probably a virus," said one boy at his lunch table, with the total confidence of someone who had heard the word somewhere and liked how it sounded.

"Or someone deleted it by accident and won't admit it," said another.

Yusuf said nothing, mostly because he genuinely didn't know but unlike most of his classmates, that fact bothered him more than it excited him. He liked computers. He liked them the way some people liked solving riddles: not because he already knew the answer, but because he enjoyed the specific feeling of not knowing yet and refusing to guess.

That evening, he brought it up with his father, Engr. Haruna Malgwi, over dinner.

"A file just doesn't vanish, does it?" Yusuf asked. "Computers don't lose things the way people lose things."

His father set down his fork, which Yusuf recognised as the specific gesture that meant a real answer was coming, not a quick one. "What do you think a file actually is, Yusuf?"

"Information, words, pictures and whatever's in it."

"And where does that information live?"

Yusuf thought about it properly. "On the computer's storage. The hard drive, or wherever it saves things."

"So if the file is genuinely gone, not moved, not renamed or not hidden somewhere"

"Someone would have to delete it or something would have to go wrong with the storage itself."

His father nodded slowly. "Good. Now which of those seems more likely to you, for one specific file to disappear from one specific computer, right after something like this was noticed by everyone in the school?"

Yusuf didn't answer immediately, turning the question over the way his father clearly wanted him to. But something in it had already caught, quietly, somewhere in the back of his mind.

The next morning, in Computer Lab 2, Yusuf found a folder on the desktop that hadn't been there the day before. It had no proper name, just a string of characters he didn't recognise. Inside was a single text file.

LOOK CLOSER.

Yusuf read it twice, then looked around the lab, half expecting someone to be watching him read it. No one was. He copied the message into his notebook, word for word, and for the first time since Mrs. Balogun's presentation had disappeared, he felt something closer to certainty than curiosity.

This wasn't an accident. Someone wanted this to be found.

UNDERSTANDING THE SYSTEM

A computer file is a collection of data, text, images, or other information stored on a device's hardware (the physical parts of a computer, like its hard drive) and organised by its software (the programs that let you create, open, and manage files). A file doesn't disappear on its own: it can be deleted, moved, hidden, or affected by a problem with the storage hardware itself, but each of those leaves some kind of trace for someone who knows where to look.

TERMINOLOGY

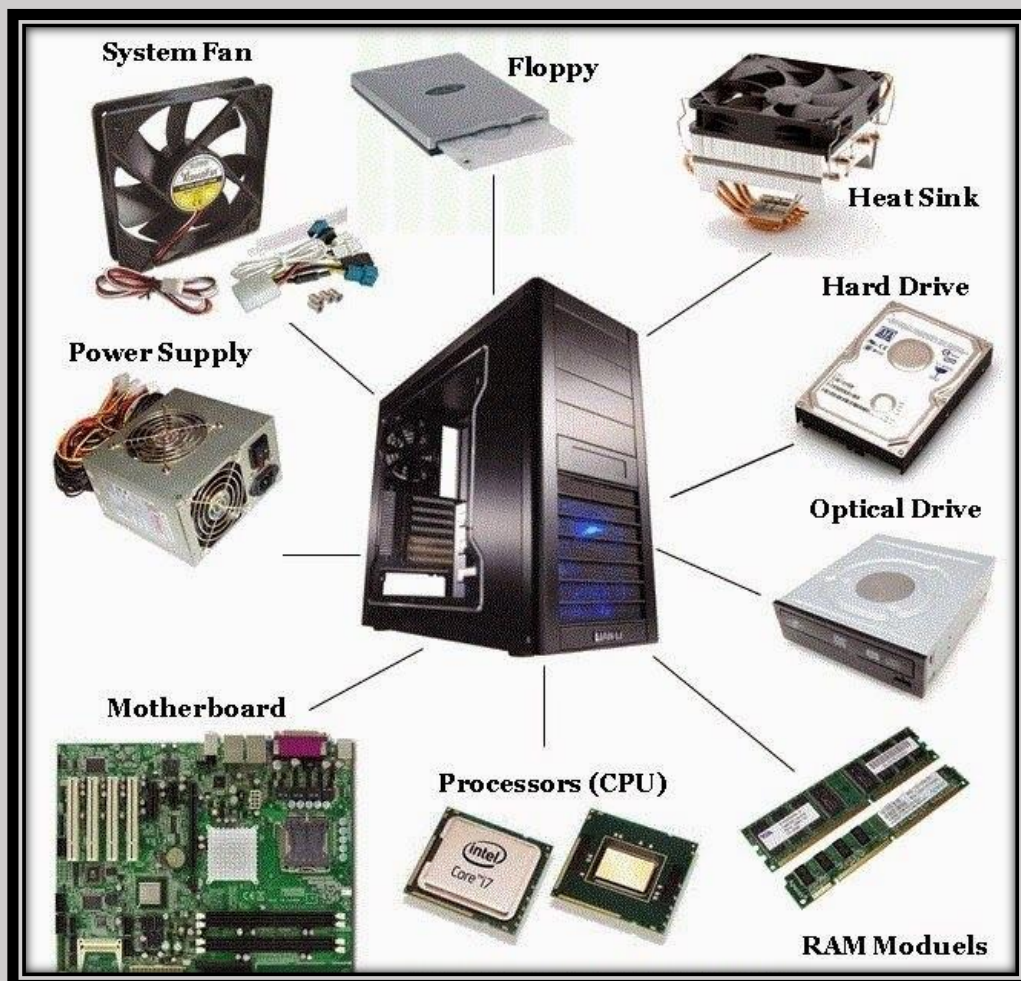
Hardware • Software • File • Data

Reading Comprehension

1. What happened to Mrs. Balogun's computer at the start of the chapter?
2. What does Mr. Kareem announce at assembly, and how does the school react?

IT Questions

1. What is the difference between computer hardware and software?
2. Name two things that could cause a file to genuinely disappear from a computer.



Chapter 2

Someone Is Using My Account

The second incident arrived in the form of a message nobody remembered sending.

It appeared in a JSS3 student's account, sent to an entire class group at half past two in the afternoon, an oddly worded note about a change to the following week's timetable, one that turned out, on checking, not to be true at all. The student, a quiet boy named Tunde, insisted immediately and repeatedly that he hadn't written it.

"I wasn't even near a computer," he told anyone who'd listen. "I was in Mr. Adisa's class the whole period."

Predictably, this didn't stop the rumours. By the next morning, Tunde had been accused, in roughly equal measure, of playing a prank, of lying about it afterward, and — from one particularly imaginative JSS1 student of somehow being hacked by "the Digital Ghost," a name that had, sometime in the last two days, attached itself to the whole mystery without anyone quite deciding to invent it.

Yusuf refused to join in on any of the accusations. Not because he liked Tunde especially, but because none of the accusations were actually based on anything.

"How would someone even send a message from an account that isn't theirs?" he asked his father that evening, notebook already open.

"What do you think a password is protecting, exactly?" his father asked back.

"Access to the account, so only the real owner can use it."

"Right and once someone enters that password correctly, what happens?"

Yusuf considered this. "The system lets them in, it trusts that whoever typed the password must be the real owner."

"Exactly and that's called authentication: the system checking that you are who you claim to be, usually through something you know, like a password. But notice something important, Yusuf. Authentication happens once, at login. After that, most systems keep you logged in for a while, through what's called a session, so you don't have to re-enter your password every few seconds."

"So if someone was already logged in on a shared computer, and didn't log out"

"Then anyone using that computer afterward could act as them, without ever needing their password at all," his father finished. "That's not a flaw unique to any one system. It's simply how sessions work everywhere, which is exactly why logging out on a shared device matters more than most people realise."

The next day, Yusuf checked something the rumour mill hadn't bothered to check: the exact time the message was sent, cross-referenced against Tunde's own timetable, which Daniel never one to let a claim go unquestioned, insisted they verify properly rather than simply take Tunde's word for it.

"He says he was in Mr. Adisa's class," Daniel said. "Let's actually confirm that, not just believe it because he sounds sincere."

They did. Tunde had, in fact, been in class at 2:30, with a teacher and twenty-odd witnesses to prove it. But the school's shared computer lab logs which Yusuf was allowed to view under an IT staff member's supervision, once he explained carefully and calmly what he was trying to check, showed that Tunde's account had, indeed, been logged in and active at exactly that time.

"So someone else was using his account," Yusuf said slowly, "while he was somewhere else entirely."

"That fits," Daniel agreed. "But it doesn't tell us who, just that it wasn't him."

It wasn't proof of anything, not yet. But it was, Yusuf thought, the first piece of evidence in the whole mystery that actually pointed somewhere real.

UNDERSTANDING THE SYSTEM

Authentication is the process by which a computer system checks that someone is who they claim to be, most commonly through a password. Once authenticated, a system usually keeps a user logged in for a period of time, called a session, so they aren't asked to re-enter their password constantly. This is convenient, but it also means that if someone doesn't log out on a shared computer, another person can use that still-open session without ever needing the original password at all.

TERMINOLOGY

Password • Authentication • Login Session • Account Security

Reading Comprehension

1. What happened to Tunde's account, and why did other students suspect him?
2. What did Yusuf and Daniel check to confirm Tunde's story, instead of just trusting it?

IT Questions

1. What is authentication, and how does a password relate to it?
2. Explain, in your own words, what a login session is.



PART II

Following the System

Chapter 3

Ask the IT Department

Rather than keep asking his father questions his father clearly intended him to answer himself, Yusuf decided, the following afternoon, to go directly to the source: the IT department office, tucked behind the main computer lab, a room most students only ever saw through its open doorway.

Mr. Kareem was there, along with one of the junior IT staff, a young woman named Miss Ijeoma, both of them looking at a monitor with the particular stillness of people who had been staring at the same screen for longer than they meant to.

"Yusuf," Mr. Kareem said, without looking especially surprised. "What can I do for you?"

"I want to understand how the school's computers are connected," Yusuf said, deciding bluntness was probably his best approach with someone who didn't seem inclined to waste time. "Not just Tunde's account, or Mrs. Balogun's computer. All of it. How does one affect the other?"

Something flickered across Mr. Kareem's face—amusement, possibly, or something closer to approval, before he gestured Yusuf to a chair.

"That," he said, "is a considerably better question than most students have asked me this week." He pulled up a simplified diagram on the monitor. "Every computer in this school connects to others through a network, think of it as the roads connecting separate buildings. Data doesn't just sit on one machine. It travels, through devices called routers, which direct that traffic to where it needs to go, and often passes through a server. A central computer that stores and manages information other computers can request."

"So the computers aren't really separate at all," Yusuf said slowly. "Even if two incidents happened on completely different machines, they could still be connected through the network underneath."

"Precisely." Mr. Kareem tapped the diagram. "Most students investigating this mystery have been looking at individual computers, one at a time, as though each incident exists in isolation. That's a reasonable place to start but it's the wrong place to finish."

"So what's the right place?" Yusuf asked.

Mr. Kareem sat back, and for a moment Yusuf had the distinct impression he was being evaluated on something well beyond the question he'd actually asked.

"If you want to understand what happened," Mr. Kareem said finally, "stop looking at one computer. Look at the system."

Miss Ijeoma, still half-focused on her own screen, added without looking up, "Most people investigate the parts. The ones who actually solve something investigate the connections between them."

Yusuf left the IT office with considerably more questions than he'd arrived with, but for the first time, they felt like the right shape of questions, not "who did this," but "how does this whole system actually work, and where might it be weak enough for something like this to happen."

He found Daniel by the school gate afterward and relayed the entire conversation, watching his friend's face shift from mild interest to something closer to genuine focus.

"So we need a map," Daniel said. "Not of one computer rather of everything, every incident, and how they might connect underneath, the way Mr. Kareem described."

"That's going to be a lot of work."

Daniel shrugged, already pulling out a fresh sheet of paper. "You wanted to actually solve this, didn't you? Not just guess like everyone else."

UNDERSTANDING THE SYSTEM

A computer network connects multiple devices so they can share data and resources. Routers are devices that direct data traffic between connected devices, much like roads directing traffic between buildings, while a server is a central computer that stores and manages information (such as files, accounts, or websites) that other computers on the network can access or request. Understanding a school's network means understanding that individual computers are rarely truly isolated, an event on one device can be connected to activity elsewhere on the same network.

TERMINOLOGY

Network • Server • Router • Connected Devices

Reading Comprehension

1. Why does Yusuf decide to go directly to the IT department instead of continuing to guess?
2. What does Mr. Kareem mean when he says most students are "looking at the parts" instead of "the connections between them"?

IT Questions

1. What is the role of a router in a computer network?
2. What is a server, and what does it do?



Chapter 4

The Network Map

The map Daniel produced over the following days was, by his own admission, more determined than elegant — a sprawl of boxes and connecting lines covering two full sheets of paper taped together, each box representing a computer, an account, or an incident, with arrows drawn wherever Yusuf and Daniel suspected a connection might exist.

"It's a mess," Daniel admitted, surveying it with something close to pride anyway.

"It's a start," Yusuf said, tracing one line with his finger. "Look Mrs. Balogun's computer and Tunde's account both connect through this section of the network here. The same part Miss Ijeoma's team manages."

"Coincidence?"

"Maybe. But that's two incidents through the same part of the system. If a third one turns up in the same place, that stops being a coincidence."

At home that evening, Yusuf laid the map out on the dining table, and his father studied it for a long moment before asking, in his usual maddening way, not what Yusuf had found, but what Yusuf thought it meant.

"I think the incidents might be connected," Yusuf said. "Not random. Not different people doing unrelated things. One system, being tested or attacked from somewhere inside it."

"That's a theory," his father said. "What would prove it, rather than just suggest it?"

Yusuf hesitated. "More incidents, in the same part of the network."

"And what would disprove it?"

This one took longer. "If a new incident happened somewhere completely unconnected. Somewhere the map doesn't reach at all."

His father nodded, satisfied in the particular way that meant Yusuf had said something worth being satisfied about. "That's the actual skill, Yusuf, not just building a theory that fits what you've already found, but knowing exactly what evidence would break it. Most people investigating anything only look for things that agree with them. The good ones go looking for the thing that might prove them wrong."

Yusuf copied that directly into his notebook, underlining it twice.

Two days later, a third incident appeared, computer in the library abruptly displaying a strange, looping message on its screen before returning to normal. Yusuf and Daniel traced its network connection within the hour.

Same section of the network, exactly where the map predicted it would be.

UNDERSTANDING THE SYSTEM

A network map is a visual representation of how devices, accounts, and systems connect to one another. Investigators in technology and elsewhere use maps like this to spot patterns: repeated connections that suggest events are related rather than coincidental. A good theory should also be falsifiable, meaning there should be some possible evidence that would prove it wrong; theories that could never be disproven by any evidence are much harder to trust.

TERMINOLOGY

Network Map • Network Segment • Pattern

Reading Comprehension

1. What does Daniel's network map show, and why does he call it "a mess"?
2. What new incident occurs at the end of the chapter, and how does it relate to Yusuf's theory?

IT Questions

1. What is a network map used for?
2. Why might tracing which part of a network an incident connects through be useful?



Chapter 5

The Strange Program

The suspicious program was Miss Ijeoma's discovery, though it was Yusuf, invited in to observe once Mr. Kareem decided his network map deserved a closer look, who first asked the question that mattered.

"What does it actually do?"

The program itself, once Miss Ijeoma had isolated a safe copy to examine, a short set of instructions, nothing like the sprawling, mysterious "hacking" Yusuf had half-expected from weeks of rumour. It sat quietly on the school's systems, doing nothing at all, until a particular condition was met.

"A program is really just instructions," Mr. Kareem explained, walking Yusuf through the logic line by line. "An algorithm is a sequence of steps a computer follows, in order, to do something specific. This one takes an input, checks a condition, and if that condition is true, it produces an output. If it's false, nothing happens at all."

"Like an if-statement," Yusuf said, recognising the pattern from a coding class he'd taken the previous term, more out of curiosity than any real seriousness at the time. "If this is true, do this. If not, don't."

"Exactly that," Mr. Kareem said. "Along with something called a loop, here see this section? It checks the same condition repeatedly, over and over, rather than just once. And this" he pointed to a short, unlabelled value near the top "is a variable. A named piece of information the program can change and check as it runs."

Yusuf studied the condition itself for a long moment. It was checking, as far as he could tell, for a very specific kind of activity, a particular type of file being opened, at a particular kind of time.

"So this program isn't doing anything most of the time," Yusuf said slowly. "It's just waiting. Watching for one exact thing to happen and when it does, it acts."

"Now you're reading it properly," Mr. Kareem said, something in his voice that Yusuf couldn't quite place approval, certainly, but also something that felt almost like relief.

"What was the exact condition, though?" Yusuf asked. "What was it actually waiting for?"

Mr. Kareem didn't answer that directly, closing the isolated copy instead. "That," he said, "is exactly the right next question. I'd suggest you keep asking it."

Yusuf left the IT office that afternoon more unsettled than satisfied. He had learned, with total clarity, how the program worked. He still had no idea what it had actually been built to do, or who had built it and the fact that Mr. Kareem seemed entirely unbothered by that gap was, Yusuf was beginning to notice, becoming a pattern of its own.

UNDERSTANDING THE SYSTEM

A computer program is a set of instructions, called an algorithm, that a computer follows step by step to perform a task. Programs use conditions (checks such as "if this is true, do this") to decide what action to take, variables to store and change information as the program runs, and loops to repeat an action multiple times rather than writing the same instruction over and over. Reading a program means tracing exactly what input it checks, what condition triggers it, and what output or action results.

TERMINOLOGY

Algorithm • Input • Output • Variable • Condition • Loop

Reading Comprehension

1. What does the suspicious program do most of the time, according to Yusuf's observation?
2. What question does Mr. Kareem encourage Yusuf to keep asking at the end of the chapter?

IT Questions

1. What is an algorithm?
2. Explain the difference between a condition and a loop in a computer program.



Chapter 6

The Weak Password

It was Daniel, of all people, who uncovered the weak password problem not through any technical insight, but through simple, patient observation, the skill Mr. Kareem had praised in him once without either of them fully noticing it at the time.

"Half the JSS1 students use their own names as passwords," Daniel reported, sliding into the seat across from Yusuf at lunch. "Or their birthday. I asked around, not even sneakily, just asked, and people just told me."

"That's not exactly a secret system, then," Yusuf said.

"That's my point. If someone wanted to guess into an account, they wouldn't need to be some brilliant hacker. They'd just need to know the person a little, or try a few obvious guesses."

They brought this to Mr. Kareem, who looked, for the first time since the mystery began, genuinely pleased rather than simply watchful.

"This is one of the most important things either of you has found so far," he told them, "and it has nothing to do with clever programming at all. A system can be built with excellent security, careful design, everything done correctly by the engineers and still be completely vulnerable, because of how the humans using it behave."

"So it doesn't matter how good the system is," Yusuf said slowly, "if the people using it make it easy to get around."

"That's the single most common cause of real security failures, in schools and far beyond them," Mr. Kareem said. "Not brilliant attacks, weak passwords, people reusing the same password everywhere, writing it down somewhere visible, sharing it casually with a friend who then shares it with someone else." He looked between them. "What would you recommend, if you were advising the school?"

Yusuf thought about it properly, the way he'd been learning to since this whole mystery started. "A strong password should probably be long, and not something easy to guess not a name, or a birthday, or a simple word."

"And it should be different for different accounts," Daniel added, "so that if one gets guessed, the others are still safe."

"Good," Mr. Kareem said. "Write that up properly, a checklist the whole school could actually use. I'll make sure it reaches the students who need it most."

That evening, cross-referencing the weak-password problem against Daniel's network map, Yusuf found something that made him sit very still at his desk for a long moment: several of the accounts affected by the earlier incidents which Tunde is among them, belonged to students Daniel had confirmed used simple, guessable passwords.

It wasn't proof of who was responsible but it was, finally, an explanation of how they'd gotten in.

UNDERSTANDING THE SYSTEM

Even a technically well-built system can be compromised through weak human behaviour rather than any flaw in its design, this is one of the most common causes of real-world security incidents. A strong password is typically long, avoids obvious personal information (like a name or birthday), and is different across different accounts, so that one guessed or leaked password doesn't put every other account at risk too.

TERMINOLOGY

Strong Password • Password Security • Responsible Digital Behaviour

Reading Comprehension

1. How does Daniel discover the weak password problem?
2. What does Mr. Kareem say is "one of the most common causes of real security failures"?

IT Questions

1. What makes a password "strong" rather than "weak"?
2. Why is it risky to use the same password for multiple accounts?



PART III

The Trail

Chapter 7

The Locked Database

The old school database was not something Yusuf had known existed until Miss Ijeoma mentioned it, almost in passing, while helping him trace a strange pattern of activity that didn't match anything on Daniel's network map.

"It's an older system," she explained, pulling it up on a monitor Yusuf wasn't usually allowed near. "Student records, mostly historical but the kind of thing the school keeps but rarely opens but someone's been accessing it."

Yusuf leaned in, careful not to touch anything. "What does a database actually look like, underneath? I always just imagined it as files, I suppose. Like everything else."

"Not quite. Think of it more like a very large, very organised set of tables." Miss Ijeoma pulled up a simplified view. "Each table holds records, think of a record as one complete entry, like one student's information. Each record is broken into fields, separate pieces of information within it, like name, class, or year of enrollment. A database lets you search, sort, and connect all of that far more efficiently than separate files ever could."

"So whoever's been accessing this," Yusuf said slowly, "isn't just looking at random information. They could be searching for something specific, one particular record, or one particular field, out of everything in here."

"That would be my guess too," Miss Ijeoma said. "Which raises a fairly obvious question."

"What are they actually looking for," Yusuf finished.

He spent the following two days, with Daniel's help, narrowing down exactly which section of the database had been accessed most. It wasn't the whole system, whoever this was hadn't simply browsed everything out of curiosity. The access was narrow, focused, returning again and again to one particular table.

"Staff records," Daniel said, reading the label over Yusuf's shoulder. "Not students. Staff."

Yusuf sat back slowly, every incident so far — the missing file, the account, the network map, the program, the weak passwords had pointed outward, toward students, toward the parts of the system a curious outsider might reasonably try to explore first.

This was different. This pointed inward.

"Whoever this is," Yusuf said, "already knows exactly where to look. That's not someone guessing their way around the outside of the system." He looked at Daniel. "That's someone who already understands it from the inside."

UNDERSTANDING THE SYSTEM

A database is an organised collection of information, typically structured into tables. Each table holds records — complete entries, such as one student's or staff member's information — broken down into fields, the individual pieces of data within each record (like a name, a class, or a date). Databases allow information to be searched, sorted, and connected far more efficiently than separate, unorganised files, but this same organisation also means that someone accessing a database can search for very specific, narrow information rather than browsing everything at random.

TERMINOLOGY

Database • Record • Field • Table

Reading Comprehension

1. What is the old school database, according to Miss Ijeoma?
2. Which specific table does Yusuf and Daniel discover has been accessed repeatedly?

IT Questions

1. What is the difference between a record and a field in a database?
2. Why might organising information into a database be more useful than storing it as separate files?



Chapter 8

The Digital Footprint

If the database access pointed toward someone inside the system, Yusuf reasoned, then the next step was obvious, even if it wasn't easy: reconstruct exactly when everything had happened, in order, and see what pattern emerged.

"That's called building a timeline," his father told him, when Yusuf described the plan that evening. "And it relies on something every digital action leaves behind, whether the person doing it realises it or not."

"A digital footprint," Yusuf said he'd heard Mr. Kareem use the phrase once, in passing, and it had stuck with him.

"Exactly that, every login has a timestamp, every file action is logged somewhere, every device connecting to a network leaves some record of having done so none of it tells you everything, on its own but laid out together, in order, it can tell you quite a lot."

Yusuf spent the following weekend doing exactly that, with Daniel's patient help and, eventually, Miss Ijeoma's cautious supervision once he explained precisely what he was trying to build. He gathered every timestamp he could find: the missing file's last save time, the strange folder's creation, Tunde's account activity, the program's discovery, the database access and laid them all, one after another, along a single line stretching across three sheets of paper taped together, considerably more careful this time than Daniel's first attempt at the network map.

The pattern, once it was actually laid out, was almost uncomfortably clean.

Every incident had occurred either very early in the morning, before most students arrived, or very late in the afternoon, after most had gone home.

"That's not random," Daniel said, staring at the timeline. "Students wouldn't have that kind of access at those hours anyway, the labs are supervised and is locked outside of class hours."

"Which means," Yusuf said slowly, feeling the shape of something settle into place that he wasn't sure he liked, "whoever's doing this has access to this building, and these systems, outside normal school hours. That's barely any students around at all."

Daniel didn't say the obvious next thought out loud, he didn't need to. Yusuf was already thinking it, turning it over uneasily, the same way he'd once turned over Mrs. Balogun's missing file except this time, and he found he wasn't entirely sure he wanted to keep going.

"We should still check it properly," Yusuf said, mostly to convince himself as much as Daniel. "A clue isn't proof. My dad's told me that a dozen times now."

"Agreed," Daniel said. "But you already know where this timeline is pointing, don't you."

Yusuf didn't answer that directly.

UNDERSTANDING THE SYSTEM

A digital footprint is the trail of records left behind by activity on a computer system including timestamps (the recorded time an action occurred), login records, file activity, and device information. On their own, individual pieces of this trail may seem minor, but organised together into a timeline, they can reveal patterns that aren't visible from any single record alone, such as when and how often certain actions occur.

TERMINOLOGY

Digital Footprint • Timestamp • Timeline • Login Record

Reading Comprehension

1. What does Yusuf's father explain a digital footprint is?
2. What pattern does the completed timeline reveal about when the incidents occurred?

IT Questions

1. What is a timestamp, and why is it useful in an investigation?
2. Why might building a timeline reveal patterns that individual records don't show on their own?



PART IV

The Hidden Answer

Chapter 9

Everyone Has a Theory

By the following week, the rumour mill had, predictably, arrived at its own confident answer — one that had nothing to do with timelines, network maps, or careful evidence of any kind.

"Everyone's saying it's Emeka," Daniel reported at lunch, with the particular flatness of someone relaying a claim he didn't believe but felt obligated to mention. "From SS1. Because he's good with computers, and he's a bit you know, odd."

"That's not evidence," Yusuf said. "That's just someone people don't know well, doing something people don't understand well and that's the laziest possible theory."

"I know, i'm just telling you what's going around."

It was going around fast, by the end of the day, Emeka, a genuinely quiet SS1 student Yusuf had exchanged perhaps ten words with in his entire time at Hirra Academy had been all but convicted in the court of school gossip, entirely on the strength of being good at something most of his accusers didn't understand.

Yusuf found this, more than anything else in the entire mystery so far, genuinely infuriating.

"It doesn't match the evidence," he said to Daniel, pulling out the timeline. "None of the incidents line up with times Emeka would plausibly have access to the building. He's a student and he goes home like everyone else."

"So why does everyone believe it anyway?"

Yusuf thought about that longer than he expected to need to. "Because it's easier than not knowing," he said finally. "People wanted an answer, and he was an easy one to reach for. Nobody actually checked."

He went to Emeka directly, which took more nerve than he'd expected not to accuse him but to ask, plainly, whether he'd noticed anything odd about his own accounts recently. Emeka, visibly relieved that someone was finally asking rather than assuming, said no — nothing at all, and offered, without being asked, to let Yusuf check his account's activity log himself, right there, to prove it.

The log showed exactly what Yusuf expected it to show: nothing unusual, nothing matching the timeline, nothing connecting Emeka to any of it at all.

"You didn't have to do that," Yusuf told him afterward. "Show me your log, I mean."

"You're the first person who actually asked instead of just deciding," Emeka said. "I'd have shown anyone who bothered to ask properly."

Yusuf carried that sentence with him for the rest of the day, turning it over the way people sometimes turn over a lesson that lands harder than expected.

The popular theory hadn't just been wrong. It had been lazy in a way that could have genuinely hurt someone, if nobody had bothered to check it properly.

UNDERSTANDING THE SYSTEM

In any investigation, it is important to distinguish between evidence, verifiable information that supports a conclusion and assumption, which is often based on incomplete information, bias, or convenience rather than actual proof. Verifying a claim, such as checking an account's activity log directly rather than relying on rumour, is an essential step in responsible investigation, and helps prevent innocent people from being wrongly blamed.

TERMINOLOGY

Evidence • Assumption • Verification

Reading Comprehension

1. Why do students begin suspecting Emeka, and what is that suspicion actually based on?
2. How does Yusuf verify that Emeka isn't responsible, rather than just assuming either way?

IT Questions

1. What is the difference between evidence and assumption?
2. Why is verifying a claim directly, such as checking a log, more reliable than relying on rumour?



Chapter 10

The Pattern

Yusuf returned to the IT office the following afternoon with everything laid out properly for the first time since the mystery had begun, not scattered pieces or half-formed guesses, but a complete case, assembled the way he imagined a real investigator might assemble one.

Mr. Kareem listened without interrupting as Yusuf walked through it: the missing file, the account accessed during a login session, the network map showing repeated connections through one section of the system, the program waiting on a specific condition, the weak passwords explaining how accounts had been accessed at all, the database search narrowed to staff records, and finally, the timeline, every incident occurring outside normal school hours, in a pattern that ruled out nearly every student in the building.

"So," Yusuf finished, "whoever's responsible has access to this building outside school hours, understands this network well enough to move through it deliberately, and specifically searched staff records rather than student ones, that's someone who already works inside the system."

Mr. Kareem didn't confirm or deny anything instead, he asked, exactly the way Yusuf's father always did, a question rather than an answer.

"What does that conclusion actually tell you, Yusuf? Not what you suspect. What does the evidence itself prove?"

Yusuf paused, forcing himself to separate the two the way he'd been learning to all term.

"It proves the activity originated from within the school's own IT environment," he said carefully. "Not from an outside hacker but from someone with legitimate access, staff-level access, and that's who is responsible for all of it."

"That's a very precise conclusion," Mr. Kareem said. "Considerably more precise than 'the Digital Ghost,' or whatever the rest of the school has taken to calling this."

"Is it right?" Yusuf asked directly.

For the first time since the whole mystery began, Mr. Kareem didn't deflect the question with another one. He simply looked at Yusuf for a long moment, something settling into place behind his calm, unreadable expression.

"Come back tomorrow afternoon," he said. "Bring Daniel. I think it's time we talked properly."

UNDERSTANDING THE SYSTEM

Effective problem-solving in technology (and elsewhere) involves connecting multiple pieces of evidence, network activity, timing, access patterns, and behaviour into a single, coherent conclusion, rather than treating each clue in isolation. It's important to distinguish between what evidence actually proves and what it merely suggests, since a precise, well-supported conclusion is far more valuable than a broad guess, however confident that guess might feel.

TERMINOLOGY

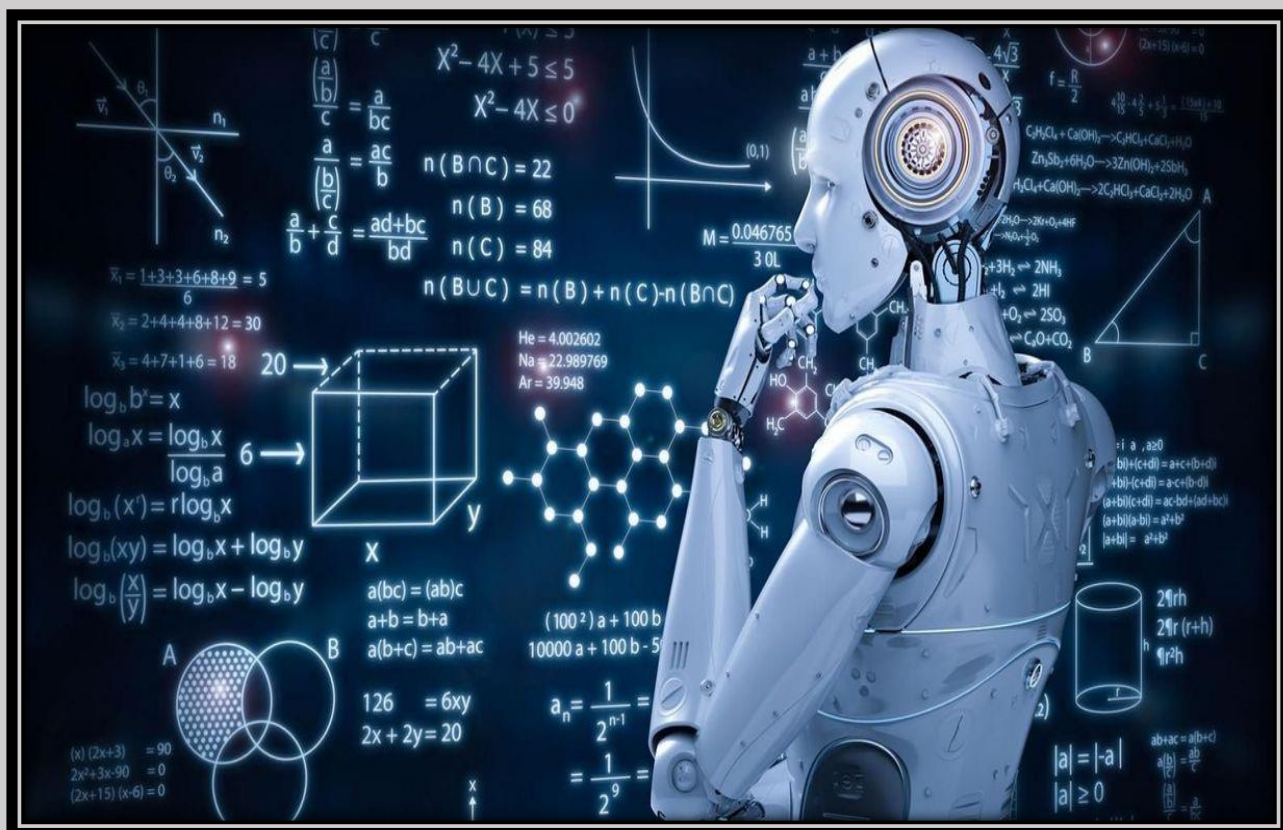
System Analysis • Conclusion • Proof

Reading Comprehension

1. What complete case does Yusuf present to Mr. Kareem in this chapter?
2. What does Mr. Kareem ask Yusuf to do at the end of the chapter?

IT Questions

1. Why is connecting multiple pieces of evidence more powerful than looking at any single clue alone?
2. What is the difference between what evidence "suggests" and what it actually "proves"?



PART V

Digital Ghost

Chapter 11

The Head of IT

Yusuf barely slept that night, and arrived at the IT office the next afternoon with Daniel beside him, both of them uncharacteristically quiet as Mr. Kareem closed the door behind them and gestured for them to sit.

"You were right," Mr. Kareem said, without any preamble at all. "About almost everything. The activity did originate from within the school's own IT environment, its from a staff-level access. Not an outside hacker at any point."

Yusuf felt something settle and unsettle in his chest at the same time. "So there was never a hacker, so someone on staff has been doing this the whole time."

"Yes," Mr. Kareem said. "Me."

The silence that followed lasted longer than Yusuf expected it to.

"So there was never a hacker?" Yusuf finally managed.

Mr. Kareem shook his head, something almost gentle in his expression now, nothing like the calm, unreadable mask he'd worn through the entire investigation. "Not the kind you were looking for."

He explained it plainly, without making Yusuf drag it out of him question by question, the way he had every other piece of this mystery. The missing file had been a copy, moved deliberately, with the original safely backed up before Mrs. Balogun ever noticed anything was wrong. The account activity on Tunde's login had been Mr. Kareem himself, using a test session specifically set up for the purpose, never touching anything of real value. The program had been built precisely to be found and studied, not to cause any actual harm. The database access had touched only a small, deliberately prepared set of records, nothing sensitive or real, created specifically to look worth investigating.

"Every part of it was controlled," Mr. Kareem said. "Monitored limited to systems and data that couldn't genuinely put anyone at risk. Nothing you found was ever real evidence of a real attack because there was never a real attack to find."

"Then why?" Daniel asked, finding his voice before Yusuf did. "Why go to all that trouble?"

Mr. Kareem leaned back, and for the first time, Yusuf saw something in his expression that looked almost like relief, the specific relief, Yusuf would realise only later, of someone who had been waiting a long time to finally explain themselves properly.

"Because examinations don't find everyone worth finding," Mr. Kareem said. "Some students are excellent at memorising and repeating information but some students have a different kind of ability entirely — noticing what others miss, asking better questions than the ones they were given, refusing to accept an easy answer just because it's convenient. That kind of ability rarely shows up clearly on a test paper and sometimes the only way to find it is to give it a real problem, and watch who actually investigates it properly."

Yusuf sat with that for a long moment, turning over every step of the last several weeks in an entirely new light, the folder that said LOOK CLOSER, precisely engineered to be found by exactly the kind of student who'd go looking. The reward, encouraging participation and the careful, patient way Mr. Kareem had answered questions with questions, the exact same technique Yusuf's own father used at home.

"You were testing us," Yusuf said slowly.

"I was looking for exactly this," Mr. Kareem said. "Someone who wouldn't stop at the first convenient answer. Who'd go back to check Emeka's log instead of just believing a rumour. Who'd ask what would disprove a theory, not just what would support it." He looked between them both. "You found me, Yusuf. That was never really in question, I made sure the trail was findable, eventually, and for the right kind of investigator that's what mattered was how you found me."

UNDERSTANDING THE SYSTEM

Cyber security professionals sometimes use controlled, deliberately designed challenges, carefully monitored and limited to safe, non-sensitive systems or data to test security awareness or identify skill, without ever putting real information or people genuinely at risk. This chapter reflects that kind of ethical, controlled exercise, distinct from any real unauthorised access, which is illegal and harmful regardless of intention.

TERMINOLOGY

Cybersecurity • Controlled Testing • Ethical Technology Use

Reading Comprehensionp

1. What does Mr. Kareem reveal about who was really responsible for the Digital Ghost incidents?
2. Why does Mr. Kareem say every part of the challenge was "controlled"?

IT Questions

1. Why is it important that Mr. Kareem's challenge never put real student data or systems genuinely at risk?
2. What is the difference between Mr. Kareem's controlled challenge and real unauthorised computer access?



Chapter 12

The Minds Behind the Screens

The truth spread through Hirra Academy almost as fast as the rumours once had, though this version, had the benefit of actually being accurate.

Mr. Kareem explained it properly at the next assembly, on how badly that particular rumour had gone and he spoke about what he was actually looking for.

"Not the student who guessed correctly," he told the assembled school. "Guessing isn't a skill I especially value not even the student who knew the most technical terms, you can learn vocabulary from a textbook far more easily than you can learn how to think. I was looking for students who could observe carefully, ask real questions, investigate patiently, analyse honestly, and perhaps most importantly work with others rather than simply chasing credit alone."

He didn't need to say the names out loud but everyone in the hall already knew.

That evening, over dinner, Yusuf's father listened to the entire story from beginning to end without interrupting, a rare enough event that Yusuf found himself almost as pleased by that as by anything else that had happened that day.

"So," his father said finally, "what did you learn?"

Yusuf looked down at his notebook, thick now with weeks of timelines, network maps, and half-formed theories that had eventually sharpened into real ones.

"That computers aren't the only things you have to understand," he said slowly, working it out properly as he said it, the way he'd learned to do all term. "You could know every technical word in the dictionary and still miss it completely, if you're not careful about how you think."

"What else?" his father asked, the exact same two words he'd used to ask all term, every single time Yusuf thought he'd finished answering.

Yusuf considered it a moment longer. "The way you think," he said. "That's what actually matters not what you already know. How you go about finding out what you don't."

His father smiled properly and said nothing else at all, which Yusuf was beginning to understand, after a whole term of exactly this kind of teaching, was sometimes the highest praise available.

The following week, Yusuf reported to the IT room for his first mentorship session, notebook in hand, Daniel beside him he was invited too, in the end, for exactly the reasons Mr. Kareem had described: not the loudest theory or to the most technical vocabulary, but the steady, careful habit of asking what else a piece of evidence might mean before accepting the first answer that felt satisfying.

The monitor in front of them flickered to life as they sat down.

WELCOME, FUTURE PROBLEM-SOLVER.

Yusuf looked at it for a long moment, then opened his notebook to a fresh page, and, for the first time since the whole mystery had begun, he felt he has found his purpose.

UNDERSTANDING THE SYSTEM

Digital citizenship refers to using technology responsibly, ethically, and thoughtfully understanding not just how systems work, but how to use that knowledge in ways that respect others and avoid harm. Strong problem-solving in technology draws on several combined skills: careful observation, honest analysis of evidence, collaboration with others, and a willingness to keep questioning an answer rather than accepting the first explanation that feels convenient.

TERMINOLOGY

Digital Citizenship • Responsible Technology Use • Problem-Solving

Reading Comprehension

1. What does Mr. Kareem say he was actually looking for, at the final assembly?
2. What final lesson does Yusuf share with his father at the end of the chapter?

IT Questions

1. What is digital citizenship, and why does it matter alongside technical skill?
2. Why does Mr. Kareem invite Daniel to the mentorship programme as well as Yusuf?



UNDERSTANDING THE SYSTEM — Full Glossary

A complete list of the Information Technology terms encountered across Yusuf's investigation.

- **Hardware** — the physical parts of a computer system.
- **Software** — programs that run on hardware and let users create, view, or manage information.
- **File / Data** — information stored on a computer, such as documents, images, or records.
- **Password / Authentication** — the process of proving identity to a system, usually through a secret credential.
- **Login Session** — the period after authentication during which a system continues to recognise a user without asking again.
- **Network** — a system of connected devices that can share data and resources.
- **Server** — a central computer that stores and manages information other devices can request.
- **Router** — a device that directs data traffic between connected devices on a network.
- **Algorithm** — a sequence of instructions a computer follows to complete a task.
- **Variable, Condition, Loop** — building blocks of a program: stored information, a decision point, and a repeated action.
- **Database, Table, Record, Field** — an organised information system and its structural parts.
- **Digital Footprint** — the trail of records (timestamps, logs, device data) left behind by digital activity.
- **Cybersecurity** — the practice of protecting systems and data from unauthorised access or harm.
- **Digital Citizenship** — using technology responsibly, ethically, and thoughtfully.

Final Case Review

Trace back through the whole mystery: which single clue do you think mattered most to solving it, and why? Would the mystery have been solvable without the network map Daniel built in Chapter 4?

Final Question

Mr. Kareem says he was looking for students who observe, question, investigate, analyse, and collaborate — not simply the ones who know the most technical words. Do you think schools should look for these qualities more often? How might a teacher design a fair way to do it?

THE DIGITAL GHOST



YUGEN MOTION