

think like a programmer pdf

think like a programmer pdf has become a popular search term among aspiring developers and coding enthusiasts eager to enhance their problem-solving skills and understand programming concepts more deeply. Whether you're new to coding or an experienced developer seeking to refine your mindset, learning how to think like a programmer is essential for writing efficient, maintainable, and scalable code. One of the most effective ways to achieve this is by exploring comprehensive resources such as PDFs that compile valuable insights, strategies, and techniques. In this article, we will delve into what it means to think like a programmer, how PDFs can aid in this learning process, and practical tips to develop a programmer's mindset.

Understanding What It Means to Think Like a Programmer

Defining the Programmer's Mindset

Thinking like a programmer involves adopting a specific way of approaching problems, designing solutions, and understanding systems. It's not just about knowing programming languages but developing a problem-solving mindset that emphasizes logical thinking, abstraction, and efficiency. The programmer's mindset includes:

- Breaking down complex problems into manageable parts
- Applying logical reasoning and structured thinking
- Focusing on creating clean, optimized, and reusable code
- Continuously learning and adapting to new challenges and technologies

Core Skills and Attitudes of a Programmer

To think like a programmer, certain skills and attitudes are essential:

- **Curiosity and Problem-Solving:** Always questioning how things work and seeking solutions.
- **Patience and Persistence:** Debugging and refining code can be time-consuming.
- **Attention to Detail:** Small mistakes can cause big issues in programming.
- **Logical and Analytical Thinking:** Building algorithms and understanding data flow.
- **Communication Skills:** Writing clear code and documentation for others (and future you).

How PDFs Help You Think Like a Programmer

The Power of Learning Resources in PDF Format

PDFs are a popular format for distributing educational material because of their versatility, portability, and ability to preserve formatting. Many programming books, cheat sheets, tutorials, and guides are available in PDF, making them accessible tools for learning and practicing programming concepts.

Here's how PDFs facilitate the development of a programmer's mindset:

- **Structured Learning:** PDFs often organize content systematically, guiding learners through foundational concepts to advanced topics.
- **Offline Accessibility:** They can be accessed without internet, allowing for uninterrupted study sessions.

- **Comprehensive Coverage:** PDFs can compile extensive information, including code snippets, diagrams, and explanations.
- **Annotation and Note-Taking:** Users can highlight, add notes, and bookmark sections for quick reference.

Popular PDFs for Thinking Like a Programmer

Some widely recommended PDFs that help cultivate a programmer's mindset include:

- *“Think Like a Programmer” by V. Anton Spraul:* Focuses on problem-solving skills and strategic thinking.
- *“The Pragmatic Programmer” by Andrew Hunt and David Thomas:* Offers timeless advice on software craftsmanship.
- *“Automate the Boring Stuff with Python” by Al Sweigart:* Emphasizes practical programming for automating tasks.
- *“Clean Code” by Robert C. Martin:* Teaches principles of writing maintainable code.

Key Concepts to Develop a Programmer's Thinking Pattern

Algorithmic Thinking

Algorithms are step-by-step procedures for solving problems. Developing algorithmic thinking involves:

- Understanding how to design efficient algorithms
- Learning common algorithmic patterns such as recursion, iteration, and divide-and-conquer
- Analyzing time and space complexity

Abstraction and Modularity

Abstraction allows programmers to manage complexity by hiding unnecessary details and focusing on high-level functionalities. Modular design involves creating independent components that can be reused and tested separately. To incorporate these:

- Use functions, classes, and modules to organize code
- Identify patterns and generalize solutions
- Design interfaces that simplify interactions between components

Debugging and Problem Breakdown

Thinking like a programmer also means mastering debugging techniques and problem decomposition:

- Break problems into smaller, solvable parts
- Use debugging tools and print statements to trace issues
- Understand common bugs and how to prevent them

Practical Tips for Learning from PDFs and Developing a Programmer's Mindset

Effective Reading Strategies

To maximize the benefits of PDFs:

1. **Set Clear Goals:** Know what specific skills or topics you want to learn.
2. **Active Reading:** Take notes, highlight key points, and ask questions.
3. **Practice Coding:** Implement examples and exercises provided in the PDFs.
4. **Review Regularly:** Revisit challenging sections to reinforce understanding.

Supplement PDFs with Hands-On Practice

Reading alone isn't enough; practical application cements learning:

- Work on small projects that incorporate concepts learned from PDFs
- Participate in coding challenges and hackathons
- Use online coding platforms like LeetCode, HackerRank, or Codewars

Join Communities and Forums

Engage with other learners and experienced programmers:

- Share insights and ask questions about PDFs or concepts learned
- Participate in discussion groups or online forums like Stack Overflow
- Collaborate on open-source projects

Additional Resources to Strengthen Your Programming Thinking

Books and PDFs

Beyond PDFs, consider reading:

- “Code Complete” by Steve McConnell
- “Refactoring” by Martin Fowler
- “Design Patterns” by Erich Gamma et al.

Online Courses and Tutorials

Complement PDF learning with interactive tutorials:

- Coursera, Udacity, edX courses
- YouTube channels dedicated to programming topics
- Interactive coding websites like Codecademy

Conclusion

Thinking like a programmer is a fundamental skill that can be cultivated through dedicated practice, structured learning, and continuous curiosity. PDFs serve as accessible, comprehensive resources to develop a problem-solving mindset, understand core programming principles, and refine your coding skills. By combining reading with hands-on exercises, engaging with communities, and exploring additional learning materials, you can gradually internalize the way programmers approach problems — logically, efficiently, and creatively. Embrace the journey of learning to think like a programmer, and leverage the wealth of knowledge available in PDFs to accelerate your growth in the tech world.

Frequently Asked Questions

What is the main focus of the 'Think Like a Programmer' PDF?

The PDF aims to teach problem-solving and critical thinking skills essential for programmers, emphasizing logical reasoning, debugging, and understanding algorithms.

Is 'Think Like a Programmer' PDF suitable for beginners?

Yes, it is designed to be accessible for beginners while also providing valuable insights for experienced programmers looking to improve their thinking process.

Where can I find a free or legal version of the 'Think Like a Programmer' PDF?

You can check official websites, educational platforms, or authorized repositories; however, always ensure you access it legally to respect copyright laws.

What topics are covered in the 'Think Like a Programmer' PDF?

It covers problem decomposition, algorithm design, debugging strategies, data structures, coding best practices, and mindset development for effective programming.

How can I best utilize the 'Think Like a Programmer' PDF for learning?

Read actively, take notes, practice exercises, and apply the concepts to real coding problems to reinforce understanding and develop a programmer's mindset.

Is 'Think Like a Programmer' PDF suitable for self-study?

Yes, its practical approach makes it a great resource for self-learners seeking to enhance their problem-solving skills and programming thinking process.

Additional Resources

Think Like a Programmer PDF: Unlocking the Mindset of Coding Excellence

In the landscape of programming education and self-improvement, "Think Like a Programmer" PDF has emerged as a pivotal resource for aspiring and seasoned developers alike. It offers a comprehensive approach to understanding programming not just as a set of syntax and commands, but as a way of thinking, problem-solving, and approaching challenges systematically. This review delves deeply into the content, structure, strengths, and practical applications of the PDF, aiming to provide a detailed perspective for anyone interested in elevating their programming mindset.

Introduction to "Think Like a Programmer" PDF

"Think Like a Programmer" is a book penned by V. Anton Spraul that emphasizes the cognitive and analytical skills necessary to become an effective programmer. The PDF adaptation of this work condenses core ideas into a portable, accessible format, making it ideal for self-study, quick reference, or supplementing formal education.

The core premise is that programming isn't solely about memorizing language syntax but about developing problem-solving strategies, analytical thinking, and a structured approach to tackling complex tasks. The PDF distills these philosophies into digestible chapters, exercises, and insights that foster a deeper understanding of the programming mindset.

Content Overview and Structure

The PDF is structured into several core sections, each targeting specific aspects of thinking like a programmer:

1. The Foundation of Programming Thinking

- Problem decomposition: Breaking down complex problems into manageable parts.
- Algorithm design: Crafting step-by-step procedures to solve problems.
- Abstraction: Focusing on relevant details and ignoring unnecessary complexities.
- Pattern recognition: Identifying common solutions and recurring themes.

2. Core Problem-Solving Strategies

- Understanding the problem: Clarifying requirements before diving into solutions.
- Planning before coding: Drawing flowcharts or pseudocode.
- Iterative development: Improving solutions through repeated refinement.
- Debugging and troubleshooting: Developing a mindset for identifying and fixing errors efficiently.

3. Developing a Programming Mindset

- Thinking algorithmically: Approaching problems with logical sequences.
- Designing for simplicity: Avoiding over-complication.
- Handling constraints: Working within resource or time limitations.
- Learning from mistakes: Embracing errors as growth opportunities.

4. Practical Exercises and Examples

- Real-world coding problems designed to reinforce thinking strategies.
- Step-by-step walkthroughs demonstrating problem-solving processes.
- Practice problems with varying difficulty levels.

Deep Dive into Key Aspects of the PDF

Problem Decomposition and Modular Thinking

One of the standout lessons in the PDF is the importance of breaking down complex problems into smaller, more manageable parts. This approach reduces cognitive load and makes solutions more

approachable.

- Why it matters: A large problem can seem overwhelming, leading to frustration or incomplete solutions.
- How the PDF guides this: It emphasizes identifying sub-problems, creating functions or modules, and focusing on one component at a time.
- Practical tip: Practice visualizing a problem and sketching a breakdown hierarchy before starting coding.

Algorithmic Thinking and Pseudocode

The PDF champions the development of algorithms as a core skill.

- What is an algorithm? A precise, step-by-step procedure to solve a problem.
- Role of pseudocode: Writing algorithms in plain language helps clarify logic before implementation.
- Benefits: Ensures clarity, reduces errors, and facilitates communication of solutions.

Abstraction and Pattern Recognition

Understanding what details to focus on—and which to ignore—is vital.

- Abstraction: Enables handling complex systems by creating simplified models.
- Pattern recognition: Allows programmers to reuse solutions for common problems like searching, sorting, or data management.
- Example from the PDF: Recognizing that different search algorithms (linear, binary) solve similar problems with different constraints.

Thinking in Terms of Data and Control Flow

The PDF emphasizes visualizing data movement and control structures.

- Flowcharts and diagrams: Tools to understand how data flows through an algorithm.
- Control structures: Mastery of loops, conditionals, and recursion to control program execution effectively.

Strengths of the PDF as a Learning Resource

Clarity and Focus:

Unlike traditional programming books that dive into language specifics early on, this PDF maintains a focus on core thinking skills. Its clear explanations and practical exercises help readers internalize abstract concepts.

Concise yet Comprehensive:

The PDF distills critical ideas without unnecessary filler, making it suitable for quick revision or deep study sessions.

Practical Application:

Real-world examples and problem sets help solidify understanding. The inclusion of exercises encourages active learning rather than passive reading.

Universal Relevance:

The principles discussed are language-agnostic, making the PDF valuable whether you're learning Python, C++, Java, or any other language.

Accessible Format:

Being a PDF, it's portable and easy to access on multiple devices, perfect for on-the-go study sessions.

Limitations and Considerations

While the PDF is a powerful resource, it does have some limitations:

- Abstract Focus:

It emphasizes thinking strategies but doesn't delve deeply into language-specific syntax or frameworks. Learners may need supplementary resources to master particular technologies.

- Prerequisite Knowledge:

Some exercises assume familiarity with basic programming concepts. Absolute beginners might find certain sections challenging without prior exposure.

- Lack of Interactive Content:

As a static PDF, it lacks interactive elements like quizzes or coding environments, which can be beneficial for reinforcement.

Practical Applications and How to Maximize Its Value

Integrate into Study Routine:

Use the PDF as a core reference during learning or problem-solving sessions. Read a chapter, then

attempt related exercises.

Supplement with Coding Practice:

Apply the thinking strategies by solving problems on platforms like LeetCode, HackerRank, or Codewars, focusing on problem decomposition and algorithm design.

Use as a Teaching Tool:

Instructors can leverage the PDF to instill a problem-solving mindset in students, emphasizing the importance of thinking like a programmer.

Develop Personal Notes:

Highlight key principles and create personalized checklists to review before tackling new challenges.

Conclusion: Is the PDF Worth It?

"Think Like a Programmer" PDF stands out as an essential resource for anyone serious about developing a robust programming mindset. Its focus on fundamental problem-solving strategies, cognitive approaches, and structured thinking makes it a valuable companion throughout a programmer's journey.

While it doesn't replace hands-on coding practice or language-specific tutorials, it complements them by cultivating the mental habits necessary for sustained growth and mastery. Whether you're a beginner looking to build a strong foundation or an experienced developer seeking to refine your problem-solving approach, this PDF offers insights that are both timeless and practical.

In essence, mastering how to think like a programmer is arguably the most critical skill of all. This PDF provides a clear, concise, and effective pathway to achieve that mastery, making it an investment worth making in your programming education.

[Think Like A Programmer Pdf](#)

think like a programmer pdf: *Think Like a Programmer* V. Anton Spraul, 2012-08-12 The real challenge of programming isn't learning a language's syntax—it's learning to creatively solve problems so you can build something great. In this one-of-a-kind text, author V. Anton Spraul breaks down the ways that programmers solve problems and teaches you what other introductory books often ignore: how to Think Like a Programmer. Each chapter tackles a single programming concept, like classes, pointers, and recursion, and open-ended exercises throughout challenge you to apply your knowledge. You'll also learn how to: -Split problems into discrete components to make them easier to solve -Make the most of code reuse with functions, classes, and libraries -Pick the perfect data structure for a particular job -Master more advanced programming tools like recursion and dynamic memory -Organize your thoughts and develop strategies to tackle particular types of problems Although the book's examples are written in C++, the creative problem-solving concepts they illustrate go beyond any particular language; in fact, they often reach outside the realm of computer science. As the most skillful programmers know, writing great code is a creative art—and the first step in creating your masterpiece is learning to Think Like a Programmer.

think like a programmer pdf: *How to Think Like a Coder* Jim Christian, 2017-10-05 A back-to-basics guide on coding for absolute beginners, whether adults or children - no prior experience required! Coding is set to change the way we work and the skills we will need in the future. For those who know nothing about coding, getting to grips with the basics is daunting. Too many of the beginner books launch straight into programming techniques but what is really needed is an understanding of the key concepts of coding. Programming then becomes much easier to grasp. This accessible, fun book goes right back to the very basics, teaching central concepts such as loops, data types, pseudocode and calculations without having to learn a single line of code! Using a set of dice, a deck of cards or a pack of dominoes to enjoy fun and straightforward exercises, you will practise key skills such as critical thinking, creativity, logic and problem-solving and begin to think like a coder without even turning on your computer. Once you are equipped with this basic toolkit, *Think Like a Coder* discusses the basic programmes that are available for beginners, keeping a focus on simple activities that draw analogies with the outside world to make learning easy and fun. Suitable for absolute beginners, adults and children. Designed to be a thorough yet lighthearted introduction for the complete beginner, *Think Like a Coder* is an essential addition to any keen programmer's bookshelf.

think like a programmer pdf: *Think Like a Programmer, Python Edition* V. Anton Spraul, 2018-05-15 Programming isn't just about syntax and assembling code—it's about problem solving, and all good programmers must think creatively to solve problems. Like the best-selling *Think Like a Programmer* before it (with over 75,000 copies sold worldwide), this Python-based edition will help you transition from reading programs to writing them, in, Python. (No prior programming experience required!) Rather than simply point out solutions to problems, author V. Anton Spraul will get you thinking by exposing you to techniques that will teach you how to solve programming problems on your own. Each chapter covers a single programming concept like data types, control flow, code reuse, recursion, and classes, then a series of Python-based exercises have you put your skills to the test. You'll learn how to: -Break big problems down into simple, manageable steps to build into solutions -Write custom functions to solve new problems -Use a debugger to examine each line of your running program in order to fully understand how it works -Tackle problems strategically by turning each new concept into a problem-solving tool The Python edition of *Think Like a Programmer* aims squarely at the beginning programmer, with additional chapters on early programming topics such as variables, decisions, and looping. Version: This book is based on Python 3.

think like a programmer pdf: Teaching Computational Thinking in Primary Education

Ozcinar, Huseyin, Wong, Gary, Ozturk, H. Tugba, 2017-10-31 Computational technologies have been impacting human life for years. Teaching methods must adapt accordingly to provide the next generation with the necessary knowledge to further advance these human-assistive technologies. Teaching Computational Thinking in Primary Education is a crucial resource that examines the impact that instructing with a computational focus can have on future learners. Highlighting relevant topics that include multifaceted skillsets, coding, programming methods, and digital games, this scholarly publication is ideal for educators, academicians, students, and researchers who are interested in discovering how the future of education is being shaped.

think like a programmer pdf: Research Anthology on Computational Thinking, Programming, and Robotics in the Classroom Management Association, Information Resources, 2021-07-16 The education system is constantly growing and developing as more ways to teach and learn are implemented into the classroom. Recently, there has been a growing interest in teaching computational thinking with schools all over the world introducing it to the curriculum due to its ability to allow students to become proficient at problem solving using logic, an essential life skill. In order to provide the best education possible, it is imperative that computational thinking strategies, along with programming skills and the use of robotics in the classroom, be implemented in order for students to achieve maximum thought processing skills and computer competencies. The Research Anthology on Computational Thinking, Programming, and Robotics in the Classroom is an all-encompassing reference book that discusses how computational thinking, programming, and robotics can be used in education as well as the benefits and difficulties of implementing these elements into the classroom. The book includes strategies for preparing educators to teach computational thinking in the classroom as well as design techniques for incorporating these practices into various levels of school curriculum and within a variety of subjects. Covering topics ranging from decomposition to robot learning, this book is ideal for educators, computer scientists, administrators, academicians, students, and anyone interested in learning more about how computational thinking, programming, and robotics can change the current education system.

think like a programmer pdf: Transforming Libraries, Building Communities Julie Biando Edwards, Melissa S. Robinson, Kelley Rae Unger, 2013-05-30 This book is for those moving their library beyond places to find information. Written by practicing public librarians and an academic librarian with an interest in public libraries, the book focuses on how public libraries can become more community centered and, by doing so, how they can transform both themselves and their communities. The authors argue that focusing on building community through innovative and responsive services and programs will be the best way for the public library to reposition itself in the years to come. Repositioning the library acknowledges that information is in abundance in contemporary life. And while accessing information will always be at the heart of what libraries do, it isn't the only thing they do. It may not be, in the future, even the most important thing that they do. This book encourages librarians to admit that our role has evolved and to reframe the discussion so that it is about what we actually can do – play an essential role in meeting community needs and building strong and vibrant local communities. The authors argue that repositioning libraries as community centered institutions is a responsibility. Libraries bring people together. They create community, and they also create mini-communities – everything from book groups to writing circles to new citizen groups to linguistic or ethnic communities reflected in programming and in collections. These mini-communities help provide fellowship and foster relationships amongst the group members, but also, because they exist in the public place that is the library, help the larger community recognize and learn about the mini-communities that create the larger community. This is the work of libraries. The book is divided into three parts which include explorations into the importance of the community centered library, practical advice on making your library more community centered, and a showcase of community centered library programs, services and initiatives across the United States. A special focus of the book is on how community development literature and practice can inform librarianship, with an emphasis on Asset Based Community

Development principles. The book looks at how community centered libraries build individual and community assets and how, in doing so, they serve as essential community anchors and institutions.

think like a programmer pdf: *Leveraging Applications of Formal Methods, Verification and Validation* Tiziana Margaria, Bernhard Steffen, 2021-10-11 This book constitutes contributions of the ISoLA 2021 associated events. Altogether, ISoLA 2021 comprises contributions from the proceedings originally foreseen for ISoLA 2020 collected in 4 volumes, LNCS 12476: Verification Principles, LNCS 12477: Engineering Principles, LNCS 12478: Applications, and LNCS 12479: Tools and Trends. The contributions included in this volume were organized in the following topical sections: 6th International School on Tool-Based Rigorous Engineering of Software Systems; Industrial Track; Programming: What is Next; Software Verification Tools; Rigorous Engineering of Collective Adaptive Systems.

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as the role communication technologies play in our everyday lives. In addition to substantial updates to each chapter, the 15th edition includes: First-ever chapters on Big Data and the Internet of Things Updated user data in every chapter Projections of what each technology will become by 2031 Suggestions on how to get a job working with the technologies discussed The companion website, www.tfi.com/ctu, offers updated information on the technologies covered in this text, as well as links to other resources

think like a programmer pdf: *Rethinking Thinking* Martin Cohen, 2022-04-04 How do generals - and business strategists - outwit their opponents? Where do designers and artists get their inspiration from? How can all of us 'pump up the originality' and steer our thinking off the standard, well-worn tracks? Everyone, as the French philosopher René Descartes pointed out long ago, thinks. That's the easy bit. The harder part, and what this book is really about, is how to make your thinking original and effective. And here the problem is that too often we don't really engage the gears of our brain, don't really look at issues in an original or active way, we just respond. Like computers, inputs are processed according to established rules and outputs are thus largely predetermined. Yet that's not what makes us human and that's not where the big prizes in life are to be found. In the third millennium, we need to think a bit more - not less! And so the focus in this book is on practical suggestions about ways to think better... on thinking strategies that each have their own style, applications and benefits.

think like a programmer pdf: The Programmer's Brain Felienne Hermans, 2021-10-05 A great book with deep insights into the bridge between programming and the human mind. - Mike Taylor, CGI Your brain responds in a predictable way when it encounters new or difficult tasks. This unique book teaches you concrete techniques rooted in cognitive science that will improve the way you learn and think about code. In *The Programmer's Brain*: What every programmer needs to know about cognition you will learn: Fast and effective ways to master new programming languages Speed reading skills to quickly comprehend new code Techniques to unravel the meaning of complex code Ways to learn new syntax and keep it memorized Writing code that is easy for others to read Picking the right names for your variables Making your codebase more understandable to newcomers Onboarding new developers to your team Learn how to optimize your brain's natural cognitive processes to read code more easily, write code faster, and pick up new languages in much less time. This book will help you through the confusion you feel when faced with strange and complex code, and explain a codebase in ways that can make a new team member productive in days! Foreword by Jon Skeet. About the technology Take advantage of your brain's natural processes to be a better programmer. Techniques based in cognitive science make it possible to learn new languages faster, improve productivity, reduce the need for code rewrites, and more. This unique book will help you achieve these gains. About the book *The Programmer's Brain* unlocks the way we think about code. It offers scientifically sound techniques that can radically improve the way you master new technology, comprehend code, and memorize syntax. You'll learn how to benefit from productive struggle and turn confusion into a learning tool. Along the way, you'll discover how to create study resources as you become an expert at teaching yourself and bringing new colleagues up to speed. What's inside Understand how your brain sees code Speed reading skills to learn code quickly Techniques to unravel complex code Tips for making codebases understandable About the reader For programmers who have experience working in more than one language. About the author Dr. Felienne Hermans is an associate professor at Leiden University in the Netherlands. She has spent the last decade researching programming, how to learn and how to teach it. Table of Contents PART 1 ON READING CODE BETTER 1 Decoding your confusion while coding 2 Speed reading for code 3 How to learn programming syntax quickly 4 How to read complex code PART 2 ON THINKING ABOUT CODE 5 Reaching a deeper understanding of code 6 Getting better at solving programming problems 7 Misconceptions: Bugs in thinking PART 3 ON WRITING BETTER CODE 8 How to get better at naming things 9 Avoiding bad code and cognitive load: Two frameworks 10 Getting better at solving complex problems PART 4 ON COLLABORATING ON CODE 11 The act of writing code 12 Designing and improving larger systems 13 How to onboard new developers

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think like a programmer pdf: How to Succeed in any Interview PDF eBook Ros Jay, 2015-01-06 You've got the interview - now how will you get the job? How to Succeed in any Interview will show you how to present yourself as the best candidate for the job, using proven tips, advice and techniques from the experts to guide you through exactly what interviewers want to see and what impresses them most. Present yourself in the best possible light - every time Understand what impresses interviewers the most Win the job before, during and after the interview Learn how to show yourself in the best possible light and maximise your chances of making a brilliant impression and getting that job.

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country like Indonesia. The dream of running your own guesthouse or restaurant by the beach on a tropical island like Bali, doesn't stop people wanting to give it a try. This guide on how to start a business in Bali was written to help guide people through the ropes of setting up a company and establishing a successful business. The book goes beyond the author's experience by including interviews with successful expat entrepreneurs who have a combined experience of over 80 years in Indonesia. The advice is practical and to the point. While the guide focuses on Bali, the information could also be applied to other locations in Indonesia as well.

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